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## Effects of Macroeconomic Policies on Rural Nonfarm Enterprises

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Philippine Institute for Development Studies

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*Aida R. Librero*

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August 1994

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**Philippine Institute for Development Studies**

**Effects of Macroeconomic Policies  
on Rural Nonfarm Enterprises**

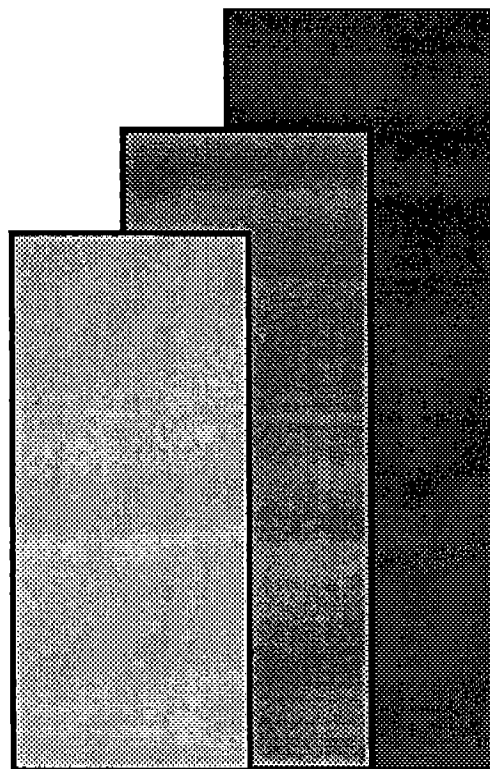
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# EFFECTS OF MACROECONOMIC POLICIES ON RURAL NONFARM ENTERPRISES

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DYNAMICS OF RURAL DEVELOPMENT PROJECT, PHASE II  
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AIDA R. LIBRERO  
Principal Investigator

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## EFFECTS OF MACROECONOMIC POLICIES ON RURAL NONFARM ENTERPRISES

### Abstract

The study is generally aimed at analyzing the effects of macroeconomic policies on rural nonfarm enterprises (RNEs) by constructing a RNE submodel and linking it with the PIDS NEDA macroeconometric model for the Philippine economy. The submodel consists of three blocks each consisting of 12 seemingly unrelated equations describing the relationship of demand, employment, and prices with various explanatory variables. RNEs were defined as manufacturing industries located outside Metro Manila and were divided into 12 sectors. The trend in the distribution of nonfarm enterprises between Metro Manila and the rural areas and the growth in number of establishments, output, and employment in RNEs were examined.

In general, the empirical results conform with theoretical expectations. As hypothesized, price coefficients in the demand equations are negative while those of consumption expenditures are positive. The estimates of the employment equations show that the coefficients of output are positive and generally statistically significant. The wage rate has a negative coefficient while capital investment or interest rate has a positive relationship with employment.

To determine the tracking ability of the model, a fully dynamic simulation was undertaken for the period 1981 to 1989. To validate the model, the root mean square percentage errors were computed. Except for the GVA from tobacco manufacture, the RSMPE statistics is less than 25 percent. The GVA for food, textile, petroleum and others has a RMSPE of less than 10 percent while that for aggregate GVA for all RNEs is 5.27 percent.

For employment, ten out of the 12 RNE sectors have RMSPE statistics of less than 20 percent. The aggregate employment equation (identity) performed quite well with a RMSPE of less than 10 percent. The performance of the price equations appears to be much better than the output and employment equations with 11 sectors having RSMPE statistics of less than 10 percent and five out of 12 sectors with less than 5.0 percent.

By linking the RNE submodel with the PIDS NEDA macroeconometric model, the effects of three major policies on RNEs were estimated. These are changes in wage rate, exchange rate, and merchandise exports. In general, increase in the wage rate results in a decline in employment, an increase in prices, and consequently a drop in output. The immediate effect of an increase in the exchange rate is to increase domestic prices which would lower the demand for goods and reduce employment. The empirical results of the simulation exercise for the period 1981 to 1989 generally conform with these expectations. The impact of higher manufactured exports consists of higher output and employment in the RNEs.

## CHAPTER I

### INTRODUCTION

#### 1.1 Significance of the study

A major component of the Philippine development plan is rural-based employment-oriented development strategy as a means of alleviating poverty in the countryside. To industrialize the rural areas and to sustain efforts to increase rural incomes has to come not only from agriculture but as a total development strategy. Here, the promotion of nonfarm enterprises is crucial in absorbing labor, increasing value added from agriculture, and income. Yet, in the past, macroeconomic policies such as high tariff rates, import controls, overvalued exchange rate, etc. have been biased against small scale enterprises in the rural areas.

Predominantly agricultural, agriculture has been a major source of growth in the Philippines. However, agricultural growth is not sufficient. Rural based industrialization is a critical determinant of the long run development prospects of the country. Small firms have persisted in large numbers at all phases of the economic history of market economies. Whether in developed or less developed countries, small enterprises play a significant role in all stages of economic development (NORDIC, 1989). Moreover, the emergence of the educated unemployed, the increase in unemployment in urban areas, and the structural imbalance between rural and urban areas are leading to a new interest in rural nonfarm activities (CIDA, 1989).

In the Philippines where excess labor exists, where rural-urban migration heightens poverty in the urban areas, the development of nonfarm enterprises which will absorb labor and provide greater income is quite imperative. Policy reforms have been pursued, hence, it is important that the effects of macroeconomic policies on rural nonfarm enterprises (RNE) be studied.

In 1989, there were an estimated 77,805 manufacturing establishments in the Philippines, 80 percent of them located in the rural areas or outside Metro Manila. They employ more than 1.2 million people about one-half of which are in the rural areas. These nonfarm enterprises,

particularly the small and medium industries, are well dispersed geographically and most of them have to deal with poor infrastructure and inadequate access to support services. Analyzing the credit delivery to rural enterprises, Llanto, et. al. (1988) argued that the lack of credit for rural enterprises in the Philippines is not necessarily symptomatic of capital market distortion which penalized small enterprises. Rather it could be interpreted as a "filter that eliminates the dishonest, the incompetent" (Little, 1987) and the nonviable loan applicants. The problem is probably not lack of formal credit per se but lack of readiness or maturity of rural enterprises, especially the small ones, for formal credit. The implication is that the barriers to the access to formal credit must be overcome. Externally, barriers not only to credit but also to other incentives consist of financial and economic policies at the macro level which determine the operation, growth and efficiency of these enterprises. Policies that provide ample access to infrastructure, markets, basic economic services, and other resources would strengthen the competitiveness of rural enterprises.

Reviewing literature on the micro impacts of macroeconomic policies, Lambarte, et. al. (1991) concluded that there is a need to study the impact of new policies on production units especially in as far as the micro, small and medium scale enterprises are concerned. These production units are typically labor-intensive, they operate outside of Metro Manila area and have some potential for a positive response to a changing macroeconomic environment.

## 1.2. Objectives of the Study

In general, the study aims at analyzing the effects of macroeconomic policies on rural nonfarm enterprises. Specifically, the objectives of the study are the following:

- 1) To develop an analytical framework to determine the impact of macroeconomic policies on rural nonfarm enterprises (RNEs).
- 2) To analyze the trends in the growth of RNEs in the Philippines.
- 3) To determine the changes in government policies towards the development of RNEs.
- 4) To describe briefly the market for selected outputs of RNEs.

- 5) To measure the effects of price and trade policies on rural nonfarm enterprises.

### 1.3. Organization of the Report

To achieve these objectives, data were gathered from secondary sources. Output and employment data were obtained from the census and annual survey of establishments undertaken by the National Statistics Office (NSO). The next chapter defines the scope of rural nonfarm enterprises as well as each of these variables. Chapter 2 also presents the theoretical framework and an analytical submodel for rural nonfarm enterprises and its linkage with the FIDS NEDA macroeconometric model for the Philippine economy developed by Constantino, Mariano, and Yap (1989).

Based on literature on nonfarm enterprises, Chapter 3 briefly describes a sample of different industries while Chapter 4 presents the various policies that have been formulated and implemented for nonfarm enterprises. Using data derived from the NSO survey of establishments, trends in output, employment, number of establishments, and prices are analyzed in Chapter 5. The next chapter discusses the result of the output, employment, and price equations estimated using the analytical model developed in Chapter 2. The model is validated and dynamic simulations are undertaken in Chapter 7 to determine the performance of the model and the effects of macroeconomic policies on rural nonfarm enterprises.



## CHAPTER 2

### THEORETICAL FRAMEWORK

#### 2.1. Definition of Rural Nonfarm Enterprises

Bautista (1991) defined RNES quite generally as "nonagricultural activities producing goods whose role in the development of an (initially) agrarian economy has been analyzed in various contexts." Focusing on microenterprises Lapar (1991) identified rural nonfarm microenterprises in the traditional sector as constituting all income-generating activities carried out by individuals, households and partnerships in rural settings excluding agriculture and modern sector activities like agroindustry, mining, commercial services, and infrastructure and government services.

For purposes of this study, the second definition was expanded to include not only microenterprises but also corporations or big enterprises. The National Statistics Office (NSO) conducts an annual survey or census of manufacturing establishments throughout the country and since 1975 has reported data for the Philippines as a whole, for Metro Manila, and for the various regions. For this study therefore, manufacturing establishments regardless of size and located outside Metro Manila were considered rural nonfarm enterprises. This is appropriate as evidenced by the presence of numerous establishments ranging from very small (e.g. less than five workers) to very large enterprises (e.g. more than one thousand workers) in the rural areas. Examples are Asia Brewery, and Nestle Philippines located in barangays in Cabuyao, Laguna and another Asia Brewery in a barangay in El Salvador, Misamis Oriental; Philippines Kao in Jasaan, Misamis Oriental; coconut product processors in Quezon; and many others.

The Metro Manila area has been defined by the NSO to comprise Manila, Caloocan City, Pasay City, Quezon City, Valenzuela, Pasig, Las Piñas, Makati, Malabon, Mandaluyong, Marikina, Muntinlupa, Navotas, Paranaque, San Juan, and Taguig. Data on manufacturing establishments on nonfarm enterprises as defined in this study are available for Metro Manila and for Regions I to XII. The data for the regions were then consolidated to compose rural nonfarm enterprises.

The NSO Annual Survey of Establishments defines manufacturing as the mechanical or chemical transformation of organic or inorganic substances into new products, whether the work is performed by power-driven machines or by hand, whether it is done in a factory or in the workers' home, and whether the products are sold at wholesale or retail. The assembly of component parts of manufactured products and major repair work are considered manufacturing.

NSO further defines establishment as an economic unit which engages under a single ownership or control, that is, under a single entity in one or predominantly one kind of activity at a single fixed location and having permanency of assets, such as goods for resale, products, materials, equipment, etc. in its premises during the operation. Thus an establishment is a plant, mill, factory or shop at a single physical location where a particular manufacturing, fabricating, processing and/or assembling operation is performed.

Data on number of establishments; value of output, employment, capital expenditures, major cost items, and others are reported by NSO by industries classified using the Philippine Standard Industrial Classification of all economic activities. The major kind of activity of an establishment is determined by the proportion of the gross output of the principal products manufactured.

For the present study, rural nonfarm enterprises were grouped into twelve, namely:

1. Food manufacturing

This includes, among others, the slaughter, preparation and preservation of meat; manufacture of processed milk and dairy products; canning, processing and preservation of fruits, vegetables, fish, crustaceans, and other seafoods; production of crude coconut oil, cake and meal, and desiccated coconut; manufacture of vegetable oils and animal oils and fats; rice, corn and flour milling; manufacture of bakery products, sugar milling and refining; manufacture of cocoa, chocolate and other sugar confectionery; coffee roasting and processing; manufacture of ice; and others.

2. Beverage manufacturing

This includes distilling, rectifying and blending spirits; and manufacture of wine, malt liquors, malt, softdrinks, and carbonated water.

3. Tobacco manufacturing

This includes the manufacture of cigarettes, cigars, chewing and smoking tobacco; and the curing and redrying of tobacco leaves.

4. Textile, wearing apparel and leather industries (referred to as textile in subsequent discussions)

These include spinning, weaving, texturizing and finishing textiles; manufacture of made-up textile goods, wearing apparel, ready-made clothing; manufacture of carpets, rugs, cordage, rope, and twine; custom tailoring and dressmaking shops; manufacture of artificial leather, oil cloth and other impregnated and coated fabrics, fiber batting, padding, and upholstery filling; manufacture of leather, leather substitutes and fur; tanneries and leather finishing; manufacture of leather shoes; and others.

5. Manufacture of wood and wood products including furniture and fixtures (referred to as wood in subsequent discussions)

This group includes sawmills and planing mills; manufacture of veneer, plywood, hardboard, and particle board; wood drying and preserving plants; manufacture of wooden containers, and wood carvings; manufacture and repair of wood furniture, rattan furniture, box beds and mattresses; manufacture of partitions, shelves, lockers, office and store fixtures, window and door screens, shades and venetian blinds; and others.

6. Manufacture of paper and paper products, printing and publishing (referred to as paper in subsequent discussions)

This group consists of manufacturers of pulp, paper, and paperboard; printing of newspapers and periodicals; printing and publishing of books and pamphlets; commercial and job printing; and others.

7. Manufacture of chemicals and chemical, rubber and plastic products (referred to as chemicals in subsequent discussions)

This group includes manufacture of basic industrial chemicals, fertilizer, synthetic resins, plastic materials and man-made fibers; pesticides; insecticides, fungicides, and herbicides; manufacture of paints, varnish, lacquers; manufacture of drugs, medicines, soap and cleaning preparations; manufacture of tires, tubes, rubber footwear, plastic products, etc.

8. Manufacture of petroleum and coal products (referred to as petroleum in subsequent discussions)

This includes petroleum refineries and the manufacture of miscellaneous products of petroleum and coal.

9. Basic metal industries

These industries consist of iron and steel basic industries such as blast furnaces and steel making furnaces; steel works and rolling mills iron and steel foundries; non-ferrous metal basic industries such as gold and other precious metal refining, nonferrous smelting and refining plants, nonferrous rolling, drawing and extrusion mills; and non-ferrous foundries.

10. Manufacture of fabricated metal products, machineries (except electrical) and transport equipment (referred to as machineries in subsequent discussions)

This group includes the manufacture of fabricated metal products and furniture and fixtures primarily of metal like cutlery, handtools, general hardware, metal containers, nonelectric lighting and heating fixtures; metal stamping, coating and refining; manufacture of fabricated wire products; manufacture of engines and turbines, agricultural machinery and equipment, metal and woodworking machinery, office, computing and accounting machinery; manufacture of transport equipment including shipbuilding and repairs; aircraft, manufacture,

assembly, rebuilding, and major alteration of motor vehicles, motorcycles, and bicycles; manufacture of motor vehicle parts and accessories; manufacture of professional and scientific equipment, photographic and optical instruments, watches and clocks; manufacture and repair of furniture and fixtures primary of metal.

11. Manufacture of electrical machinery, apparatus, appliances and supplies (referred to as electrical in subsequent discussions)

This includes the manufacture of electrical machinery and apparatus; radio, television, and communication equipment and apparatus; electrical appliances and housewares; primary cells and batteries; electric wires and wiring devices and others.

12. Other manufacturing industries

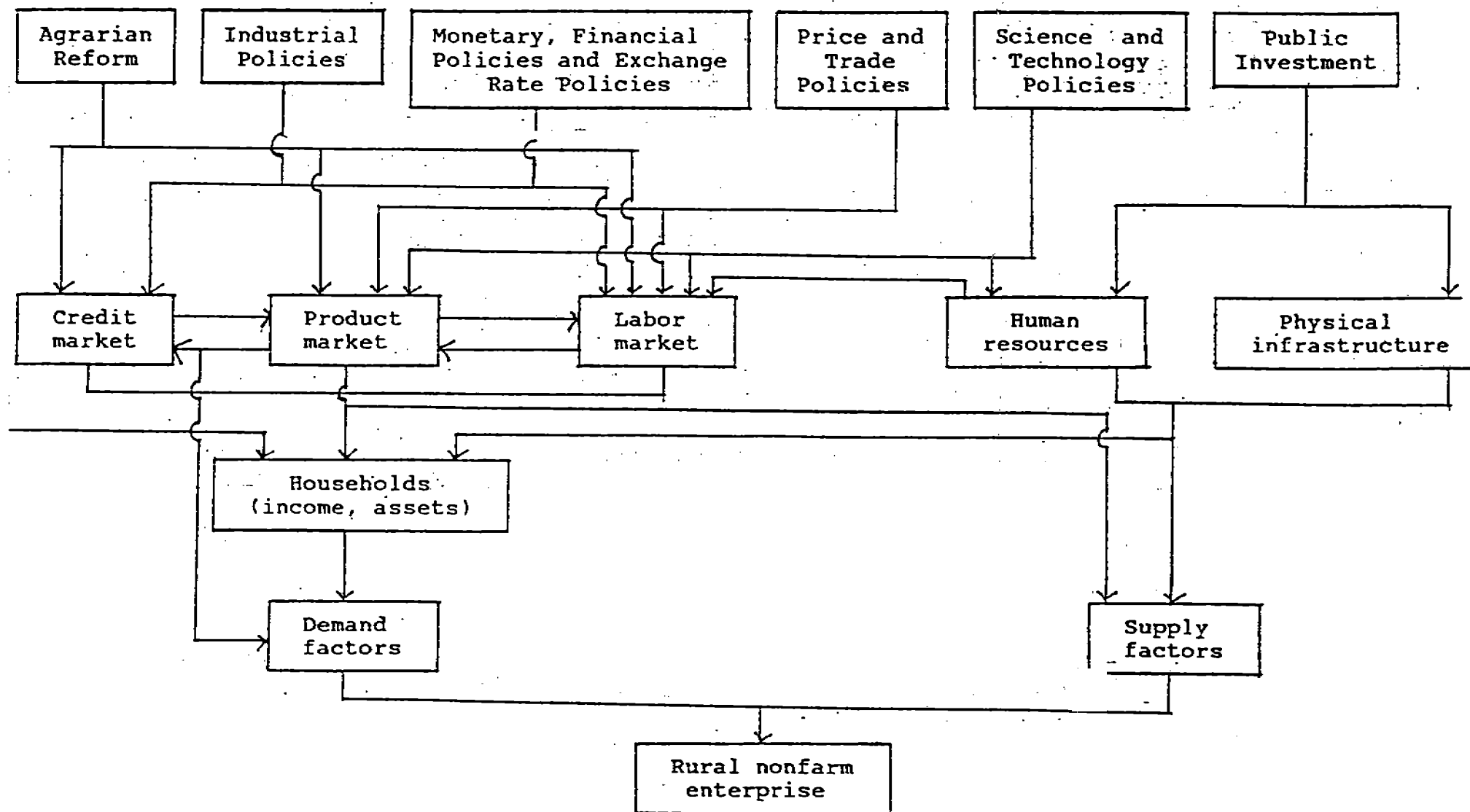
This includes the manufacture of nonmetallic mineral products such as pottery, china, earthenware, glass and glass products. It also includes the manufacture of jewelry and related articles; musical instruments; sporting and athletic goods; surgical, dental, medical and orthopedic supplies; ophthalmic goods, eyeglasses and spectacles; toys and dolls; stationers, artists and office supplies; and others.

## 2.2. Theoretical Framework

The framework for policy analysis is adopted with some modifications from R.M. Bautista, Dynamics of Rural Development: Analytical Issues and Policy Perspectives, a report submitted to PIDS in September 1991. A schematic representation of the main relationships underlying the influence of government policies on the economic performance of RNEs is presented in Figure 2.1. Five major policy instruments affecting RNEs are agrarian reform, industrial policies, price and trade policies, public investment, and monetary, financial, and exchange rate policies. These policies are linked to the product and labor markets of the RNEs as well as the infrastructure and human resources.

According to Bautista, on the demand side consumption linkage effects are indicated from households and production linkages in the product market. Household incomes and assets, both the absolute level and their distribution, are affected by agrarian reform as well as government

Figure 2.1. A framework for policy analysis of RNEs



investments on physical infrastructure and human resources development. Furthermore, income is earned by household members participating in any of the two markets.

The product market interacts with the credit and labor markets. The product market may also be affected by agrarian reform through the latter's impact on productivity and the different expenditures patterns among large and small landowners, tenants, and landless workers. Moreover, it is influenced by trade and price policies directly through import tariffs, export taxes, etc., and indirectly through the induced changes in the exchange rate. Here, trade policies should consider both domestic and international trade policies including quantitative restrictions.

Monetary and financial policies circumscribe developments in the credit markets, in terms of both the magnitude of available domestic credit and its allocation. Likewise, they affect the labor market through their influence on the interest rate, a major component of the user cost of capital which in part determines the capital-labor ratio and hence the extent of labor employment.

Agrarian reform can lead to significant changes in the credit market, e.g., a shift in the sourcing of nonformal loans from landlords to traders. In addition, credit allocation practices of banks may change as the value of land-based collateral declines. In the labor market, if labor is underemployed in small farms and land is underutilized in large farms, the land distribution could increase labor employment, land use and farm output, provided that the other input requirements (e.g. seeds, fertilizer, chemicals, etc.) are applied. Labor supply and demand would be affected by the level and composition of the human capital (a determinant of labor productivity) and the foreign trade regime. Exchange rate overvaluation and low tariff rates on imported capital equipment have a distortionary effect on relative factor prices that penalize labor-intensive industries and the adoption of labor-using production technologies. This weakens the demand stimulus to rural nonfarm production through the induced effects on the product market and the purchasing power of rural households.

On the other hand, the supply response of RNEs is determined by relative prices from the product, labor and credit markets, as well as the availability of factor inputs-capital and labor skills and access to them by rural producers. If the credit market is such that the financing

of fixed capital investment and of working capital, or if public investment is distorted against expenditures on health, education, and the development of labor skills in rural areas, the growth performance of RNEs will be hampered. The effects of market changes on rural nonfarm production are also determined by the existing physical infrastructure in rural areas, which may or may not permit low-cost marketing to take place. A strong anti-rural bias in infrastructure policy, for example, is likely to impair the ability of rural producers to respond to favorable price and demand conditions.

Furthermore, the growth in RNEs - both in terms of the existing establishment of new RNEs and the sustainability of existing ones - will be affected by industrial policies, e.g. the various incentives provided by the government. It will also be influenced by the extent of the generation and dissemination of new technology particularly those which have direct bearing on increasing output and productivity and reducing cost of production.

In order to estimate the quantitative effect of some macroeconomic policies on rural nonfarm enterprises, a submodel for volume of output, employment and prices was formulated. The submodel is to be linked to the PIDS NEDA Macroeconometric Model (MEM) developed by Constantino, Mariano and Yap (1989). The RNE submodel follows a similar theoretical framework as that of the PIDS NEDA MEM. The macro model divides the production categories into (a) "fixprice," (b) "flexprice," and (c) "flexprice/flexquantity" sectors. The flexprice/flexquantity sector has flexible output and prices to clear the market, the fixprice sector has an adjusting output level with fixed prices while the flexprice sector has fixed output and adjusting prices.

Constantino, et al state that the fixprice sector is most applicable to the industrial sector which is often characterized by excess capacity and therefore, adjustments to increases in demand take place on the quantity side. Industrial prices are likely to be fixed in the short-run by relatively stable markups over variable cost. Markups can be justified by the presence of spare capacity and oligopolistic structures. On the other hand, excess capacity can be justified by lack of effective demand both in the domestic and the international markets.

The PIDS NEDA model consists of four major blocks: (1) the real sector, (2) the fiscal sector, (3) the financial sector, (4) the external sector. The real sector block is further subdivided into three subsectors, namely: (1)



production, (2) expenditure, and (3) employment, wages and price. Consisting of 169 equations, the model incorporates key aspects which have special significance for analyzing the impact of macroeconomic policies such as the following: (1) changes in government expenditures or deficit; (2) effect of money on prices and output; (3) impact of debt service and foreign loan or assistance on economic performance; (4) role of the exchange rate and interest in the adjustment of the economy; and (5) the dual role of capital formation, demand generation in the short run and capacity creation for increased supply in the long run.

The interactions among the blocks may be described as follows:

"The linkage between the production sector and expenditure sector moves only in the four aggregate expenditures categories appearing as arguments in the demand functions in the production sector. Output as determined then enters into the employment equation.

The financial and real sectors interact through the interest rate and through the price variables as some monetary aggregates affect prices.

The fiscal sector is essentially exogenous in the basic model, specially with respect to government expenditures. However, tax revenues are linked to the level of economic activity or output. To the extent that it is monetized, the government budget deficit serves as the link with the financial sector.

The external sector links up with the rest of the economy through financial variables specifically, net foreign assets. This is in addition to the link between the expenditure/production side, i.e. exports and imports with the current account components."

## 2.3. Analytical Model

### 2.3.1. Demand Functions

Demand for output of each RNE is characterized as a function of its price and indicators of aggregate domestic and international demand. Thus, the demand for the products of each RNE sector is assumed to be a function of its price, consumption expenditure, population and exports. That is,

$$Q = f(P, CP \text{ or } CG \text{ or } CP + CG, X, POP)$$

where:

Q = Demand for RNE sector 1

P = Implicit price index for industrial sector 1

CP = Personal consumption expenditures

CG = Government consumption expenditures

X = Real exports of Industrial products 1

POP = Population

It is hypothesized that the coefficient of P would be negative, that of consumption expenditures would be positive, that of population is positive, and that of exports is positive.

Specifically, the following equations for each RNE group were assumed to characterize the sector demand:

#### Industry Group

Food (1)  $Q_{FOOD} = f(P_{FOOD}, CP + CG, DV8489)$

Beverage (2)  $Q_{BEV} = f(P_{BEV}, CP + CG)$

Tobacco (3)  $Q_{TOB} = f(P_{TOB}, CP, X_{TOB})$

Textile (4)  $Q_{TEX} = f(P_{TEX}, CP, POP)$

Wood (5)  $Q_{WOOD} = f(P_{WOOD}, CP, DV8486)$

Paper (6)  $Q_{PAP} = f(P_{PAP}, CP + CG)$

Chemicals (7)  $QCHEM = f(PCHEM, CP, XCHEM)$   
 Petroleum (8)  $QPET = f(PPET, CP+CG, XPET, TIME)$   
 Basic Metals (9)  $QBSM = f(PSBM, POP)$   
 Machinery (10)  $QMACH = f(PMACH, CP+CG, XMACH)$   
 Electrical (11)  $QELEC = f(PELEC, POP, XELEC)$   
 Others (12)  $QOTH = f(POTH, CP+CG, POP)$

where:

$QFOOD$  = real GVA of the rural food industry  
 $QBEV$  = real GVA of the rural beverage industry  
 $QTOB$  = real GVA of the rural tobacco industry  
 $QTEX$  = real GVA of the rural textile industry  
 $QWOOD$  = real GVA of the rural wood industry  
 $QPAP$  = real GVA of the rural paper industry  
 $QCHEM$  = real GVA of the rural chemical industry  
 $QPET$  = real GVA of the rural petroleum industry  
 $QBSM$  = real GVA of the rural basic metals industry  
 $QMACH$  = real GVA of the rural machinery industry  
 $QELEC$  = real GVA of the rural electrical industry  
 $QOTH$  = real GVA of the other rural nonfarm industries  
 $PFOOD$  = implicit price index for GVA of food manufacturing  
 $PTOB$  = implicit price index for GVA of tobacco industries  
 $PTEX$  = implicit price index for GVA of textile industries

PWOOD = implicit price index for GVA of wood manufacturing  
 PPAP = implicit price index for GVA of paper manufacturing  
 PCHEM = implicit price index for GVA of chemical manufacturing  
 PPET = implicit price index for GVA of petroleum manufacturing  
 PBSM = implicit price index for GVA of basic metal manufacturing  
 PMACH = implicit price index for GVA of machinery manufacturing  
 PELEC = implicit price index for GVA of electrical manufacturing  
 POTH = implicit price index for GVA of other industries  
 CP = private consumption expenditure  
 CG = government expenditure  
 POP = population  
 XTOB = exports of tobacco manufacture  
 XCHEM = exports of manufactured chemical products  
 XPET = exports of petroleum and coal products  
 XMACH = exports of manufactured machinery products  
 XELEC = exports of manufactured electrical products  
 DV8486 = dummy variable equal to 1 for 1984 to 1986 and 0 otherwise  
 DV8489 = dummy variable equal to 1 for 1984 to 1989 and 0 otherwise

As defined earlier, the  $Q_i$  refer to the GVA of each sector of the rural nonfarm enterprises while prices reflect the average price for Metro Manila and rural areas, that is, for the Philippines as a whole. Similarly, exports could not be segregated into rural and Metro Manila and therefore export values are aggregated figures. The same is true for private and government consumption expenditures. Furthermore, population refers to total Philippine population as products of RNEs enter not only the rural markets but also those of Metro Manila.

It should be noted that dummy variables were added as a dependent variable in some equations to reflect the crisis situation in the mid 1980s. As will be seen in the analysis of historical trends in GVA, there were changes in patterns immediately after 1983. The change could be short-lived, e.g. up to 1986 or longer term up to 1989. The dummy variables were included to take account of factors not otherwise captured by other arguments in the equation. In some cases, time trend was also added as a catch-all variable.

In the actual estimation of the equation, prices appeared as the implicit price per se or deflated by the consumer price index (CPI)

### 2.3.2. Employment Function

Assuming a specific production technology, traditional neoclassical theory of demand for labor hypothesizes it as positively related to the demand for output on production, negatively to its own price, i.e. to wage rate, and positively to prices of substitute inputs. Mathematically, the equation can be expressed generally as follows:

$$L_i = f(Q_i, \text{WAGE}, \text{INT})$$

where:

- $L_i$  = employment in RNE sector i
- WAGE = wage rate
- INT = interest rate

It is hypothesized that  $Q_i$  would have a positive coefficient, wage a negative coefficient and interest a positive coefficient. That is, as output increases, more labor would be employed but an increase in the wage rate could bring about a reduction in the amount of labor

employed. A substitute input is capital which is relatively scarce, hence an increase in interest rate or the price of capital would reduce desired capital and increase labor demand. In estimating the equation the capital input was represented either by the nominal or real value of treasury bill rates or the amount of additional investment that each RNE sector makes during the year.

The following employment functions were therefore estimated for each RNE sector:

- (1) LFOOD =  $f(QFOOD, WAGE, KFOOD)$
- (2) LBEV =  $f(QBEV, WAGE, KBEV)$
- (3) LTOB =  $f(QTOB, WAGE, TBILL)$
- (4) LTEX =  $f(QTEX, WAGE, KTEX)$
- (5) LPAP =  $f(QPAP, WAGE, TBILL, DV8489)$
- (6) LWOOD =  $f(QWOOD, WAGE, KWOOD, DV8489)$
- (7) LPET =  $f(QPET, WAGE, TBILL)$
- (8) LCHEM =  $f(QCHEM, WAGE, TBILL-INFL)$
- (9) LBSM =  $f(QBSM, WAGE, TBILL-INFL)$
- (10) LAMCH =  $f(QMACH, WAGE, KMACH, DV8489)$
- (11) LELEC =  $f(QELEC, WAGE, KELEC)$
- (12) LOTH =  $f(QOTH, WAGE, DV8489)$

where:

- LFOOD = employment in the rural food industry
- LBEV = employment in the rural beverage industry
- LTOB = employment in the rural tobacco industry
- LTEX = employment in the rural textile industry
- LWOOD = employment in the rural wood industry
- LPET = employment in the rural petroleum industry
- LCHEM = employment in the rural chemical industry
- LBSM = employment in the rural basic metal industry

LOTH = employment in the other rural industries  
 WAGE = daily wage rate  
 KFOOD = capital expenditures in the rural food industry  
 KBEV = capital expenditures in the rural beverage industry  
 KTEX = capital expenditures in the rural textile industry  
 KWOOD = capital expenditures in the rural wood industry  
 KMACH = capital expenditures in the rural machinery industry  
 ELEC = capital expenditures in the rural electrical industry  
 TBILL = nominal rate for treasury bills  
 INFL = inflation rate

Employment has been defined earlier as the number of all workers in each RNE sector. The real GVA entered the equations either as the real value per se or the percentage growth rate between any two successive years.

As defined in the NSO annual survey of establishments, capital expenditure for fixed assets include "cost of acquisition of new and used fixed assets produced by the establishment for its own use, major alterations, additions and improvements to fixed assets, whether done by others or done on own account." Therefore, these are annual investments by the industry and would be expected to have a positive relationship with employment.

### 2.3.3. Price Functions

Sector prices are modelled directly as a function of the wholesale price index. These equations provide the linkage to the other sectors in the macroeconometric model. In the PIDS NEDA model, the wholesale price index is determined by a pricing rule characterized by stable mark-ups over variable cost in the short run. A firm's variable inputs will typically comprise of labor and imported inputs. The mark-up rate is influenced positively by capacity

utilization rates of firms. In the formulation of the MEM, increases in demand are proxied by average liquidity divided by potential GNP. The presence of a capital stock index provides the link from increased investment expenditures to increased production.

In general therefore, the price function may be described mathematically as

$$P_1 = f(WPI)$$

where:

WPI = wholesale price index

For some sectors, the lagged sector prices influenced the price level of prices and therefore the price function becomes

$$P_1 = f(WPI, P_{1-1})$$

The price functions that were estimated are the following:

- (1) PFOOD = f (WPI)
- (2) PBEV = f (WPI, PBEV<sup>-1</sup>)
- (3) PTOB = f (WPI, PTOB<sup>-1</sup>)
- (4) PTEX = f (WPI, PTEX<sup>-1</sup>)
- (5) PWOOD = f (WPI, PWOOD<sup>-1</sup>)
- (6) PPAP = f (WPI)
- (7) PCHEM = f (WPI)
- (8) PPET = f (WPI, PPET<sup>-1</sup>)
- (9) PBSM = f (WPI, PBSM<sup>-1</sup>)
- (10) PMACH = f (WPI, PMACH<sup>-1</sup>)
- (11) PELEC = f (WPI)
- (12) POTH = f (WPI, POTH<sup>-1</sup>)



#### 2.3.4. Identities

To complete the model, identities were defined. First, the sum of the demand for each RNE sector should be equal to the total demand for all sectors, that is,

$$\begin{aligned} QRNES &= \sum_{i=1}^{12} Q_i \\ &= QFOOD + QBEV + QTOB + QTEX + \\ &\quad QPAP + QWOOD + QCHEM + QBSM + \\ &\quad QMACH + QELEC + QOTF \end{aligned}$$

where:  $QRNES$  = the total output from all RNEs. Second, total employment in all RNEs must also be equal to the sum of employment in all sectors, thus,

$$\begin{aligned} LRNES &= \sum_{i=1}^{12} L_i \\ &= LFOOD + LBEV + LTOB + LTEX + LPAP + \\ &\quad LWOOD + LCHEM + LPET + LBSM + \\ &\quad LMACH + LELEC + LOTH \end{aligned}$$

where:  $LRNES$  = total employment in all RNEs.

For linking with the macroeconometric model, it is necessary that total demand for output of all nonfarm enterprises be equal to the sum of the demand for output in Metro Manila plus the demand for output in the rural areas. The same holds for employment. Therefore,

$$QMFG = QRNES + QMM$$

$$\text{and } LMFG = LRNES + LMM$$

where:  $QMFG$  = total demand for output of manufacturing

$QMM$  = demand for output of Metro Manila nonfarm enterprises

$LMFG$  = total employment in nonfarm enterprises

$LMM$  = employment in nonfarm enterprises located in Metro Manila

### 2.3.5. Estimation Method

The above systems of equations may be classified as Seemingly Unrelated Equations model which is a specific type of recursive model consisting of a series of endogenous variables which are considered as a group because they bear a close conceptual relationship to each other (Pindyck and Rubinfeld, 1981). The demand equations represent a set of equations for related products. So does the employment and price equations.

In the demand equations, quantity in one sector is a function of the corresponding price in that sector and other variables such as consumption expenditures, population, etc. The price index in one sector appears only once, that is, only in the relevant sector and not in the other industry groups.

The price functions were defined such that the sector price index is a function of the wholesale price index and the lagged sector price. For the RNE submodel, the WPI is an exogenous variable although it is endogenous in the macro model. The sector price enters as a lagged variable.

Thus, for each block, no endogenous variable appears in more than one equation in which case the error terms of each equation are unrelated or uncorrelated. In such a case ordinary least squares estimation is "quite proper" (Pindyck and Rubinfeld, 1981). If the error terms are correlated between equations, more efficient estimates can be obtained using more sophisticated estimation technique, e.g. two stage least squares (TSLS) or the generalized least-squares estimation. The ordinary least squares method was used in estimating the equations in the study. The systems method could have been used, however, this will automatically truncate the data series. As it is, the availability of the data on RNES has already limited the number of observations; and using the TSLS, for example, to improve the efficiency of the estimates would have shortened the data series. A major consideration also is that the PIDS NEDA MEM to which the present model will be linked.

Some modifications were made in defining the variables. As mentioned earlier, some equations in the demand block used growth rates in the real GVA. Moreover, prices were deflated by CPI in some equations. Wages were also deflated by the implicit price index for the Gross National Product. Treasury Bill rates were also expressed either in nominal or real terms. The macroeconometric model used the interest rate in time deposits in its initial specifications. Adjustments were later made to use the Treasury Bill rate

instead whenever this yielded similar or better results. It has been observed that the behavior of the interest rate on time deposits closely followed that of TBILL especially when the interest rates were deregulated after 1981.

Availability of data dictated that the real value of GVA use 1972 as the base (There is a complete GVA series for the period 1975 to 1989 using 1972 as base). Since the more current figures has changed this base year to 1985, bridge equations were estimated.

When necessary, serial correlation was corrected either by adding a lagged dependent variable in the equation or by estimating the equation using the Cochrane Orcutt procedure.

The structure of the equations in Chapter 6 follows essentially this basic procedure. However, the variables included in an equation depend on a number of considerations, among them being the economic theory behind the relationships and the significance of the variable in the estimated equation. While economic theory may dictate that a certain variable should be included in the equation, it is possible that the coefficient may turn out to be nonsignificant or the sign is inconsistent with theory. The specification of a number of variables could affect the

sign, level of significance,  $R^2$ , etc. Hence, a variable is either added or deleted in some equations if the coefficient has the incorrect sign or not significantly different from

zero. An equation is disregarded if the  $R^2$  is very low. There are different degrees to which this "rule" is followed. As can be seen from the equations, some variables still have nonsignificant coefficients. This happens when the exclusion of a variable would adversely affect the coefficients of other variables.

#### 2.4. The Data Series on Employment, Output and Prices

The principal data series for the major endogenous variables in the model are output, employment, and prices. Employment and value of output data are available from the NSO Census and Annual Survey of Establishments. Here, employment is defined as the total number of persons who work in or for the establishment, including working owners and active business partners and unpaid family workers, managers, production workers, and other employees.

Value of output represents the total value of products adjusted for change in inventories (ending less beginning) of finished products, work-in-process and merchandise for

resale, value of contract work and industrial services done for others, value of merchandise resold, cost of fixed assets produced on own account. In the estimation of the equations, gross value added (GVA) was used to make it consistent with the PIDS NEDA MEM. The GVA for each industry group is available in the NSCB Philippine Statistical Yearbook as an aggregate for the whole Philippines. To obtain the GVA for rural nonfarm enterprises, the annual proportion of the value of output of each of the annual proportion of the value of output of each of the rural enterprises from the NSO census and survey was used.

For prices, the implicit price indexes for GVA of each industry group was used. These prices refer to the Philippines as a whole and no attempt was made to construct a series for rural nonfarm enterprises.

The study would like to cover as long a series as possible, however the NSO regional statistics started only in 1975. When the data for the study were being collected, the 1988 and 1989 surveys of establishments have not been published yet but computer diskettes were already available. Data for 1990 are still being processed and therefore could not be included in the present analysis. The estimates of the equations that analyzed output, employment, and prices, therefore, covered only the period 1975 to 1989. Moreover, the trends in the growth of RNE were discussed only for the same period.

Some adjustments were made on the data to take account of differences in coverage of the NSO Census of Establishments and the Annual Survey of Establishments (ASE). Where obvious inconsistencies appear, simple averages or growth rates were used. For example, data for total employment during a certain year  $t$  could be obtained by averaging the figures for the previous ( $t-1$ ) and the succeeding ( $t+1$ ) year. If this total has to be disaggregated between rural and urban and among the 12 industry groups, then the corresponding distribution obtained from the Census was used. Where the simple average would pose problems (e.g. if there is an apparent inconsistency) in the distribution among industry groups, an alternative procedure was to use the growth rate in the previous few years (two or more) to project the data for a particular year.

## CHAPTER 3

### A BRIEF DESCRIPTION OF DIFFERENT NONFARM ENTERPRISES

Based on available literature, this Chapter attempts to describe a few selected nonfarm industries to provide some background particularly on the structure of the industry and specific policies affecting thereof.

#### 3.1. The Food Industry

The food industry products are generally classified under key commodity areas such as meat and meat preparations, dairy products and eggs, cereals and cereal preparation, fruits and vegetables, sugar and honey, beverages and spices, feedstuffs and miscellaneous foods, animal and vegetable oils and fish and fish preparation.

The crop based products include the major traditional exports such as coconut oil and dessicated coconut, sugar, canned pineapple; wheat flour from imported wheat; milled rice from locally produced paddy; corn grits from local and imported corn; cocoa chocolate, and coffee depending basically on imported cacao and locally grown coffee beans.

The meat processing industry is occasionally sufficient in its pork and poultry requirements but continuously short in beef supply. The country's dairy processing industry produces canned milk, cheese, ice cream, and other products from basically imported milk powder. The local dairy industry produces only a small quantity of fresh milk for dairy processing. To make canned filled milk, the industry mixes imported non-fat dried milk powder with coconut and corn oil.

The processing sector for fishery products produces mainly frozen marine products for export and canned fish and other seafood items for the local and export markets.

The country's food industry ranges from sophisticated multi-national processing factories to cottage-level operations. Although the latter sector comprises 90% of the

total food processing factories, it produces only about 30% of the total output (Hicks, 1991). A number of local food machinery manufacturing companies have harvesters for rice, cassava, and sweet potato; milling machines for rice; sorting and grading equipment; and many small-scale items such as slicers, grinders, extenders, etc.

The processing sector may be classified into (a) traditional and (b) modern food processing sector (Aquino, 1991). In the former, the equipment used are mostly locally fabricated. The industry generally produces Western-type processed foods employing established food processing technology and adapting this to local raw materials. Plant equipment is pilot in scale and production is carried out in batch type of operation in general. In contrast, the modern food processing sector caters mostly to the export market. The major problem encountered in this sector is the fluctuations in the world market price, especially for coconut and sugar.

The food processing industry employs different levels of technology, from simple kitchen scale operation to established technologies. Supplies and other ingredients used such as preservatives, additives, emulsifiers, flavorings, seasonings, etc. are still basically imported. Packing and packaging materials are locally fabricated.

Some of the frequently mentioned problems of large processing industries in the country are as follows (Aquino, 1991):

- a. Lack of raw materials for processing;
- b. Poor quality of available supply: leanness of cattle, hog and poultry, lack of acceptable grades of fish, improper maturity and variety of fruits and vegetables, mechanical damage during transport, production and related handling problems;
- c. The tropical climate contributes to the fast deterioration of perishable raw materials;
- d. Grading and standardization is hardly practiced, hence, a large variation in quality prevails;
- e. Adequate infrastructure to bring produce from farms to factories. There are too many middlemen in the distribution system;

- f. High cost of tin cans which are imported; and
- g. Increasing production cost, labor and equipment and the weakening of the Philippine peso vis-a-vis the US dollar.

On the other hand, Dizon (1983) cited the following problems of small-scale processors:

- a. Limited market coverage due to limited volume of production, insufficient demand, inadequate sales force, inefficiency of the the local distribution system, and high perishability of locally processed products;
- b. Widespread use of middlemen as distribution channels;
- c. Inadequate physical distribution facilities;
- d. Pricing problems;
- e. Vulnerability to competition, market flexibility and aggressive marketing activities.

It can be observed that small-scale processors face the same problems as those experienced by the large food processing industries.

In the Philippines the domestic food consuming market is large and growing at a rate of about 2.78% per annum (Aquino, 1991). Although the average inflation rate in 1991 was about 12%, the inflation rate for food was a bit lower at 11% albeit varying by commodity.

Table 3.1 shows the value of food product imports and exports in 1988. On the export side, the top four products were animal and vegetable oils, fruits and vegetables, fish and fishery products, and sugar and honey. On the imports side, the major products were cereal and cereal products, dairy and dairy products, fish and fishery products, and feeding stuff for animals.

Coconut oil and sugar have always been among the country's top dollar-earners. They have significantly contributed to the national economy in terms of income and employment. In this regard, this section on the marketing aspect of the food manufacturing industry gives a more detailed discussion on the two products. The discussion below is based mainly on the study of Chupungco (1991).

Table 3.1. Value of food product exports and imports, 1988.

Item	Exports		Imports	
	f.o.b. th. \$	Percent	f.o.b. th. \$	Percent
Animal and vegetable oils	425,990	28.15	18,002	2.52
Vegetables and fruits	417,812	27.61	36,848	5.15
Fish and fish preparations	406,701	26.88	35,393	4.95
Sugar, sugar preparations and honey	83,107	5.49	20,111	2.81
Cereals and cereal preparations	8,039	0.53	228,249	31.91
Coffee, tea, cocoa, spices, and preparation thereof	62,347	4.12	8,101	1.13
Feeding stuff for animals	35,437	4.33	166,496	23.27
Dairy products and bird's eggs	931	0.06	161,442	22.57
Meat and meat preparations	455	0.03	8,820	1.23
Live animals, chiefly for food	93	0.01	9,097	1.27
Oilseeds and oleaginous fruits	30,484	2.02	14,046	1.96
Miscellaneous	11,682	0.77	8,807	1.23
Total	1,513,078	100	715,412	100

Source: NSO, Philippine Yearbook 1989.



### 3.1.1. Coconut Oil

Domestic marketing of coconut involves the movement of coconuts from the farm to the traders/buyers and finally to end-users such as copra exporters, coconut oil millers/exporters, and coconut desicators/exporters. The oil millers also produce copra cake or copra meal. Some mills refine the crude coconut oil to produce cooking oil and other coconut-based consumer products. Others produce coco-chemicals, charcoal, coir, etc.

In general, the country's coconut products, especially coconut oil, suffer from price instability in the world market. Although Philippine coconut oil constitutes about 75% of the coconut oil in the world market, it accounts for only about five percent of the world fats and oil market. Coconut oil, soybean oil, palm oil, and palm kernel oil are close substitutes and hence, the world demand for coconut oil appears to be elastic. Price is largely dependent on the interaction of supply and demand forces in the world market (Habito, 1985; Librero, 1971).

The major importers of Philippine coconut products have been the U.S. and Europe. New markets like the Soviet Union and China have been tapped in the more recent periods.

Coconut Oil Marketing and Trade Policies. The import controls in the 1950s and the decontrol program and the consequent retention scheme in the 1960s somehow affected the coconut industry. Under the retention scheme policy, exporters were permitted to retain a portion of their foreign exchange revenue that they could sell at free market rates. The rest should be exchanged at the lower rates, hence, implicitly taxing their exports. Such policy was lifted in 1965 (Clarete and Roumasset, 1983).

From 1956 to 1974, coconut oil and copra meal exports to the U.S. were within quota limits and were exempted from U.S. duties as agreed upon by the Philippines and the U.S. in the Laurel-Langley Agreement.

In 1970, the floating rate policy which was essentially another peso devaluation made exportation profitable, thus prompting the government to explicitly tax the major exports through Republic Act No. 6165. The initial plan was to lower its rate every year until its removal in 1974. Export taxation was made, however, a permanent policy of the government in 1973, fixing the tax rate at 6% for copra and

4% for processed coconut products. The lower rate for processed products aimed at encouraging coconut processing in the country. In 1979, the tax rate for copra was raised to 7.5%. Due to low coconut prices, however, the tax on coconut exports was abolished in 1980.

The significant transformation of the coconut industry began with the passage of the Coconut Investment Fund Law or R.A. No. 6260 in 1971 which authorized the collection of the COCOFUND levy at the constant rate of P0.15 per 100 kg. of copra for a period of 10 years, starting 1 March 1972. The levy collected was used in the P100 million capitalization of the Coconut Investment Company and was intended to replace the traditional middlemen (who were perceived to be exploitative of farmers), for the industrialization of the industry, and for manpower development and research (Tiglao, 1980; ILMS, 1981).

The COCOFUND levy paved the way for the collection of another coconut levy, the Coconut Consumer Stabilization Fund (CCSF). The imposition of the CCSF levy at an initial rate of P15.00 per 100 kg. of copra was legalized through P.D. No. 176 issued on 20 August 1973. P.D. 176 provided also that the levy was to be revoked after one year or after the supply of cooking oil and the prices of basic coconut-based consumer products had stabilized, whichever was earlier. This provision was amended in 1974 through P.D. 414 which added two new uses of the levy, namely, to pay about 90% of the premium duty and for investment of the Philippine Coconut Authority (PCA). To tax the windfall gains of exporters in 1974, the premium duty was set at 30% for copra and 20% for processed coconut products. This duty was lifted in 1980 (Clarete and Roumasset, 1983).

The subsidy program had two schemes. For the period 1973 to 1979, it provided for direct payment to manufacturers. The actual amount given to the program from CCSF collections varied from 10% in 1973 to 6% in 1976 and 20% in 1978 (Guerrero, 1985; Clarete and Roumasset, 1983). On 19 April 1979, PCA Administrative Order No. 1, Series of 1979 provided for the direct payment to the oil mills of United Coconut Planters Bank (UCPB). Manufacturers and oil refiners were indirectly subsidized when purchasing copra or crude coconut oil from these mills (ILMS, 1981; Clarete and Roumasset, 1983). The latter scheme had further bearings on the vertical integration program.

Coconut prices declined sharply in 1980, hence P.D. 1699 provided for the suspension of the CCSF levy on 27 May 1980, to resume 45 days thereafter. The Coconut Development

Project Fund was then established and imposed the collection of P600 per metric ton from the first domestic sale of copra. An additional P400 was paid by the exporter upon application for export clearance (Clarete and Roumasset, 1983).

The CCSF levy was scrapped in September 1981 only to be restored in October 1981 at P50/ 100 kg. This levy was then renamed the Coconut Industry Stabilization Fund (CISF) (Guerrero, 1985). In January 1982, the rate was reduced to P32/100 kg. Six months later, in July 1982, the coconut levy was finally abolished.

Vertical Integration. The vertical integration program of the coconut industry aimed at making the farmers also traders, processors, and bankers. It had the following components: a) the establishment of the UCPB, b) the creation of the United Coconut Oil Mills, Inc. (UNICOM), c) the launching of the Philippine Coconut Producers Federation (COCOFED), and d) the establishment of the COCOFED Copra Marketing Center (COCOMARK) and the United Coconut Chemicals, Inc. (UNICHEM). In 1975, the First United Bank was purchased to fund the UCPB. Habito (1985) noted that 70 percent of UCPB's equity was acquired by the PCA in behalf of the farmers through the levy funds (Farmers were entitled to receive stock shares in the bank upon presentation of registered COCOFUND receipts). UCPB became the depository of the CCSF revenue, interest free, and was instrumental in the purchase of coconut oil mills and the creation of the UNICOM, COCOMARK, and other entities. It was also intended to address the credit needs of the industry.

The UNICOM was established in 1979 to adjust the coconut industry's milling capacity to more realistic levels. In the late 1970s, there was an over investment in coconut oil mills as a response to incentives granted by the Board of Investments. In 1979, however, copra production was quite low, resulting in a fierce competition for the available copra among oil millers, copra exporters, and refiners (Habito, 1985). This led in turn to a very low utilization and financial difficulties of mills. Hence, UNICOM engaged in and coordinated buying, selling, milling, and refining of coconut products and became the largest seller/exporter of copra and coconut oil, thus limiting market competition in the milling sector, marketing of copra and coconut oil. An export trade monopoly had virtually arisen with the establishment of UNICOM.

Although UNICOM professed to give farmers higher prices, prices fell below competitive levels. It is not clear however whether these low prices were the result of UNICOM's exercise of monopsony power or of marketing inefficiencies resulting from UNICOM policy (Habito, 1985). By 1982, UNICOM controlled 93% of milling capacity and 80% of coconut oil exports. Due to pressures from the International Monetary Fund (IMF), UNICOM was abolished in 1985 to make way for the restructuring of the oil milling industry.

In 1982, the UNICHEM, a subsidiary of the UCPB group of companies, was established to produce and market locally and internationally semi-processed materials for the manufacture of cosmetics, soaps, detergents, pharmaceuticals, explosives, etc.

The implementation of the vertical integration program rested on the PCA, the COCOFED, and the UCPB.

Copra Export Ban and Export Taxes. The severe drought in 1982 which considerably reduced coconut and copra output which in turn led to increased competition for copra (making copra export prices lower than average millgate prices), prompted the government to impose the copra export ban. Originally intended for a short period the ban was extended to promote coconut oil exports but was lifted in March 1986 because of the short run glut in the copra market. Considered a positive development, allowing copra exports would reduce oil millers' profit margins on copra purchases and may eventually drive the more inefficient mills out of business (Habito, 1986).

Export taxes on copra were instituted in 1970 to absorb the windfall gains of the exporters from the peso devaluation but were supposed to be phased out by 1974. The Tariff and Customs Code of 1973 made these taxes permanent, however, presumably for revenue reasons. As of 1986, export taxes on coconut products comprised the following:

<u>Product</u>	<u>Export Duty</u>	<u>Additional Duty</u>	<u>Total Duty</u>
Copra	7.5%	7.5%	15.0%
Coconut Oil	4.0%	1.0%	5.0%
Copra meal/cake	4.0%	0	4.0%
Dedicated coconut	4.0%	0	4.0%

The coconut export ban was lifted by E.O. No. 9 which also lowered the additional duty on copra to 2.5% making the total duty on copra equal to 10%. In July 1986, all export duties on agricultural commodities, including coconut products, were abolished through E.O. No. 26 (UCAP, 1987).

Trade Barriers in the World Market. In the world market, PCA (1988) underscores the tariff and non-tariff barriers facing the coconut industry such as:

- a. Campaign against coconut oil by the American Soybean Association (ASA) which claims that saturated oils such as coconut oil raises cholesterol levels.
- b. Levy on vegetable oils and fats entering the European market. The European Economic Community (EEC) established a price support mechanism in 1987 to finance agricultural programs on the oil seeds and seed oils sector. This tax which would be levied on oils and fats intended for edible uses, would reduce copra price in Philippine ports by as much as 43%. This tax is expected to be shouldered by the farmers.

### 3.1.2. Sugar

Fifty-six to 60 percent of sugar is produced in Negros and Panay Islands, while 50 to 60 percent is consumed in Metro Manila (Pabuayon and Catelo, 1987).

In 1946, the Philippine-American Trade Agreement Act (later amended by the Laurel-Langley Agreement) provided for a fixed Philippine annual quota of 952,000 short tons for the years 1946 to 1973 and 476,000 short tons from 1 January 1974 to 3 July 1974; duty-free entry of Philippine sugar to U.S. for the first eight years and for graduated tariffs for the years thereafter.

From the early postwar years till 1962, the exchange rate was fixed at P2.00/US\$. The peso devaluation in 1962, affected a substantial increase in the peso price of sugar exports to the U.S. relative to the domestic consumer price. Export prices doubled while the increase in Manila wholesale price was less than 50 percent (Nelson and Agcaoili, 1983).

When the U.S. stopped sugar purchases from Cuba in 1962, the Philippine basic quota was increased, first to .05 million short tons and then to 1.126 million short tons in 1965. The country received additional export entitlements of up to 47 percent of export deficits of other U.S. suppliers (Pabuayon and Catelo, 1987). The rise in the peso prices of exports and the growth in export demand made exports more attractive. However, sugar production and productivity did not improve and between 1962 and 1973 exports to the U.S. were below 95 percent of the quota in four out of 12 years (Nelson and Agcaoili, 1983).

The imposition of a 10 percent export tax, together with another devaluation of the peso in 1970, caused export prices to increase even more than consumer prices. During the period 1962 to 1973, the difference between export and consumer prices was 30 percent on the average.

When the Laurel-Langley Agreement expired in 1974, the government controlled domestic and export marketing. Government intervention then became crucial in making structural adjustments in the industry as well as in protecting consumers and producers from price fluctuations.

The Philippine Exchange Company, Inc. (Philex), a subsidiary of the Philippine National Bank (the major financial institution for the sugar industry during that time) was designated as the sole buyer and exporter of sugar. Philex buying price was a composite price computed by taking the weighted average of the officially determined prices of sugar for export, for the domestic market, and for reserve. (The export price component of the composite price referred in general to the world price such that when world price decreases/increases, the composite price decreases/increases holding other factors the same.) Sugar for the domestic market was sold by Philex to licensed traders.

In 1973-1974, world prices were quite high such that the problems associated with the termination of the U.S. quota were not quite felt. An additional export tax was imposed and then a temporary export ban was implemented, however, in late 1974 to protect domestic consumers.

In anticipation of a further rise in world prices after 1974 Philex hoarded large quantities of sugar but world prices went down instead to a record low during the period 1975 to 1979. Substantial losses incurred prompted the government to transfer Philex control of sugar to the Philippine Sugar Commission (PHILSUCOM), a policy-making body created in 1978 which had the National Sugar Trading

Corporation (NASUTRA) as its trading arm. NASUTRA had a network of licensed traders/wholesalers authorized to trade in sugar and withdraw sugar from the mill warehouses. As of December 1984, 195 traders nationwide were registered with PHILSUCOM most of whom operated in Metro Manila, a major consuming area, and Negros Occidental, a major producing area.

Apparently, NASUTRA acted as another middleman in the industry. NASUTRA, fortunately, made profits when world prices rose in 1979 and 1980. It entered into long-term contracts with importers in 1980 to export 565,000 m.t. of sugar at 23 cents per pound for crop years 1980-81 through 1983-84. During this period, world price averaged 10 cents per pound (Pabuayon and Catelo, 1987).

For the first time after World War II, the Philippines imported 287,238 m.t. of sugar in 1983-84, most of which came from Thailand, Brazil, and Argentina. The sugar shortage in the country was brought about by low production (from 2.46 million m.t. in 1982-83 to 2.33 million m.t. in 1983-84) due to high production costs, financial difficulties, and the 1983 drought.

After the long-term contracts with foreign buyers, the sugar industry was confronted with more serious problems, such as:

- (1) U.S. imports of Philippine sugar declined while buying sugar at 20 cents per pound. U.S. limited its purchases to about 360,000 m.t. in 1984, further declining to 310,000 m.t. in 1985 and to 210,000 m.t. in 1986. The remaining exportable sugar had to be sold in the free market at 5 to 6 cents per pound in 1984, 2 to 2.5 cents per pound during the later part of the Marcos regime and at about 7 cents per pound in 1986.
- (2) The problems of declining U.S. imports of Philippine sugar and low world market price were exacerbated by unfavorable developments in the international market such as the utilization of substitute sweetener products, the continuing increase in worldwide production, and depressed global demand.

Although export marketing was still handled by the government, free domestic trading was allowed in 1984, and NASUTRA became just another trader. Its immediate result was more competition and lower retail prices even with lower production.

### 3.2. The Beverage Industry

The Philippine Standard Industrial Classification (PSIC) defines the beverage industry to cover the manufacture and marketing of liquors, wines, beers, colas and carbonated water. These are usually bottled and canned drinks. Although coffee, chocolate and cocoa, fruit juices and fruit based drinks (e.g. Hi-C, Zesto, Sunkist, Magnolia, etc.) and milk are also beverages according to use, the PSIC places them under food processing.

The country's large consumption of beverages has made the beverage sector a relatively large component of the manufacturing industry. In 1982, a total of more than 4.9 billion bottled drinks were produced/sold by San Miguel Corporation, Asia Brewery, Coca-Cola, and Pepsi-Cola implying an annual per capita consumption of around 98 bottles, 49 of which were softdrinks (IBON Databank Philippines, Inc., 1985). On the average, a Filipino male was estimated to consume 96 bottles of beer annually.

The first modern brewery in Southeast Asia was established in 1890 as a one plant single-product firm. It grew to become the food and beverage giant, the San Miguel Corporation (SMC) which enjoyed a monopoly of beer production in the country until 1979 when Asia Brewery, Inc. (ABI) entered the industry.

During the American colonial period, U.S. soft drinks, Coca-Cola and Pepsi-Cola, were introduced into the country. The two firms have always been struggling for market leadership. Transnational corporations were a dominant force in soft drinks and non-Filipinos had a significant presence in beers and liquors. The third soft drink company in the Philippines is the Cosmos Bottling Corporation.

Coca-Cola Bottlers Philippines, Inc. started operations in June 1981 as a joint venture of SMC with 70% equity and the Coca-Cola Export Corporation (TCCEC) with 30% equity. Prior to 1981, SMC held the franchise to bottle Coca-Cola products. TCCEC was a subsidiary of the Coca-Cola Company of Atlanta, Georgia, USA and manufactures the syrup concentrate for the company's drinks.

Pepsi-Cola Bottling Company of the Philippines and its supplier of syrup concentrates, the Pepsi-Cola Far East Trade Development Company, Inc. were established in 1946 and 1958, respectively. They were both wholly-owned subsidiaries of the American PepsiCo International.



In March 1985, however, Pepsi-Cola Bottling Co., of the Philippines sold its bottling and distribution facilities to a group of Filipino businessmen (IBON Databank, Philippines, Inc., 1985). The local company however would continuously receive support from PepsiCo in terms of marketing and technical assistance.

The No. 3 softdrink company in the Philippines, Cosmos Bottling is about 40% alien-owned and produces local brands such as Sarsi, Pop Cola and Sunta Orange.

### 3.2.1. Method of Producing Beverages.

A typical soft drink plant has the following phases of production: compounding of ingredients, water treatment, carbonation, bottling or canning, packing, and distribution (Sunga, 1985). Most of the equipment used in a fully integrated bottling line for softdrink manufacture are imported machineries built according to specifications from the decaser, bottle washer, bottle inspector, filler and capper, deaerator, syrup and water proportioner, up to the refrigeration and carbonating units.

From the data gathered by IBON Databank Philippines, Inc. (1985), the ingredients of a typical soft drink are purified water, carbon dioxide gas, flavoring, edible acids and coloring.

Beer, on the other hand, is made by the alcoholic fermentation of malted cereal. Wines and spirits are the result of the fermentation or distillation of fruit juices and cereals like rice, corn, barley, wheat and rye.

### 3.2.2. Consumers of Beverages

Imported champagne, brandy, vodka, and the like are highly priced that they are consumed mostly by well-off drinkers (IBON Databank, Philippines, Inc., 1985). The price of locally manufactured liquors are much lower, hence, such liquors are patronized in general by adult males in the lower income brackets. Local fruit based wines are usually bought by higher income sectors. Beer consumers are mainly the middle and low income groups. Soft drinks are consumed by all sexes and all ages

### 3.2.3. Market Structure

The NSO Census of Establishments had a record of 102 establishments in the beverage industry in 1978. However, the 1978 Directory of Establishments identified only 85 plants or establishments. One firm owned as many as 11 plants whereas another had nine. These plants were found in 19 provinces in 11 regions of the country (IBON Databank Philippines, Inc., 1985).

Dominated by a small number of firms, the beverage industry may be characterized as oligopolistic, i.e. a relatively few sellers of identical or minimally differentiated products. It must be noted though, that the beer sector was monopolistic until 1979.

IBON Databank Philippines, Inc. (1985) identified two distinguishing features of an oligopoly, namely inter-connectedness and mutual dependency of firms. One company is not likely to make a move without considering how it may affect competitors and how they are likely to react. Rivalry continue though with some limits on competition to avoid losses.

The oligopolistic structure of the industry makes entrance into the beverage industry difficult. Large capitalization is required and risks are great. The firms try to outsell each other by waging massive advertising and marketing campaigns expenses for which could amount to a significant portion of the total cost of production.

### 3.3. The Tobacco Industry

With the exception of direct exports of unmanufactured tobacco, tobacco is an input in the production of a final product, either cigarettes, cigars, or pipe tobacco.

Essentially, two markets exist for tobacco, one for leaf tobacco and the other for tobacco products of which the key subsector is cigarette manufacturing. In the local market, the former serves the cigarette manufacturers while the latter caters to consumers in the domestic and international markets. Hence, leaf tobacco can either be processed into cigarettes or exported to manufacturers in other countries.

Individuals, groups, and institutions that have interest in the industry include farmers, middlemen/agents, trading centers, wholesale tobacco dealers, redrying plants, importers/exporters, cigar and cigarette manufacturers, local communities of tobacco growing areas, and the government in particular, the National Tobacco Administration (NTA).

There were 12 wholesale tobacco dealers (WTDs) in 1989, seven in Virginia tobacco and the others in burley and native tobacco. WTDs are supposed to purchase tobacco only from trading centers. Four of the Virginia WTDs have also redrying plants. About 60% of the total Virginia tobacco supply is handled by two WTDs, the Northern Tobacco Redrying Corporation and the Orient Leaf Corporation.

In 1989, 14 companies were classified as importers/exporters engaged in the international trade of tobacco leaf, cigars, cigarettes, and other tobacco products. A total of 11 cigar and cigarette manufacturers were reported in 1989. Seven produced native cigars and cigarettes, two, aromatic or American-blend cigarettes, and one, aromatic and native cigars and cigarettes.

Cigar and cigarette manufacturers produced 69.72 billion sticks in 1989 with aromatic or American - blend cigarettes dominating production and shared 91% of the total. The local cigarette market is likewise dominated by aromatic cigarettes which accounted for 93% of the total demand in 1990. Of the 11 cigar and cigarette manufacturers it is estimated that two companies, Fortune Tobacco Corporation and La Suerte Cigar and Cigarette, control 90% of the market for aromatic cigarettes.

### 3.3.1. Sources of Growth of the Tobacco Industry

The major source of growth of the tobacco industry has been the domestic market where apparent demand for leaf has grown at the rate of 6.6% per year over the twenty year period 1970 to 1990.

Native tobacco production has declined at an annual rate of 38% in the 1970s only to recover slightly by 1.4% per year in the 1980s. Virginia tobacco which was initially grown in the 1960s grew at the rate of 6.4% per year at its early years but growth slowed down to only 0.4% in the 1970s. This can possibly be explained by the effect of the

monopoly on farmers' incentive to improve production (EYIFICS, 1991).

Export of unmanufactured tobacco grew by almost 10% in the 1970s but imports have been increasing by almost twice that rate (Table 3.2). In the 1980s exports declined slightly but imports continued to increase, in fact more than doubling or even tripling that of exports.

On the other hand, local cigarette demand increased by 2.13% on the average from 1977 to 1980. The surge in import demand and the rise in the deficit was reported to coincide with the increase in cigarette consumption. The average growth of consumption rose by 2% for the period 1980 to 1985 to 2.75% for the period 1985 to 1990.

### 3.3.2. Contribution of the Industry to Gross Domestic Product and to Government Revenue

The share of tobacco manufacture to gross domestic product declined from 1.68% in 1970 to 0.91% in 1980 to 0.58% in 1990. While the importance of the tobacco manufacturing industry appears to be waning, excise taxes collected from the industry, increased from P1.3 billion in 1980 to about P7.0 billion in 1990 (Table 3.2). From 1981 to 1990, taxes rose by 20% for Virginia and 11.4% for native tobacco annually. Considering the period 1981-1985 and 1986-1990, excise taxes increased more rapidly from 10.7% to 14.1% for native tobacco and 18.3% to 23.8% for Virginia tobacco. It should be stressed though that 99.3% of the collection in 1990 came from Virginia tobacco cigarettes.

On the other hand, the average excise tax per stick for native tobacco grew from P0.004 for the period 1981-1985 to P0.008 for 1986-1990. The average excise tax per stick on Virginia tobacco cigarettes went up from 4 centavos to 10.5 centavos over the period.

Table 3.3 presents the value and growth rates in exports and imports of unmanufactured tobacco and Virginia cigarettes. Exports of unmanufactured tobacco grew by 9.56% and imports by 22.08% in the 1970s. From 1980 to 1990, exports declined by .76% while imports increased by 13.67%. Cigarettes, however, could be a prospective foreign exchange earner if the performance in the 1980s to 1990 would continue. Note that cigarette exports rose from US\$24 thousand in 1981 to US\$3.2 million in 1985 to US\$7.8 million in 1989 and suddenly to US\$27.5 million in 1990.

Table 3.2. Net Trade of Tobacco Products, 1970-90 (million US\$).

Year	EXPORTS (FOB)		IMPORTS (CIF)		NET TRADE		
	Unmanu- factured Tobacco	Cigarettes, Virginia	Unmanu- factured Tobacco	Cigarettes, Virginia	Unmanu- factured Tobacco	Cigarettes, Virginia	Total Tobacco
1970	13.6	0	7.8	0	5.8	0.0	5.8
1975	33.9	0	19.2	0.3	14.7	-0.3	14.4
1980	28.8	0	35.1	2.3	-6.3	-2.3	-8.6
1981	48.1	0.024	41.4	3.0	6.7	-3.0	3.7
1982	46.7	0.7	51.9	3.7	-5.2	-3.0	-8.2
1983	33.4	0.6	55.2	5.1	-21.8	-4.5	-26.3
1984	28.4	1.5	27.1	2.7	1.3	-1.2	0.1
1985	24.2	3.2	61.5	6.1	-37.3	-2.9	-40.2
1986	21.0	3.9	65.9	2.6	-44.9	1.4	-43.5
1987	18.4	3.7	95.5	2.5	-77.1	1.2	-75.9
1988	19.1	6.5	74.1	6.2	-55.0	0.3	-54.7
1989	17.4	7.8	63.1	4.5	-45.7	3.3	-42.4
1990	20.4	27.5	60.7	6.6	40.3	20.9	-19.4
Growth Rates:							
1970-80	9.56%	N.A.	22.08%	N.A.	3.88	-0.72	3.17
1980-90	-0.76%	381.19%	13.67%	27.87%	-31.93	1.25	-30.68
1970-90	0.32%	N.A.	12.88%	3.31%	-11.26	-2.92	-14.18

Source: National Statistics Office

Table 3.3. Excise Tax on Cigarette Removals, 1980-90  
(in million pesos and pesos per stick)

Year	Excise Tax		Excise Tax Per Stick	
	Native	Virginia	Native	Virginia
1980	25	1,309	0.003	0.025
1981	23	1,512	0.003	0.029
1982	20	1,679	0.003	0.029
1983	19	1,840	0.003	0.037
1984	28	2,181	0.004	0.044
1985	37	2,985	0.005	0.061
1986	69	5,051	0.008	0.088
1987	80	6,788	0.011	0.124
1988	45	5,872	0.007	0.099
1989	44	6,181	0.007	0.101
1990	46	7,019	0.008	0.113
1991 (Jan-June)	18	3,884	0.007	0.129
	Growth Rate:		Average:	
1981-85	10.69%	18.31%	0.004	0.040
1986-90	14.11%	23.84%	0.008	0.105
1981-90	11.45%	20.05%	0.006	0.072

Source: Bureau of Internal Revenue

In 1990, total cigarette exports of the Philippines amounted to US\$28.8 million while imports amounted to US\$6.6 million, hence, a large trade surplus. The major countries of destination were Hongkong (for re-export to China) which accounted for 50.07% in 1990; Taiwan (17.25%); Saudi Arabia (14.6%); and Singapore (11.22%). Except for one manufacturer, the export of cigarettes is primarily controlled by multinationals.

The major markets for unmanufactured Virginia tobacco exports of the country are West Germany, Austria, and the Netherlands. On the import side, the Philippines obtains most of tobacco fillers and binders from the U.S., Belgium, Rhodesia, and Brazil.

Value of cigarette importation increased from U.S.\$2.3 million in 1980 to US\$6.6 million in 1990. In 1980, more than 80% of cigarette imports came from the U.S. whereas in 1990, a large proportion originated from Hongkong. It is interesting to note that Hongkong is a transshipment point for many products. It does not grow tobacco nor produces significantly large amounts of cigarettes.

Using trend analysis to forecast base growth rates which were then adjusted based on factors such as the extent of anti-smoking campaigns in six countries in Asia, the Food and Agriculture Organization (FAO) estimates that tobacco production in the Philippines would increase by 1.8 percent per annum for the period 1990-1995 and 1.6 percent for 1995-2000.

Matching this forecast with import and consumption projections, it seems that imports would take an increasing share of the total consumption. FAO estimates that for the Philippines tobacco leaf (dry weight) consumption would grow by 4.4% per year during the period 1990-1995 and 4.2% during 1995-2000. Imports, therefore, would be expected to grow more rapidly at 19.8 and 12.0 percent per year respectively for the two periods to meet consumption requirements. One would note a downward trend in the growth rate of imports and consumption in the second half of the decade. It is not clear, however if the slowdown would come from a decline in local consumption or a higher growth of exports.

Quoting estimates made by the U.S. Department of Agriculture, the Ernst and Young Group (1991) reported that the preference for cigarettes has been falling in developed countries as shown by the downward trend in cigarette consumption per capita in Canada, the United States, the United Kingdom, West Germany, the Netherlands, Austria,

Denmark, Switzerland and Japan. However, the preference for cigarettes is still rising in developing countries such as China and Indonesia. Estimates made by the Ernst and Young Group for the Philippines showed that cigarette consumption is expected to rise from 0.42% per annum in the late 1980s to about 0.83% in the early 1990s. Greater consumption per capita is expected to occur in the later half of the 1990s as growth rate inches up to about 1.2% per year. Adding a population effect of about 2.3% the Ernst and Young group forecast a total cigarette consumption of about 3.13% per annum for 1990-1995 and about 3.52% for 1995-2000 or an average growth rate of about 3.3% per annum for the period 1990-2000.

On a worldwide basis, there are both positive and negative factors affecting tobacco and cigarette consumption. As reported by Barford (1991), the positive influences are: (1) increase in population of smoking age; (2) general improvement in economic climate; (3) rising level of disposable incomes; (4) increase in smoking by women; and (5) rapid urbanization in developing countries.

On the other hand, the negative influences are: (1) high taxation of cigarettes; (2) public attitude to smoking, i.e., smoking bans, restraints on marketing, and anti-tobacco propaganda; and (3) increased competition by nontobacco products.

### 3.3.3. Policies

The tobacco industry faces challenges in the immediate future and beyond. Concern for the health hazards of cigar and cigarette smoking has led a number of government agencies and private organization/groups - the legislative local government units (LGUs), print media, medical groups, the Department of Health - to spearhead the anti-smoking campaign. Local government units prohibit smoking in public places. Ordinances No. NC-73, S-89 which bans smoking in Quezon City was issued in April 1990. The following year this ban became metrowide with the enforcement of Metro Manila Authority (MMA) Ordinance No. 9 and 9-2 in July 1991. These ordinances were amended in August 1991 to provide penalties to those who do not prohibit smoking in designated areas and those who fail to post the required "No Smoking" signs in such areas.



The Senate and the Lower House have filed several antismoking bills including the following: House Bill (HB) No. 52011 known as the Comprehensive Tobacco Regulation and Education Act of 1988; HB No. 10938 which prohibits the sale of cigarettes to minors and penalizes the violation thereof; HB No. 27762 which bans cigar and cigarette smoking in public conveyance such as jeepneys, buses, LRTs, and commuter trains as well as in enclosed public places such as schools, restaurants, movie houses, shopping malls, and other establishments. Bills against the advertisement of cigars, cigarettes and tobacco derivatives have also been filed.

Medical groups including the Lung Center of the Philippines, the Philippine Cancer Society, the Philippine Medical Association, Doctors for Smoke-Free Philippines, the Philippine Heart Association, and others have been strongly urging the government to implement a tobacco regulation program that will protect the health of the populace.

A high tax is levied on cigarettes. Locally manufactured cigarettes packed in 20s carrying an international brand name (Local A) are taxed at 60% (50% ad valorem plus 10% VAT), locally manufactured cigarettes with local trademarks and whose wholesale price is ₱3.60 or higher (Local B) is taxed 50% (40% ad valorem plus 10% VAT). If locally manufactured cigarettes are priced lower than ₱3.60 at wholesale (Local C), they are taxed 25% (15% ad valorem plus 10% VAT).

Already approved on third reading by the Senate is House Bill No. 8308 revising the excise tax base, imposing rationalized taxes and providing for the reclassification of locally manufactured cigarettes (Manila Bulletin, June 5, 1993). Cigars will be levied a tax of 10 percent of the index price. Cigarettes packed in thirties by hand will be taxed at the rate of 15% of the index price or the actual manufacturer's or importer's wholesale price, whichever is higher. The same basis will be used for the taxation of cigarettes packed in twenties by machine. Locally manufactured cigarettes which are currently classified and taxed at 55 percent or the exportation of which is not authorized by contract or otherwise, shall be levied a 55 percent tax.

Fears have been expressed by some sectors, however, that the bill will not address the loopholes in the present taxation system but will further entrench the virtual monopoly prevailing in the cigarette industry (Manila Bulletin, June 8, 1993). The version approved by the House

of Representatives imposes a 20 percent levy on the increase over the 1992 income declared by cigarette manufacturers.

### 3.4. The Paper and Paper Products Industry

The paper industry deals with the manufacture from pulp of paper and paperboard which are cut into size or shape and converted into products for use in industry and by other consumers. Paperboard is heavier, thicker, and more rigid than paper and is widely used for containers and boxes for various commodities. The Philippine Standard Commodity Classification (PSCC) considers the product paperboard if the weight per square meter is greater than 300 grams. Paper is usually used for printing, writing, wrapping, sanitary, etc. while paperboard includes boxboard, chipboard, clayfilled board, bleached board and bristol board (printer's board), coated board (used by cigarette, cosmetic and drug manufacturers as well as the publishing industry), containerboard, kraftboard, newsboard, tagboard, and specialty board.

#### 3.4.1. Establishments in the Industry

In 1980, a total of 241 establishments were engaged in the manufacture of paper and paper products. During that year they had a gross output of P3.12 billion, total employment of 16180 persons, total receipts of P3.09 billion, and total cost of P2.70 billion. Most of the establishments then were paper converters. Based on the 1983 data from PULPAPEL, there were 24 paper mills, 19 of which were PULPAPEL members. They had a total rated capacity of 550,195 metric tons (Pineda, 1987).

Of the 24 firms, five were integrated pulp and paper/paperboard mills, four were paper and paperboard mills, 13 were purely paper mills, and two were solely paperboard mills. The total rated capacity of the industry in 1983 ranged from 3960 metric tons for the smallest firm with a 0.7% share to 184335 metric tons for the biggest firm (PICOP) with a 34% share. The six biggest firms in the industry accounted for 67% of the total rated capacity. The remaining 18 firms contributed only 33%. Most of the firms were located in Luzon, 14 in Metro Manila, 4 in Central Luzon, and 2 in Southern Tagalog. Two firms were in the Visayas and another 2 were in Mindanao (Pineda, 1987).

### **3.4.2. Raw Materials for the Industry**

The raw materials for the paper industry include long and short fiber pulp, scrap/waste paper, and chemicals. Pulp can be obtained from rice straws, grasses, abaca, rags, agricultural wastes, wood waste, hardwood and softwood species.

In the Philippines, the raw materials used by the paper industry include wood, sugarcane bagasse, abaca fibers, waste paper, and imported pulp. Long fiber pulp is sourced from abaca due to lack of softwood species. However, the supply of abaca is limited and is relatively costly. Hence, it is being used only in producing specialty papers.

On the other hand, the short fiber pulp produced by integrated mills is sometimes sufficient but inadequate at other times to meet the needs of the industry. Such shortage therefore has led to importation of about 60% of these materials. The industry also has relied heavily on the recycling of scrap paper for its input although this has led to the production of poor quality paper.

Other local sources of raw materials (in limited quantities) for paper manufacture are forest resources; the leaves and barks of ipil-ipil trees; vegetables such as okra and pechay; grasses such as cogon; wastes such as sawdust; cotton linters; banana stalks; rice stalks; corn hair; bamboo and barks of trees; water hyacinths; etc.

### **3.4.3. Government Policies and the Paper Industry**

The government, in line with its import substitution policy, encourages the growth of the paper industry by providing high protection and incentives in the form of various tax exemptions or reduction. In 1981 and 1982, importation of the 55 paper products banned since 1970 was liberalized. Another policy change was the Tariff Reform Program implemented in stages during the period 1981 to 1985 which reduced tariff rates for paper products from 30-100% in 1980 to 10-50% in 1985.

While the government tried to liberalize trade, non-tariff barriers which were more restrictive than tariff in limiting imports were implemented. Most paper products were regulated in 1982 and 1983 in the form of requirement of

prior import approval or clearance from the BOI. This import regulation was actually a result of the PULPAPEL petition to protect the local paper industry due to the influx of imports caused by the tariff reduction in 1981. The industry's already low capacity utilization declined further from 59% in 1981 to 56% in 1982.

The policies which have affected the industry since 1946 were:

- a. R.A. No. 35 of 1946 which entitled paper manufacture considered then as a new and necessary industry, to full exemption from the payment of internal revenue taxes for a period of 5 years. This was revised in 1953 by R.A. No. 901 which granted full exemption to paper manufacture from the payment of import duties, compensating tax, special import tax, and foreign exchange tax;
- b. Tariff Act of 1957 increased the tariff rates on pulp imports from zero duty in 1909 to 10% in 1957 and on finished product imports from 10%-40% in 1909 to 5% - 100% in 1957;
- c. Central Bank (CB) Circulars and Memoranda required prior CB approval for the importation of 55 paper products under the Unclassified Consumer Goods (UC), Semi-unclassified Consumer Goods (SUC), and Non-essential Consumer Goods (NEC) categories (1970); prior authorization and licensing from the CB for the importation of newsprint (1972), and that paper waste may be imported only by paper mills/manufacturers (1978);
- d. R.A. No. 37 (Revised Tariff and Customs Code of the Philippines as amended by P.D. 34 (Jan. 1, 1972) - imposed a three-level tariff rate at 30, 50, and 100% on paper and paperboard products based on essentiality and availability of local production. It also imposed 50% levy on pulp other than long-fibered which had a tariff of 20%;
- e. In 1978 and 1979 advance payment of duties and taxes on all imports which included paper products and inputs, and in 1979 advance margin deposits on import licenses were required;
- f. In 1981 and 1982, the CB liberalized the importation of paper products but during the same year and in succeeding years, it required prior BOI approval/clearance on the importation of

paper products as well as inputs of the industry including machineries and equipment. Then in 1984, the CB banned importation of commodities requiring prior CB approval and are classified under the UC and NEC categories. The three banned paper products were bond paper in rolls or sheets; paperboard, ruled, lined, or squared, in rolls or sheets; and cigarette paper, cut to size, in leaves, booklets or tubes.

- g. P.D. 1789 (Omnibus Investments Code of 1981, amended by BP Blg. 391 known as the Investment Incentive Policy Act of 1983) - provided incentives such as tax credits and exemptions, protection of patents and rights, post-operative tariff, protection from government competition, and priority on financial and investment assistance and export promotion to pulp, paper, and paperboard mills registered with the BOI and in preferred areas of investments in the Investment Priorities Plan. For pulp and paper, these areas include pulp from indigenous raw materials; integrated pulp and paper production, fiberboard for indigenous raw materials, and packing containers for export requirements.
- h. Tariff and Customs Code of the Philippines (1982) - scheduled tariff rate adjustments in 5 stages over the period 1981-1985. Before this tariff reform program, tariff rates ranged from 10-50% for material inputs and 30-100% for finished products of the paper industry. In 1985, the tariff rates were reduced to 10-20% for inputs and 10-50% for finished products.

#### 3.4.4. International Trade in Paper and Paper Products

In the Foreign Trade Statistics, paper imports were categorized into Paper and Paperboard imports; and paper and paperboard cut to size or shape and articles of paper and paper-board. Respectively, the categories correspond to the processing of pulp into paper and paperboard and the conversion of paper and paperboard into various products. The latter comprised a very small percentage of all paper imports.

During the years 1975 to 1978, there were lower imports compared to 1974 and 1973. The higher cost of oil which had a greater share of import expenditures and the inflation worldwide which made imports more costly led to lower imports of other goods including paper and paper products.

The quantity of paper imports rose by 5.3% from 123921 metric tons in 1980 to 149892 in 1984. In terms of value, the relative proportion to total imports was 0.98% in 1980 and 1.2% in 1984.

Paper exports include newsprint, printing and writing paper, paperboard, toilet paper, paper bags and boxes, envelopes, and stationaries and represent only a small percentage of local output

#### 3.4.5. Problems of the Industry

Pineda (1987) enumerates the following problems faced by the paper industry:

- a. Financial difficulties apparently due to inflation and peso devaluation
- b. Plant facility which were old and obsolete. In addition, small pulp and paper mills proliferated in various parts of the country causing low productivity and uncompetitive scale of operation.
- c. Unfair product competition - because of dumping or technical smuggling and foreign-made paper and paper products the quality of which are at par or better than locally made products.
- d. Raw material shortage is a perennial problem of the industry. The industry depends on imported raw materials making it vulnerable to external conditions. For instance, devaluation resulted in an increase in the cost of inputs while output prices did not rise as much because of depressed demand. These problems which started in the 1970s due to oil price increase and worldwide inflation exacerbated further in the 1980s because of another world recession.
- e. Pollution problem - the paper industry ranked second among industries polluting water bodies.

- f. Manpower problems - technically trained manpower was lacking both for maintaining the industry's facilities and equipment and producing quality paper and paper products. Likewise pulp and paper research lack manpower.

### 3.5. The Fertilizer Industry

Fertilizer is a significant input in crop production in the Philippines, especially rice and sugar. Food crop production has failed to keep pace with the increasing population, hence, one of the reforms made by the government was to dismantle the bias against agriculture including fertilizer monopolies and direct government intervention in the trading of agricultural inputs in 1986. Importation of fertilizers was liberalized, bringing about the entry of new importers, distributors, dealers and retailers as well as suppliers (Villareal, 1989).

The number of importers granted licenses by the FPA went up from only 14 in 1985 to 71 in 1986. The entry of new importers brought more competition among importers and fertilizer traders. This, together with declining prices in the world market caused a decrease in domestic prices. For instance, while in 1983-1985, importers of urea obtained an average margin of US\$112.7/ton, in 1986-1988, the average margin went down to US\$35.1/ton, a reduction of about 70%.

In order to keep their selling prices competitive, fertilizer companies were compelled to reduce costs of operation by minimizing or discontinuing services provided to farmers. These services included advisory and extension services. Moreover, the distribution network of regional offices with four or five warehouses in each region was reduced. Currently, some fertilizer companies maintain their warehouses, only at or near regional ports.

As the gap between import costs and prices paid by farmers narrowed down, demand for imported fertilizers increased. The rise in the use of fertilizers was also attributed to the protection accorded to locally manufactured phosphatic-based fertilizers.

Other reforms in the fertilizer sector were:

- a. Fertilizers are exempted from the 10% value added tax and from the 9% ad valorem tax on importation.

The industry is also provided an indirect subsidy through exemption of imports of nitrogen and potassic-based fertilizers from the 5% import tax.

- b. On transport, there was deregulation of shipping and cargo handling services, rationalization of freight rates, provision of incentives for vessel acquisition and removal of disincentives to the development of private port facilities.

### 3.5.1. Role of the FPA

Because of the liberalization program, the Fertilizer and Pesticide Authority (FPA) relinquished its control on the procurement and trading of fertilizers. It retained, however, its other functions such as:

- a. Quality control services to safeguard the health of the people and to ensure optimum productivity.
- b. Implementing preventive measures against manipulation in the markets for staples and agricultural inputs - The government monitors, arrests, and prosecutes manipulators as well as regulates fertilizer and pesticide traders through the issuance of import permits. The permits enable the FPA to monitor the entry and quality of fertilizer shipments and its distribution around the country. Permit is likewise required from importers in availing the fertilizer subsidy under a deferred tax payment scheme. The FPA also monitors fertilizer prices to protect farmers.

The deregulation of the fertilizer industry, however, has made it more difficult to track down unscrupulous traders who sell mislabelled, adulterated or underweight fertilizers because of the presence of numerous fertilizer handlers operating on a non-exclusive arrangement (FADINAP, 1992).

The FPA was created in May 1977 through Presidential Decree 1144 which also abolished the Fertilizer Industry Authority (FIA). P.D. 1144 placed the regulatory functions applicable to the fertilizer and pesticide industry on the FPA. It also provided additional powers to the FPA, such as the licensing of all handlers of fertilizers and registration of all grades and types of fertilizers.



### 3.5.2. Domestic Production of Fertilizer.

As early as the 1950s, fertilizers were locally produced with the establishment of the Maria Cristina Fertilizer Corporation (MCFC) in Lanao to boost sugar production in Mindanao. Between 1953 to 1965, rice and corn farmers were encouraged to apply fertilizer in their farms, hence the establishment of three more plants, namely: Planters Products, Inc. (PPI), Atlas Fertilizer Corporation (AFC), and Chemical Industries of the Philippines (ChemPhil).

The fertilizer plants were strategically located to satisfy demand. PPI, the largest company, built its plant in Limay, Bataan to provide urea, NP, and NPK in Luzon. It produced more than 50% of locally produced fertilizer. Chemphil in Taguig, Rizal manufactured ammonium sulfate and sulphuric acid for Luzon also. To meet the fertilizer requirements in the Visayas, AFC built its plant in Toledo, Cebu.

In 1977, increased production costs due to high costs of imported raw materials forced MCFC and Chemphil to shut down their plants. In 1980, AFC temporarily stopped manufacturing ammonium sulfate but resumed operations in 1985. In 1982, PPI reduced its volume of production by half and eventually stopped producing fertilizer in 1984.

In 1984, fertilizer prices soared due partly to the global oil crisis and to the scarcity of foreign exchange in the Philippines caused by political instability. Production of fertilizer declined to a record low of 103364 tons in 1984 from 164,183 tons in 1983.

In 1985, the Philippine Phosphate Fertilizer Corporation (PHILPHOS), a semi-government owned fertilizer plant, started commercial operations. It was considered the largest phosphate fertilizer plant in Asia and one of the largest in the world (it exports 16-20-0 and 18-46-0). It produces 88-90% of phosphatic-based and complete fertilizers while AFC satisfies 10-12% of local demand for those fertilizer types. Another private company, the Farmix Fertilizer Corporation (FARMIX) likewise produces phosphatic-based fertilizers.

In 1986, a local plant, International Chemical Inc. (Inchem), started producing commercial potassium sulfate (0-0-52) in response to the growing demand for a chlorine free source of K<sub>2</sub>O for tobacco and other plantation crops.

Table 3.4 enumerates the physical facilities and capabilities of fertilizer manufacturers in 1990. The volume of fertilizer manufactured locally reached 934,346 tons in 1990, an increase of 14.7% from the total of 814,420 tons in 1989 (Table 3.5). Compared to the production of 103364 tons in 1984, the increase was about 802% in 1990.

Table 3.6 presents production and demand for fertilizer for the years 1985, 1989, and 1990. In terms of nutrients, demand was always highest for nitrogen (N), followed by phosphorus ( $P_2O_5$ ), and then potassium ( $K_2O$ ).

Production on the other hand, was highest for phosphorus, followed by nitrogen, and then potassium.

Of the 2.36 million tons of fertilizer available in 1990, 61% was absorbed locally, 19% was exported, and the rest remained at the importers or distributors warehouses. In terms of nutrient content, 990551 nutrient tons of total nitrogen, phosphorus, and potassium were available during the same year. Of this volume, nitrogen comprised 60%, phosphorus, 24%, and potassium, 16%. About 588,091 nutrient tons were locally consumed, 194,600 tons were exported, 112980 tons were in the inventory, and 95,217 tons were the adjustments on sales or imports that were still in transit, at the time the reports of fertilizer companies to FPA were being prepared.

### 3.5.3 Importation

Fertilizer raw materials and finished products are both locally produced and imported. Phosphatic fertilizer is produced locally whereas nitrogenous and potassic ones are sourced through imports.

The Philippines has always relied on imports for its finished grade of nitrogenous and potassic fertilizers and for the raw materials necessary for the local manufacture of phosphatic based fertilizers. Indonesia, Japan, the former USSR, the Republic of Korea, Qatar and Canada are among the country's major suppliers of finished fertilizers. Indonesia supplies more than 60% of the country's requirements for urea while Japan supplies most of the ammonium requirements and the former USSR was the source of muriate of potash (MOP).

Japan and Canada gave fertilizer assistance to the Philippines through the R.P. Japan Grant and CIDA,

Table 3.4. Physical facilities and capabilities of fertilizer manufacturers, 1990.

Manufacturer	Location	Unit	Capacity	Products	
PHILPHOS	Isabel, Leyte	a. Granulation	65 MTPH/Train (2 trains)	18-46-0	15-15-15 S
		b. Sulphuric acid	1500 MTPD	16-20-0	15-15-15 M
		c. Phosphoric acid	600 MTPD	14-14-14	16-16-8
		d. Ammonium sulphate	520 MTPD		
AFC	Sangi, Toledo City, Cebu	a. Fertilizer compaction	50 000 MTPY	16-20-0	0-18-0
		b. Sulphuric acid	72 000 MTPY	14-14-14	6-9-15
		c. Phosphoric acid	8 000 MTPY	12-12-12	
		d. Single superphosphate	45 000 MTPY		
		e. Ammonium phosphate	75 000 MTPY		
		f. Complex fertilizer	80 000 MTPY		
INICHEM	Guiguinto, Bulacan	a. Potassium Sulphuric	8 000 MTPY	0-0-52	

MTPH - Metric Tons Per Hour

MTPD - Metric Tons Per Day

MTPY - Metric Tons Per Year

Table 3.5. Fertilizer Production by Grade, 1989-1990 (Tons).

Grade	1990	1989	Per cent change
16-20-0	332953	330604	0.71
18-46-0	142814	76942	-19.29
0-18-0	106	7322	-98.55
15-15-15 M <sup>a</sup>	84863	78941	7.50
15-15-15 S <sup>b</sup>	80698	30839	161.68
12-12-12	1167	2795	-58.25
16-16-8 M <sup>a</sup>	80916		
14-14-14	205814	182820	12.58
0-0-52	5015	4157	-20.64
Total	934346	814420	14.73

<sup>a</sup>  
Muriate of Potash - source of K<sub>2</sub>O

<sup>b</sup>  
Sulphate of Potash - source of K<sub>2</sub>O

Table 3.6. Fertilizer Production, demand and gap, 1985, 1989 and 1990  
(Nutrient tons)

	Nitrogen N	Phosphorus P O 2 5	Potassium K O 2	Total
1990				
Production	145714	199039	62869	407622
Demand	400572	104974	82545	588091
Gap	(254858)	94065	(19676)	(180469)
1989				
Production	126893	191029	44559	362481
Demand	375940	84101	77260	537301
Gap	(249047)	106928	(32701)	(174820)
1985				
Production	88924	109652	5511	204087
Demand	205364	42822	35060	283246
Gap	(116440)	66830	(29549)	(79159)

Note: Production of nutrients N and K O were derived from the  
local manufacturing of compounds of NP (e.g. 18-46-0 and  
16-20-0)

Source: FADINAP (1992)

In 1990, Japan provided 146515 tons or about 60% of the ammonium imports whereas Canada provided 15750 tons of MOP or about 30% of the country's total imports.

Rock phosphate fertilizers are obtained mainly from Senegal, Israel, Jordan, Nauru, Central Africa, South Africa, and Morocco, while anhydrous ammonia is imported from Indonesia, Qatar, Saudi Arabia, and others. Sulphuric acid is supplied mainly by Japan.

The average import and retail prices of fertilizer from 1983 to 1991 are presented in Table 3.7.

Importation was left in the hands of the private sector. In 1990, a total of 82 importers were registered. Thirty percent of these importers import traditional grades of fertilizer such as urea, 21-0-0, and 0-0-60.

Considering the volume of importation in 1990, the first 10 companies were: Swire (15.8%), Farmix (15.5%), Fertiphil (12.1%), Norsk Hydro (8.4%), Philippine Planters Corporation (7.2%), PHILPHOS (7.2%), AFC (6.9%), La Filipina (6.3%), Parafert (2.7%), and Modern Times (2.8%).

#### 3.5.4. Fertilizer Consumption

In 1990, fertilizer consumption was placed at 1.4 million tons. For the period 1985 to 1990, consumption grew at a rate of 15.3% per annum. On the basis of nutrient consumption, NPK consumed amounted to 580,318 nutrient tons in 1990, an increase of 8% from 1989. Due to increasing use of fertilizer, average application of fertilizer reached 44.9 kgs. NPK/ha.

#### 3.5.5. Marketing and Distribution

Each of PHILPHOS, AFC, and FARMIX has established its own marketing system and a separate marketing subsidiary. Their own dealer networks receive stocks through their corporate distributors which in turn sell fertilizer to farmers or subretailers.

Imported fertilizers are sold through various dealer networks which receive supplies either directly from the

Table 3.7. Average import and retail prices of fertilizers by grade,  
1983-1991 (US\$/ton).

	Urea	21-0-0	0-0-60	14-14-14	16-20-0	18-46-0
1983-1988.						
Import	172.77	97.81	103.69	173.38	168.88	244.53
Retail	285.44	185.83	241.51	294.42	287.32	419.43
Margin	112.67	88.02	137.82	121.04	118.44	174.90
1986-1988						
Import	126.00	77.47	102.98	172.31	163.57	235.51 a
Retail	161.12	114.95	159.02	212.16	204.87	260.40
Margin	35.12	37.48	56.04	39.85	41.30	24.89
1990						
Import	157.08	91.18	137.23	171.90	172.00	230.70
Retail	214.98	129.81	174.91	226.78	220.73	294.14
Margin	57.90	38.63	37.68	54.78	48.73	63.44
1991 Jan.-June						
Import	197.09	85.18	144.72	NI	NI	233.36
Retail	266.21	131.82	227.19	258.86	253.93	311.19
Margin	69.12	46.64	82.47			77.83 b

Import price in 1988. No importations from 1985 to 1987.

b

Average of January and April imports

NI - No imports

Source: FADINAP, 1992

importers upon arrival or through distributors at key distribution points. Private distribution of imported as well as locally manufactured fertilizers are allowed. This is in line with the privatization of the fertilizer sector in order to allow farmers to take full advantage of the available distribution systems. Other distribution channels for fertilizer are farmers' cooperatives, sugar mills, cotton growers, and large farms and plantations.

In 1990, about 1.45 million tons of fertilizer were sold in the country with 53% distributed in Luzon; 25%, in the Visayas; and 23% in Mindanao. Prior to fertilizer liberalization, the government designated fertilizer ports for discharge. With the program, a free market system exists and this is necessary to ensure availability of fertilizer in the provinces.

Marketing costs incurred by local manufacturers include transport, handling and storage costs from the plant to corporate warehouses and eventually to dealers' warehouses/stores.

The cost structure for imported fertilizers is more complex. From the port to the warehouse of the importers, costs cover bagging, landing, delivery and warehousing and this is estimated to be about 14% of total cost. Other costs that should be considered are cost of money and bank charges (about 6%). Depending on the performance of the company, the relative proportion of administrative overhead and marketing costs vary. Five percent for operating costs and another five percent for their margins are considered reasonable figures by the fertilizer association. Only one percent contingency is given for losses in storage or transit, shrinkage and demurrage.

Of the total landed cost, marketing cost amounts to an average of 20%, 9.5% of which is cost of bagging including cost of bag (It should be stressed that about 20% of the total imports are already bagged). On the average, bagging cost is higher in Manila ports by P60/ton compared to other ports in the country. This can be attributed to higher labor cost and higher transport and storage costs in Manila. Also, there is a lighterage charge of about P80/ton where offshore unloading is necessary.



### 3.5.6. Fertilizer Subsidy

In 1973, the tax incentive on fertilizer was first granted in the form of an outright tax exemption on fertilizer importation. It was later converted into subsidy and was implemented through the deferred payment scheme. This incentive was given in response to the fourfold increase in the world fertilizer price and to complement the program of the government to attain self-sufficiency in rice and corn by making available cheap fertilizer to the farmers.

The subsidy started as a cash subsidy scheme based on a two-tiered pricing system wherein fertilizers were sold to growers of priority I crops such as rice, corn, and vegetables at a subsidized price which was 50 to 70% off the regular price. Fertilizers were sold at a higher price to growers of priority II crops or export crops such as sugar, banana, and pineapple. However, there was rampant diversion of fertilizer from priority I crops to priority II crops. The program was terminated in 1976 because of difficulty in implementation and monitoring and the large budgetary requirement amounting to P12 billion.

Simultaneous with the two-tiered pricing system, the FPA developed a pricing formula in order that local manufacturers can recover their production cost with a guaranteed mark-up of 5% and importers can be assured of a 2% mark-up. To do this, the FPA determined the ex-warehouse price based on the amount of cash subsidies available to the fertilizer companies as well as on the weighted average cost of locally produced and imported fertilizer. For the prices to prevail in the market, FPA ruled that no importer can bring in fertilizer without the approval of FPA. This system was abolished in 1982 due to the slump in the world market prices as well as budgetary constraints on the part of the government.

The government then adopted the indirect subsidy to the local fertilizer scheme which was implemented under the deferred tax payment scheme. Hence, the government through the FPA absorbs the applicable customs duties and taxes. The import duties were charged against the subsidy fund of the government known as the Tax Expenditure Fund (TEF) in the General Appropriations Act.

Fertilizers not available locally were granted full exemption from the 20% import duty. Importers of phosphatic fertilizer are taxed to protect the local manufacturers. In

1988, however, importers of phosphatic fertilizer paid only 5% import tax as the balance of 15% was subsidized.

Executive Order No. 364 in July 1989 lowered import tariff on fertilizer grades from 20% to 5%. The subsidy on nitrogen and potassic based fertilizer imports continued while that on phosphates was terminated.

Starting in December 1990, the government assumed the 9% Ad Valorem Tax imposed on fertilizer imports, in addition to the 5% import tax. The Ad Valorem Tax which was levied on all imports was reduced to 5% in January 1991. In July 1991, Executive Order No. 470 lowered the import duty of nitrogen-based and potassic-based fertilizer from five percent to zero percent.

Again, to help farmers increase their income through increased productivity, the government implemented the Rice Action Program (RAP) in 1988. There were also the Rice Production Enhancement Program (RPEP) I and RPEP II which provided a free bag of urea for every two bag of mineral fertilizer with a maximum of three bags free for every six bags purchased. Where farmer beneficiaries opted for inorganic fertilizers, they are entitled to one bag free for every four bags purchased or a maximum of three bags free for every 12 bags bought. While RPEP I and II covered irrigated areas only, the RAP covered both irrigated and rainfed areas.

### 3.5.7. Problems of the Industry

Among the problems of the industry were inadequate capacity and low efficiency in production; inadequate supply of raw materials for local manufacturing of fertilizer; inferior quality and insufficient characterization of locally available raw materials deter local manufacturers from using them; shortage of vessels in transshipment of fertilizers; lack of adequate pier facilities and warehousing capacities, shortage of credit schemes; ineffective government extension services which should have been the appropriate source of information on the efficient use of fertilizer; and the high urea-rice price ratio which affects the use of fertilizer by farmers (FADINAP, 1992).

### 3.6. The Pesticide Industry

Pesticides have become a major component of farm production, being used as an input in the production of rice, vegetable, fruits, and others. The government agency that has been given the power to regulate the importation, production, distribution, sale and use of pesticides in the Fertilizer and Pesticide Authority (FPA).

#### 3.6.1. Market Structure of the Pesticide Industry

The pesticide industry is characterized by a small number of sellers, lack of marketing information among firms, some degree of product differentiation and existence of barriers to entry (Rola and Chupungco, 1992). The structure of the industry has remained oligopolistic most probably ever since the industry started. Barriers to entry in the industry include among others the amount of capitalization needed and the licensing requirements (Rola and Chupungco, 1992; Rola, 1981).

In 1980, the Agricultural Pesticide Institute of the Philippines (APIP), a non-stock, non-profit organization of companies engaged in the manufacture/formulation and/or marketing of agricultural chemicals controlled about 80 percent of the total sales of the industry (Rola, 1981). As of 1991, the member companies of APIP have held the control of the industry to the same extent. The APIP was founded in 1967 and was then composed of 22 pesticide companies. Only one pesticide company, the Planters Products, Inc. was not a member of APIP in 1991.

Pesticide companies differ in business operations. Some companies import pesticide products and market the final products by themselves. Others import the technical materials, formulate these materials into final products which are then marketed to the users.

APIP (1991) reported that its members employ a total of 424 sales representatives and extension agents/demonstrators all over the country, and have around 3000 dealers duly licensed by the FPA. For calendar year 1991, 118 dealers registered with FPA for pesticides only and 1062 for fertilizer and pesticides. Among the regions, Region IV or Southern Tagalog had the most number of pesticides dealers, 23, while Region III or Central Luzon had the most number of

fertilizer and pesticide dealers, 195, who were issued license to operate in 1991. These figures were lower than the number registered in 1990. The FPA license is effective for a continuous three-year business operation, thus considering the years 1989 to 1991, the total number of registered dealers adds up to 4186.

The sales statistics of the APIP for the second half of the 1980s show that the stock sales of agricultural chemicals generally increasing.

Imports consisted of insecticides, fungicides, and herbicides. In terms of value, the highest amount of imports was reported for insecticides, followed by fungicides, and then herbicides. In 1989, the total value of pesticide imports was \$49.2 million composed of 41 percent insecticides, 23 percent fungicides, and, 14 percent herbicides. In terms of volume, the highest was obtained in 1987 for insecticides at 3007 mt and for fungicides at 5571 mt. Herbicide imports was highest in 1988 at 2043 mt. In 1989, the total volume of pesticide importation amounted to 12265 mt consisting of 20 percent insecticides, 14 percent herbicides, and 16 percent fungicides.

Prior to 1973, the tariff rate on formulated pesticides was 10 percent. From January 1, 1973 until August 23, 1991, it became 20 percent under P.D. 34 and P.D. 1464 but was back to 10 percent on August 24, 1991 under E.O. No. 470.

### 3.6.2 Marketing of Pesticides by Dealers/Wholesalers

Based on the interviews with 34 pesticide dealers and wholesalers in nine provinces in the Philippines, the most common type of marketing channel for pesticides was the channel from the pesticide company/distributor to the dealer and finally to the farmers. The other channels observed were from the pesticide company/distributor to the big dealer and then to the small dealer and lastly to the farmers (Rola and Chupungco, 1992). Rola (1981) did a more comprehensive study of the marketing intermediaries and identified other marketing channels for pesticides such as from the indenter direct to distributors and plantation owners, and from the distributors to big dealers to agents and then to farmers.

To increase sales, the pesticide dealers and wholesalers gave discounts on their products, personal

service thru technical advice, and credit extension, among others. Most of these dealers and wholesalers determined their selling price based on mark-up while others used the prevailing market price or the suggested company price. The mark-up on the procurement price of insecticides, herbicides, fungicides, and other chemicals varied from one percent to 33 percent with most of the mark-up ranging from 6 to 10 percent.

Although the government banned the sale of some pesticides, some market outlets were found to continue selling these banned pesticides. In its pesticide regulatory policies and implementing guidelines and procedures, and its latest listing of banned and restricted pesticides, FPA (1987-1991) only allowed the use of DDT for malarial eradication program. Aquatin and Brestan, on the other hand, were formerly allowed for use in the control of golden snails, but then were found to be toxic and proved hazardous to humans and other living organisms and hence were banned in the market through Pesticide Circular No. 1, Series of 1990 (FPA, 1991).

### 3.7. The Petroleum Industr

#### 3.7.1. Institutions

The Philippine oil industry is governed by the Petroleum Act of 1949 which regulates oil exploration and production including refining and oil pipelines. The marketing function of the industry is contained in the Retail Trade Nationalization Act of 1954 which originally banned non-Filipino corporations starting 1964 from selling oil directly to end-users. This granted American firms a 10-year extension when the RP-US Parity Agreement expired. Corporations were likewise encouraged to organize 100 percent Filipino-owned companies to do retail activities.

In May 1975, P.D. No. 714 amended the law and permitted manufacturers or processors or their subsidiary or affiliate company to sell to industrial, commercial or agricultural users and consumers who utilize the products to render public service and/or to produce or manufacture products which are in turn sold by them.

In 1971, the Oil Industry Commission (OIC) was created to regulate and set prices of petroleum products. It was gradually phased out with the organization of the Ministry of Energy in 1977 through P.D. 1206 and the activation of the Board of Energy (BOE) under the Office of the President. The BOE handled the price regulatory functions of the OIC. The other functions of the BOE were:

- a. Issuance, renewal, and cancellation of power franchises.
- b. Licensing and regulation of petroleum refinery capacities.
- c. Review of crude oil import costs in order that extraordinary gains to oil companies due to product price adjustments would redound to the public interest.

The Ministry of Energy was created to formulate, implement, and monitor policies and programs of the energy sector. In 1986, it was renamed the Office of Energy Affairs and was placed under the administrative supervision of the Office of the President through E.O. No. 20.

The Office of Energy Affairs became the agency responsible in the formulation, planning, monitoring, implementing, and coordinating policies and programs in energy. In addition, it coordinates all activities which the government may need to undertake in relation to the exploration, development, marketing, distribution, storage, and efficient utilization of energy resources from fossil fuels such as petroleum, coal, natural gas and gas liquids, nuclear-fuel resources, geothermal resources, hydroelectric resources, and existing and potential forms of non-conventional energy.

On May 8, 1987, E.O. No. 172 created the Energy Regulatory Board (ERB) in place of the BOE. It also absorbed the Bureau of Energy Utilization's regulatory and adjudication powers and functions.

The Office of Energy Affairs also took over the Philippine National Oil Company's (PNOC) regulatory authority over oil companies particularly on product importations. The PNOC, created in 1973 by Presidential Decree 334, however, remained a state corporation which undertook oil/petroleum operations, mainly the buying of crude oil for Petron Corporation, its refinery and marketing subsidiary.

In December 1973, PNOC acquired the marketing operations of Esso and the latter's 57 percent equity in Bataan Refining Corporation (later increased to 60 percent). Esso was renamed Petrophil Corporation which was later merged with the Bataan Refining Corporation to form Petron Corporation in 1987. Earlier, on September 1, 1983, Mobil, which had a market share of 12.6 percent, sold their marketing assets to Caltex but PNOC, acquired the 40 percent share of Mobil in BRC on an extended payment processing agreement.

### 3.7.2. The Medium Term Energy Plan

The Philippine Medium-Term Energy Plan 1988-1992 defined the energy objectives of the country as follows:

- (1) on the supply side, to ensure the availability of energy to the local markets at reasonable prices,
- (2) on the demand side, to promote the judicious and efficient use of energy resources; and
- (3) on the environmental side, to accomplish (1) and (2) with minimal adverse effects on the environment

To achieve these objectives, then President Aquino created the Energy Coordinating Council (ECC) through E.O. No. 338 in September 1988 with the following powers and functions:

- (1) Review and formally ratify the energy plan, including the power expansion program of government agencies and corporations;
- (2) Make appropriate representation to the Investment Coordinating Committee or the government agency responsible for investment fund appropriations, to ensure that energy sector investments are consistent with the approved energy plan;
- (3) Analyze, coordinate, and, with the approval of the President, initiate major energy and power development projects that require the utilization of funds available to the government;
- (4) Coordinate the implementation of approved projects to assist in their timely completion; and

- (5) As the need arises, such as during anticipated energy or power shortage, determine and recommend to the President the appropriate course of action.

### 3.7.3. Pricing Policy

The government set key product specifications for fuels and enforce price ceilings which were adjusted from time to time.

Adjustments on company take are usually delayed but were allowed for almost full recovery of increases in crude cost and other cost factors such as refining, marketing, and financing. Prices ex-Refinery and ex-Pandacan (the main Manila oil terminals) were first determined. Differentials were then added on for other points in the marketing chain to reflect freighting costs (PSPC, no date).

A large percentage of wholesale and pump prices was taxes for various purposes. Such taxes were set at different levels for specific products to facilitate the socialized pricing policies of the government. Selling prices for gasoline and aviation fuel were made higher than those for kerosene (used by the masses), gasoil (used for mass transport), and fuel oil (used for industry and power generation).

The Consumer Price Equalization Fund (CPEF), formerly Consumer Cost Equalization Fund, later was made a component of the product price build-up due to widened price differentials between crudes of OPEC hardliners and conservatives (who obtained their crude at much higher prices) to recover crude costs and other cost variables beyond a defined reference price. This was also intended to eliminate the potential windfall gains for the advantaged oil companies and to equalize the crude cost burden without affecting the uniform industry pricing policy of the government.

Because of the July 1981 decision of the BOE to allow recoveries for the increase in the peso cost due to the deterioration of the foreign exchange rate, the CPEF later became a multi-purpose fund. On June 21, 1983, this mechanism was abolished. Oil companies were allowed to retain the average amount being collected and paid to the fund.



The Oil Price Stabilization Fund (OPSF) was established on October 10, 1984 to serve as a buffer against crude oil prices and fluctuation in the exchange rate (PSPC, no date). If actual costs of importation is greater than the reference crude price and the peso-dollar exchange rate set by the ERB, the three oil companies can reimburse the peso cost differential from the OPSF. If it is lower, the oil companies deposit the resulting peso cost differential into the OPSF.

An added feature of the OPSF was the forward foreign exchange cover which allowed the oil companies to recover from the OPSF financing costs for importations of crude oil (Lamberte and Yap, 1991). Such costs represent the difference between the foreign exchange rate at the time of availment of trade credit and at the time of settlement or repayment of such credit. The forward foreign exchange cover extended for 360 days but was reduced to 180 days beginning September 1990. The OPSF charges a flat rate of two percent as risk fee for a maximum period of 180 days of cover.

The OPSF formerly extended oil price subsidy to the National Power Corporation (NPC) on a per liter basis. The arrangement was that oil companies have to sell fuel oil to the NPC at subsidized rate but higher prices for other petroleum products would be charged to recoup the subsidy. This scheme was also being done in subsidizing petroleum products such as kerosene, diesel, and liquified petroleum gas (LPG). The NPC subsidy has been abolished since January, 1991.

For sometime, the OPSF was a self-liquidating buffer mechanism. Then, the government created the Petroleum Price Stabilization Fund. The OPSF was virtually converted into a subsidy mechanism when Congress appropriated P5 billion in 1990 to partly pay the accrued OPSF arrears.

As of 1991, the structure of the retail prices for petroleum products was composed of direct company take, specific tax, contribution to OPSF, the hauling price, and the dealer's margin.

There was a plan to deregulate the oil industry, that is, shift to the market-based oil pricing system. On January 1, 1991, some aspects of the deregulation such as the removal of the NPC subsidy were carried out (Lamberte and Yap, 1991). The measures taken were:

- a. Discontinuance, effective 1 July 1990, of the

foreign exchange forward cover provided to oil companies.

- b. Elimination of the power rates subsidy through the OPSF.
- c. Shifting from ad valorem tax on oil to specific tax.
- d. Allowing more competition in some aspects of the oil industry, such as transport, importation of oil products, etc.
- e. Allowing the PNOC to expand its distribution and refinery capacity and accelerating its development of geothermal energy sources.

Because of the sharp rise in the crude oil price caused by the Iraq-Kuwait conflict in 1989 to 1990, the government postponed the planned deregulation of the oil industry. Hence, there were still the OPSF and the foreign exchange cover.

In spite of the increase in world prices of crude oil and the deteriorating value of the peso, the government tried to hold on to the existing domestic prices of petroleum products for almost two months since the start of the Gulf War Crisis. Hence, more deficits were built up in the OPSF. The unpaid claims of the three oil companies reached P7.2 billion as of December 1989, increasing by another P3.5 billion in the first half of 1990.

On September 21, 1990, the ERB adjusted the prices of petroleum products by an average of P1.42 per liter. On December 5, 1991, another increase by an average of P2.82 per liter made. In this latter increase, the price of premium gasoline went up by 80 percent to P15.95 per liter. The LPG price rose to P6.89 per liter, an increase by 57 percent. A few days after the price adjustment, strong pressure from various groups to give some relief to users of diesel oil, kerosene, and LPG made the ERB lower the retail prices of these products. The price of fuel oil was likewise adjusted downward.

In August 1991, about six months after the softening of the world prices of crude oil, the prices of petroleum products were lowered by an average of P1.17 per liter.

In September 1990, the ad valorem tax on oil products was converted into specific tax (Table 3.8). This measure

Table 3.8. Taxes and Duties on Petroleum Products.

Product	Existing Ad Valorem Peso/Liter Tax Rate	New Specific Peso/Liter Tax Rate	% Reduction in Tax
Premium	3.5963	2.5200	30
Regular	3.2622	2.2800	30
Jet	3.4037	2.3800	30
Diesel	1.1532	0.4500	60
Kerosene	1.1704	0.5000	57
LPG	1.0590	0.0000	-
Asphalt	0.7956	0.5600	21
Thinner	1.1780	0.0000	-
Fuel Oil	0.0000	0.0000	-
Total	1.1363	0.6195	-
Duty	0.4271	0.4271	-
Total	1.5634	1.0466	-

Source: Lamberte and Yap (1991). Original data from the Office of Energy Affairs.

reduced the effective tax rate on petroleum products and at the same time made the excise tax on petroleum products less vouyant.

Oil companies were urged by the government to maintain crude/product stock cover of 90 days for security in supply. In cases of crises such as the Gulf War crisis, this was somehow relaxed. The Office of Energy Affairs, however, closely monitored the stocks.

#### 3.7.4. The Oil Companies

There are three big oil companies in the Philippines, namely: Philipinas Shell Petroleum Corporation (PSPC), Petron Corporation and Caltex (Philippines) Inc. These oil companies compete intensely for the domestic oil market. Their operations including pricing, however, are regulated by the government.

Most of the government's oil requirements are supplied by Petron/PNOC. As of 1988, it was number one in the oil industry with Total Oil Inland Trade (TOIT) market share of 37.3 percent (PSPC, no date). (TOIT is composed of reseller, industrial consumer, Philippine government, U.S. military bases and international sales volume.

The Caltex refinery located in Bauan, Batangas and produces 72,000 barrels per day has enough tankage and jetty facilities to receive crude ex-VLCCs. According to the PSPC report (1991) Caltex has the distinct advantage of supplying oil to Metro Manila most economically through the FPIC white and black oil pipelines.

Prior to Petrophil days, Caltex was the industry leader with a 35 percent market share. When Petrophil was established, the market share of Caltex was reduced to 24 percent. But with its acquisition of the Mobil marketing network in 1983, its market share went up to 33.5 percent by the end of 1984. Caltex was said to enjoy the lowest freight for crude and the highest public brand awareness (PSPC, 1991). By the end of 1988, its share of the market was 32.1 percent.

Two-thirds owned by Shell Petroleum Co. Ltd, PSPC with its refinery located in Tabangao, Batangas, ranked third in the industry in 1988. To strengthen its market position, it acquired Basic Landoil Energy Corporation in July 1982

increasing its market share from 18.7 percent in 1982 to 21.4 percent in 1983. In 1988, PSPC shared 30.1 percent of the total oil market.

A \$667 million new refinery by PSPC is now being constructed in Tabangao, Batangas and is expected to make PSPC the biggest oil firm by 1994 (Lirio, 1993). It would increase PSPC's daily capacity from 72,000 barrels to 110,000 barrels by 1994. (Petron's refinery produces currently about 100,000 barrels a day compared to the 70,000 barrels a day of Caltex). The Royal Dutch Group of Companies, PSPC's parent firm at present, would invest P250 million whereas foreign investors would put up \$233 million.

The new oil refinery was intended to meet rising oil demand and ease the importation of diesel fuel. The PSPC (1993) study underscores that existing refining facilities which average from 30 to 35 years old would be unable to meet volume and quantity requirements by mid-1990s unless new and additional capacity is built up.

### 3.7.5. Demand

The total energy consumption in the Philippines for the period 1980 to 1991 ranged from 92.07 million barrels of fuel oil equivalent (MBFOE) in 1985 to 120.59 MBFOE in 1990. Of the total energy consumption, the share of imported oil increased from 53.4 percent in 1986 to 63.2 percent in 1990. Of the total import bill, oil import was about 16.6 percent in 1990 (Lamberte and Yap, 1991).

The bulk of the country's crude oil imports come from the Middle East. Total crude oil imports from the Middle East rose from 68.4 percent in 1988 to 75 percent in 1989 and 83 percent in 1990. The ASEAN countries particularly Malaysia and Brunei supply about 17 to 19 percent of the Philippine crude oil requirement.

In 1991, the average daily consumption nationwide was only 225,000 barrels. This rose to a high 260,000 barrels in 1992. In 1993, the average consumption of all petroleum products in the Philippines was 264,000 barrels a day (Lirio, 1993). Twenty percent of the daily demand was imported.

### 3.8. The Land Transport Industry

The transportation network in the Philippines is composed of roads, railroads, air routes and shipping routes. The major means of movement, land transport shared P20.59 billion (at 1985 prices) or 64.12 percent of the 30.711 billion earned by the transport industry in 1991. This is four percentage points higher than that for 1981 but three percentage points lower than that for 1986.

The country's transport industry began with the shipment of U.S. assembled cars into the country during the American occupation. Only horse-drawn calesas and the tranvia or railroads could then be seen in the streets of Manila.

After World War II, there was a transport shortage resulting in the conversion of U.S. Army surplus vehicles into jeepneys. Using vibrant colors to paint the G.I. jeeps, the bodies were lengthened to increase the seating capacity. The new jeepneys were powered by surplus jeep engines such as McArthur, M38 and Willys. In the late 1960s, the diesel engine had taken over paving the way for the importation of reconditioned diesel engines of Japanese make (Anonymous, 1984).

#### 3.8.1. Jeepneys

About 80 to 85 percent of the jeepney market is supplied by Sarao Motors Corporation and Francisco Motors Corporation. There was stiff competition with big car manufacturers who produced Fieras, Cinnamon, Sakbayans, Tamaraws and Harabas. Jeepneys were, however, preferred because they were less costly, spare parts were readily available and they can accommodate more passengers and goods. The smaller engines of the jeepneys meant less gasoline consumption. As fuel consumption determined to a large extent the profitability of operation the jeepneys were fitted with diesel motors which use less fuel (Anonymous, 1984).

### 3.8.2. Car Manufacturing

As a result of the country's limited foreign exchange, progressive car manufacturing was introduced in 1969. Earlier, there was a clamor for voluntary reduction on completely knocked down car imports on the part of local car assemblers of the automotive industry and the government to employ a progressive car manufacturing program (PCMP). To progressively increase the domestic content of cars and save dollars, the PCMP encouraged domestic manufacture of automotive components, created manufacturing activity in small and medium size enterprises for the domestic production of automotive components, upgrading in the process the engineering and production skills and technological knowhow; and generated new exports in a regional automotive complementation program.

The participants of the PCMP included five companies: Ford Philippines, Inc.; Delta Motors Corporation; General Motors Philippines Incorporated; NISSAN; and Canlubang Automotive Resources. As a promotion strategy, manufacturers offered various models for each brand.

### 3.8.3. Performance of the Motor Vehicle Industry

The total number of registered motor vehicles increased from 865 thousand in 1975 to 1.12 million in 1985 and to 1.715 million in 1991 (Table 3.9). Of the total number in 1985, about 88 percent were private vehicles; 8.08 percent were public utility vehicles; 3.30 percent, government owned cars and other vehicles; and diplomatic vehicles, 0.40 percent. The number of private vehicles in 1990 increased by 34 percent, however the share to total number of the motor vehicles declined by about eight percentage points compared with 1985. The number of private cars increased by about 100 thousand units but utility vehicles outstripped private cars. The number of utility vehicles increased by almost 200 thousand units. The number of vehicles-for-hire went up from 90,607 in 1985 to 246,082 in 1990, an increase of 172 percent thus the share of this group to total number of motor vehicles rose from 8.09 percent to 15.19 percent. In 1991, 81 percent of all motor vehicles were privately-owned; 16.34 percent, for hire, 2.61 percent, government vehicles, and 0.76 percent, diplomatic vehicles. Hence, private vehicles comprised the biggest portion of road transport, followed by for hire vehicles,

Table 3.9. Number of Motor Vehicles Registered by Type of Vehicle: 1985, 1990

Type of vehicle	1985		1990		1991	
	Number	Percent	Number	Percent	Number	Percent
Total motor vehicle	1120172	100.00	1620242	100.00	1715366	100.00
Private	980143	88.21	1322783	81.64	1384148	80.69
Cars	332473	30.24	430735	26.58	430943	25.12
Utility Vehicles	328179	29.30	520534	32.13	560831	32.69
Buses	2804	0.25	3288	0.20	3404	0.20
Trucks	79759	7.12	117047	7.22	123426	7.21
Motorcycles/Tricycles	231207	13.71	233861	14.43	247892	14.45
Trailers	13721	1.22	17318	1.07	17652	1.03
For Hire	90607	8.09	246082	15.19	280254	16.34
Cars	7123	0.64	13676	0.84	16360	0.95
Utility Vehicles	57961	5.17	71365	4.40	87285	5.09
Buses	11641	1.04	14667	0.91	16884	0.98
Trucks	6362	0.57	6515	0.40	7534	0.44
Motorcycles/Tricycles	6622	0.59	138948	8.58	151091	8.81
Trailers	898	0.08	911	0.06	1100	0.06
Government	36947	3.30	45482	2.81	44759	2.61
Cars	5694	0.51	6052	0.37	5724	0.33
Utility Vehicles	19690	1.76	23704	1.46	22732	1.33
Buses	291	0.03	386	0.02	402	0.02
Trucks	6001	0.54	5607	0.35	4552	0.27
Motorcycles/Tricycles	5161	0.46	9617	0.59	11144	0.65
Trailers	110	0.01	116	0.01	205	0.01
Diplomatic	4475	0.40	5895	0.36	6205	0.36

Source: Land Transportation Office.



then government vehicles, and lastly, diplomatic vehicles. The ratio in 1975 was 21 motor vehicles for ever 1000 population. In 1990, there were 27 vehicles for 1000 people.

Comparing the newly registered motor vehicles and vehicles with renewed registration. Table 3.10 shows that the number of newly registered vehicles rose from 133 thousand in 1981 to 183 thousand in 1991. It can be observed, however, that from 1983 to 1984 (the trend of which continued until 1988), there was a sharp drop in the number of such vehicles from 137 thousand in 1983 to 60 thousand in 1984. The number of vehicles with renewed registration went up from 873 thousand in 1981 to 1.5 million in 1991.

Between Metro Manila and the regions, more vehicles were newly registered in the former but more renewal of registration very made outside Mero Manila. This may be explained by the fact that more new vehicles are sold in Metro Manila and even buyers from the provinces register newly purchased cars in the city but renew them in their respective regions in the succeeding years after purchase.

In 1991, a total of 1.2 million motor vehicles used gasoline while 499 thousand utilized diesel fuel (Table 3.11). The high cost of gasoline compared to that of diesel resulted in the increasing preference for diesel-fed utility vehicles and buses. The share of diesel-fed utility vehicles to the total number of utility vehicles increased from 33 percent in 1981 to 50 percent in 1991; 70 percent in 1981 to 96 percent in 1991 for buses.

Between Metro Manila and the regions, the proportion of gas fueled vehicles varied only by a small percentage. Gas-fueled vehicles in Metro Manila represented 72.5 percent of total while in the regions the corresponding proportion is 69.4 percent.

#### 3.8.4. Rail Transport

Trains are energy-flexible. They have different types of power sources: gasoline, diesel, electricity, wood, coal and even sawdust. They can carry more passengers and freight on a single car compared to other vehicles. One coach can accomodate 120 passengers while a bus avarage secting capacity is only 45 persons. The same train wagon

Table 3.10. Number of Motor Vehicles Registered by Classification, New and Renewal, 1981 to 1991.

Year	Total		Cars		Utility Vehicle		Trucks		Buses		Motor/Tricycles		Trailers	
	New	Renewal	New	Renewal	New	Renewal	New	Renewal	New	Renewal	New	Renewal	New	Renewal
1981	133449	872581	35645	282440	35072	329634	11661	91479	2270	15551	47313	139677	1488	13800
1982	137192	949988	33292	308757	38948	346362	10336	96538	1187	16171	51342	167101	2087	15059
1983	137250	1063553	31111	335891	38075	389850	9746	101110	1042	15672	55608	205817	1668	15213
1984	60216	1105341	12722	348000	17610	399111	4759	97312	433	14846	23366	229967	1326	16105
1985	41570	1078602	8589	339360	11669	394161	3220	90718	277	14459	16965	226025	850	13879
1986	60633	1125199	7571	349117	13826	402728	3413	91805	309	14665	34750	253875	764	13009
1987	71000	1105753	10657	348108	23144	418613	5112	92640	545	14628	30430	219138	1112	12626
1988	87963	1182520	16322	360324	33543	441556	6438	101589	573	14510	29659	251243	1428	13296
1989	141499	1289965	32808	380190	50821	485584	8273	110109	868	16082	46599	284376	2130	13624
1990	206090	1414152	42389	412165	74731	540872	13419	117554	2119	1622	70034	312392	3398	14947
1991	182826	1532540	32130	424476	71969	598879	12646	125492	1877	18813	61820	348307	2384	16573
Metro Manila	92930	628846	27371	281891	32642	244891	8054	37246	918	5400	22419	51432	1526	7986
Outside Metro Manila	89896	903694	4759	142585	39327	353388	4592	88246	959	17895	39401	296875	858	8587

Source: Land Transportation Office

Table 3.11 Number of Motor Vehicles Registered By Classification, By Type of Fuel Used: 1981-1991.

Year	Total		Cars		Utility Vehicle		Trucks		Buses		Motorcycles/Tricycles		Trailers
	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	
1981	773049	217693	308096	9989	243295	121411	35584	67556	5365	12456	180709	6281	15228
1982	805176	264858	329752	12297	233169	152141	28690	78184	3207	14151	210358	8085	17146
1983	861223	322699	351296	15706	230727	197198	23050	87806	1939	14775	254211	7214	16881
1984	826305	321821	345055	15667	216454	200267	18783	81288	1285	13994	244728	8605	17431
1985	794368	311021	335267	12682	206341	199489	14934	78950	829	13907	236997	5993	14729
1986	852345	319708	344197	12491	211888	204666	13856	81362	1958	13016	200446	8173	13773
1987	829850	333165	346573	12192	226567	215190	11719	86033	1478	13695	243513	6055	13738
1988	905864	349893	364355	12291	248612	226487	14899	93128	797	14286	277201	3701	14726
1989	1021703	394007	398593	14405	280949	255456	16111	102271	800	16150	325250	5725	15754
1990	1152785	449112	437079	17475	323598	292005	17446	113527	1050	17291	373612	8814	18145
1991	1197282	499127	436775	19831	338177	332671	15692	122446	885	19805	405753	4374	18957
Metro Manila	516706	195558	292619	16643	144818	132715	5221	40079	288	6030	73760	91	9512
Outside Metro Manila	680576	303569	144156	3188	193359	199956	10471	82367	597	13775	331993	4283	9445

Source: Philippine National Railways and Metro Transit Organization Incorporated.

can carry about 30 tons of freight while a huge trailer truck can load about 10 tons of cargo. Moreover, on the average, a train has 10 wagons which can load about 1600 passengers and 300 tons of commodities. Hence, trains provide the least costly mode of mass transit (Anonymous, 1984).

The Philippine railway company was managed by the Americans during the Second World War. Later, with the Japanese occupation, it was renamed by the Japanese "Rikuyo OKarikuko." By virtue of R.A. 4156 passed on June 30, 1964, the company's name was changed to Philippine National Railways. On August 20, 1971, a new PNR charter was passed through R.A. 6366. Its capital stock was increased from ₱250 million to ₱650 million providing for a rehabilitation and modernization program.

The PNR renders two types of services, the train service and the motor service. The former has passenger cars and baggage cars, diesel rail cars, diesel engine and hydraulic locomotives and freight cars while the latter consists of revenue vehicle (e.g. tourist and minibuses, freight trucks and tanker for hire) and nonrevenue vehicles. Nonrevenue vehicles are not profit or income earners such as ambulances, automobiles, wreckers and others that are for official use only.

In Table 3.12 shows that the number of passengers carried by the trains in general declined from 6.2 million in 1950 to 5.4 million in 1975 to 0.7 million in 1991. Total passengers revenue, however, rose from ₱6.7 million in 1950 to ₱32.2 million in 1975 to ₱64.4 million in 1991. Revenue per passenger was lowest in 1950 at ₱1.09 was ₱5.96 in 1975 and was highest at ₱98.39 in 1991.

Like the number of passengers, freight tons loaded generally declined from 787 thousand in 1950 to 281 thousand in 1975 to 12 thousand in 1991. Although revenue per freight ton increased from ₱8.65 in 1950 to ₱33.44 in 1975 to ₱184 in 1991, freight revenue varied with the highest at ₱9.4 million in 1975 and the lowest at ₱2.1 million in 1991. Likewise, express tons loaded fluctuated ranging from 10 thousand in 1991 to 104 thousand in 1974. With revenue per express ton increasing from ₱38 in 1950 to ₱860 in 1991, express revenue rose from ₱1.7 million in 1950 to ₱8.0 million in 1975 to ₱8.6 million in 1991.

Logs, poles, lumber and plywood; firewood; other mine products; and copra and coconut gave the most revenue and the largest freight to the railway industry.

Table 3.12. Number of Passengers, Freight and Express Tonnage, and Revenue by Philippine National Railways: 1975-1991

Year	Passengers Carried ('000)	Passengers Revenue ('000 pesos)	Revenue per Passenger	MMRC Passenger Carried	MMRC Revenue ('000 pesos)	Revenue per Commuter	Freight Tons Loaded ('000)	Freight Revenue ('000 pesos)	Revenue/Freight Ton (pesos)	Express Tons Loaded ('000)	Express Revenue ('000 pesos)	Revenue/Express Ton (pesos)
1975	5399.6	32181.6	5.96	-	-	-	280.6	9383.7	33.44	69.4	8036.5	115.80
1976	4255.0	44330.0	10.42	-	-	-	208.6	6073.7	29.12	56.4	5736.6	101.71
1977	4892.8	43791.0	8.95	-	-	-	194.3	6740.4	34.69	51.3	5267.6	102.68
1978	4012.4	39442.0	9.83	-	-	-	158.7	5152.2	32.47	37.2	3802.9	102.23
1979	3021.8	34832.0	11.53	3442.7	2422.6	0.7037	145.5	5783.4	39.75	34.2	4381.5	128.11
1980	2465.7	42435.0	17.21	4957.7	6502.0	1.3115	141.9	6440.5	45.39	24.8	4288.0	172.92
1981	1651.4	32252.0	19.53	6156.3	9321.9	1.5142	115.8	6729.9	58.12	18.2	3411.0	187.42
1982	1316.2	27996.0	21.27	4335.9	7151.2	1.6493	79.2	5440.3	68.69	15.8	3642.0	230.51
1983	1375.6	36219.0	26.33	5142.2	9729.6	1.8921	65.3	5377.6	82.35	17.1	3989.0	233.28
1984	1262.6	48799.0	38.65	4755.4	13093.0	2.7533	72.1	8851.4	122.77	21.6	6878.3	318.44
1985	749.0	41974.0	56.04	2952.2	10206.9	3.4574	53.0	7667.4	144.67	19.4	6988.2	360.22
1986	909.6	45516.0	50.04	2834.7	7927.5	2.7966	64.0	7341.8	114.72	21.5	8116.7	377.52
1987	1177.8	61222.0	51.98	2024.0	5219.1	2.5786	62.2	7903.6	127.07	27.7	9452.8	341.26
1988	968.1	64766.0	66.90	1182.1	2975.3	2.5170	57.0	7976.5	139.04	23.3	10091.2	433.10
1989	1004.7	69093.0	68.77	979.7	2519.1	2.5713	53.2	6861.6	129.00	21.5	9819.4	456.72
1990	928.0	74964.0	80.78	5560.8	12454.5	2.2397	32.2	3864.6	120.00	16.8	9281.2	552.45
1991	654.9	64432.5	98.39	4508.5	12777.1	2.8340	11.6	2135.5	184.10	10.3	8604.9	860.40

Note: Metro Manila Commuter (MMRC) started in 1979.

Source: Philippine National Railways and Metro Transit Organization Incorporated.

### 3.8.5. Government Support

The depressed situation in the automotive industry in 1987 prompted the President to issue E.O. No. 248 which gave the BOI authority to review the guidelines of the Progressive Car Manufacturing Program (PCMP) and the Progressive Truck Manufacturing Program (PTMP) in order to formulate new guidelines that would address more aptly to major problems facing the industry.

The guidelines of the PCMP, renamed the Car Development Program (CDP), were approved in December 1987. Participation in the program is open to active car assemblers licensed by BOI under the PCMP as of October 1, 1987 and to any new applicant who intends to use existing facilities of former but inactive PCMP participants.

The CDP guidelines prescribed a minimum vehicle content of 32.26 percent in 1988, increased the minimum content to 36.58 percent in 1989 and 40.0 percent in 1990. In addition, the guidelines stipulated that participants should earn one-half of their foreign exchange requirements for importation through exports.

### 3.9 The Textile Industry

The discussion below was summarized from Mercado (1986) and Flores (1990). Some of the data were updated using the Foreign Trade Statistics of the Philippines and the Philippine Yearbook.

The textile industry covers firms engaged in the manufacture of fibers, fabrics, and other textile-related goods such as bags, sacks, hosiery, thread, cordage, net, twine, etc. except garments. Textile fibers are either natural or man-made. The most common natural fibers are cotton and ramie whereas typical examples of man-made fibers are nylon, polyester, rayon and acrylic.

Depending on the number of processing stages conducted, textile mills may be classified into integrated mills (where all the three stages are performed in one plant) and non-integrated mills (where only one or two of the three stages are done). The three stages are (1) spinning - the conversion of textile fibers into yarns and threads; (2) weaving or knitting - the processing of yarns and threads to

produce looms which are transformed into woven or knitted fabrics; and (3) finishing - the process of bleaching, coloring or dyeing and/or treating with chemicals to come up with the finished textile. Non-integrated mills consist of spinning and/or weaving mills and other mills for knitting, dyeing, grey cloth finishing, cloth finishing, texturizing, twisting, hosiery and extrusion.

The textile industry was a heavily protected industry, protected by high tariffs and other devices such as import restrictions and investment incentives. The industry, however, instead produced high-cost, low-quality textiles which could not compete with imports (Mercado, 1986). It was also not capable of exporting substantial quality products. There was no initiative to manufacture quality product, no advertising, and no promotion whatsoever (Flores, 1990).

A high degree of vertical and horizontal integration exists in the industry but no competitive pressures. During the post war years of heavy tariffs, quantitative import restrictions and investment incentives, the textile industry had been inefficient and the industry's capacity was greatly underutilized. The industry's equipment were aging and ill-maintained. Other problems besetting the industry were high cost of raw materials; low labor productivity; depressed domestic market conditions; high interest rates; protectionist policies adopted by major industrialized markets; and smuggling, which offered unfair competition to locally produced textiles (Mercado, 1986; Flores, 1990). It is worth noting that the high cost of energy contributed likewise to the high cost of production of the textile mills.

#### 3.9.1. Firms in the Industry

In 1981, there were about 130 firms in the industry 90% of which were located in Metro Manila. For the period 1980 to 1984, the industry declined annually by 6.25 percent. In 1984, only 83 textile firms were in operation in the Philippines.

Of the industry's rated capacity of about 1.22 million spindles, 19440 looms and an annual finishing capacity of 540.27 million meters of woven cloth, integrated mills accounted for 56% of total spindle capacity, 83% of total loom capacity, and 88% of total finishing capacity; semi-

integrated mills, 14%, 17%, and 12%, respectively. Basic mills accounted for 30% of total spindle capacity (Mercado, 1986).

In 1980, the BOI estimated the capacity utilization rate of the industry to be 65%. This was reduced to 50% in 1985.

In 1985, there were about one million spindles, 13,272 rotors, 19,500 looms, 2,818 knitting machines, and 607 texturizing machines (Flores, 1990).

As of 1989, the industry had 210 companies engaged in the production of yarns from natural and man-made fibers. About 54 were engaged in two or more processes. Ninety percent of these companies were Filipino-owned while 10 percent were owned by partnerships.

The machinery and equipment used by the industry were mostly acquired during the 1950s and early 1960s. Hence, a large proportion of these were already obsolete. In fact, one of the major problems encountered by the industry in modifying and modernizing its machinery and equipment is the large amount of capital requirement.

In the weaving sector, looms that were capable of production in 1986 numbered 14,247 with a capacity of 43 thousand metric tons. In 1989, the number of looms capable of production plus the number of rehabilitated ones were 10,635 with a capacity of 47 thousand metric tons. The total number of looms declined but the total capacity increased due to the use of modern machineries.

On the whole, 43 percent of the machineries used were acquired in the 1960 to 1970 period while 41 percent were rendered unusable.

After the 1986 recession, the improvement in the economy in 1987-1988 created a big consumer demand for textiles. Hence, old machines including spindles and looms were again used leading to improved maintenance and rehabilitation. This in turn, led to an increase in output.

### 3.9.2. Raw Materials

The major raw materials of the industry comprise of raw fibers, yarns, dyestuffs, and chemicals like caustic



soda, hydrogen peroxide, and soda ash. Locally produced were polyester fiber, nylon filament yarn, and some chemicals.

Most of the raw materials were included in the list of regulated commodities of the CB. Prior import clearance from the BOI was needed in all importations of synthetic fibers, yarns and threads, hydrogen peroxide and caustic soda.

The import restrictions on raw materials resulted in creating monopolies. Hence, the inefficiency in the production of an intermediate input tends to spread within the industry which uses the said input.

Polyester staple fiber accounts for 60% of the total raw materials used in the manufacture of textile. As part of the import substitution policies of the government, the manufacturers of polyester, Filipinos Synthetic Corporation (FILSYN) and Lakeview Industrial Corporation were incorporated in 1969 and 1972, respectively. These plants, however, were small and did not achieve the needed economies of scale. Their production costs also increased because of high interest rates and power costs. Polyester production was also said to be highly capital intensive. Due to financial setbacks, Lakeview Industrial Corporation was compelled to become part of Filsyn in 1983 (Flores, 1994).

In 1986, the sole local supplier of staple fiber had acquired a monopoly over polyester sales as the government required mills to purchase fibers from local suppliers up to the quantity these firms can supply. Suppliers of raw materials were required in turn to sell the materials at prices equivalent to the landed cost of imports. Hence, the Textile Mills Association of the Philippines (TMAP) denounced the monopoly firm for selling polyester fiber at a price higher by 43 % than the cost of importing the fiber. Other complaints of the textile millers were the unreliable supply, low quality, and high cost of polyester fiber. In addition, the millers could not take advantage of the low world prices for fiber (Mercado, 1986).

Polyester imports went up from \$14.7 million in 1987 to \$20.3 million for the period January to November 1988. The country's polyester production could not meet domestic demand. Also, polyester products of other countries were of better quality and with lower prices (Flores, 1990).

In 1985, one of the two local manufacturers of nylon filament yarn stopped operating. Studies undertaken in 1982

and 1983 concluded that there was excess capacity for nylon filament in the country and that the operations of the two plants would no longer be viable (Mercado, 1986).

To a large extent, production of cotton was controlled by a semi-government-owned corporation. Although domestic cotton production improved, self-sufficiency in cotton production was then still far behind. As reported by the millers, the prices of domestic cotton and those of imported cotton lint were almost the same.

Of the chemicals and dyes used particularly in the dyeing and finishing, and texturizing stages, Flores (1990) reported that there were no statistical data on the quantity used by the industry. Her inquiries with TMAP, however, revealed that about 80 percent of the chemicals and dyes were imported. Imported chemicals and dyestuffs increased from \$27 million in 1987 to \$30 million in 1988.

For the years 1977 to 1989, the raw material imports of the industry ranged from \$86 million in 1984 to \$231 million in 1989. Of the raw material imports, synthetic fibers had the biggest average share of 34% followed by cotton, 28%; textile yarn, 21%; and other man-made fibers, 16%.

During the same period, imports of fabrics, made-up articles and related products generally increased from \$51 million in 1977 to \$386 million in 1989. Woven man-made and cotton fabrics accounted for an average of 40% and 6% of total imports, respectively; knitted or crocheted fabrics, 30%; and special textile fabrics, 15%.

In 1980, 1982, and 1984, prices of domestic raw material inputs were on the average 48.6%, 55.4%, and 119.3% higher than equivalent import prices. For the same years, domestic textile output prices were 0.50% higher, 17.5% lower, and 18% higher than equivalent import prices.

### 3.9.3. Demand for Textile Products

Final consumers demand for textile products consist of demand for made-up textile articles and inputs in the production of garments and made-up textile products, and in other allied industries.

Smuggled fabrics were sold at prices lower than prevailing market prices as these goods were untaxed. A

report on a study about smuggled fabrics in 1983 estimated these goods to be about 25% of total textile sales yearly, about P2.5 billion in revenues and \$300 million in foreign exchange lost to the government annually. According to the TMAP, smuggling of textiles especially polyester fiber could be attributed to the big disparity between local and international price (Mercado, 1986).

The supply for the domestic market came from the local textile manufacturers and from the smuggling of fabrics and garments. Flores (1990) reported that the percentage supplied by smuggling activities was quite significant, even larger than the imports used for the domestic market.

Other than the barter trade in Mindanao, smuggling in the textile industry maybe either technical or direct. Technical smuggling was done by export garment manufacturers. For instance, manufacturers import fabric and yarn in excess of the production requirements and sell the excess to the domestic market. They may also understate the size and volume of the imported textiles. Direct smuggling may involve the misdeclaration of imported goods as low value items (Flores, 1990).

The outlet for fabrics produced by the integrated mills was mainly the Divisoria wholesaling network. Due to the high operating costs of these mills (attributed to their multiple product lines and machineries), the mills could operate only if the market is protected. These costs and the lack of development of new fabrics made smuggling a lucrative business. Importation likewise went up as a result of the increasing demand of the RTW business in the 1970s and 1980s (Flores, 1990).

The results of a consumer survey undertaken by the SGV in 1987 reported that about 40% of all fabric purchases pertained to knitwear. In early 1989, there was a rise in ready to wear knitted garments in the form of "T" shirts.

There were a lot of small, family-owned firms in the knitting sector. Because of their lower operating costs large companies had difficulty in competing with them.

About 90% of total demand was for apparel use, 75% of which was for the domestic market and 14% for export. Although no supply/demand gap in the domestic market was reported, there was an increasing trend in importation as local textile manufacturers could not meet the quality specifications of the garment export sector.

The Philippine garments industry depends greatly on imported raw materials. The poor quality and higher prices of local fabrics and the inability of mills to meet delivery schedules were cited as the major reasons for this dependence on imported materials (Mercado, 1986). Through the BOI-approved bonded warehouses or export processing zones, the materials are imported for re-export duty free.

#### 3.9.4. Exports of Textiles

Exports of textiles were insignificant with an average share of 0.7 to 1.3% of total exports for the period 1975 to 1989. Garments exports had the lowest average share of 4.7% in 1975 and the highest of 19% in 1987.

For the period 1977 to 1989, textile exports varied from \$34 million in 1977 to \$87 million in 1989. Of the textile exports, special textile fabrics and related products had the highest average share of 33% while woven textile fabrics other than of cotton or man-made fibers had the lowest at 0.9%.

The major importers of the country's garments and textiles were the U.S. and EEC.

#### 3.9.5. Government Policies

In the early 1950s, the local textile industry was developed as an import substitution industry. In 1949, the government imposed import and foreign exchange controls, hence, reducing imports of textile and increasing the price of imported fabrics. Many textile finishing mills were put up as the CB was liberal in the granting of dollar quota allocations for the importation of grey goods, the basic input in textile finishing.

In the second half of the 1950s, the industry proceeded towards integration, either backward or forward because of government incentives which included financial assistance and tax exemption privileges.

In 1963, the decontrol program removed the limits on the importation of textile goods. Rampant smuggling and unlimited importation of textiles existed. Although anti-

smuggling measures were imposed, such were loosely implemented.

Effective April 1972, imports of fabrics and textiles including synthetic fibers and yarns, hydrogen peroxide and caustic soda were restricted in order to protect the local textile industry. In Sept. 1974, more products were restricted. In January 1975, with the implementation of MAAB no. 1, all imports of synthetic yarns and fibers were to be referred to the CB. With MAAB no. 2 in January 1982, importations of spun yarn and sewing thread needed prior BOI authorization. With Circular no. 1050 issued in Feb. 1985, textile items/fabrics, synthetic yarns, fibers and threads were included in the list of regulated products which required BOI clearance/permit. In July 1982, MAAB no. 25 required prior clearance from the BOI for all importations of hydrogen peroxide. The importation of liquid caustic soda needing prior clearance from the BOI was effected with the signing of MAAB no. 49 in November 1982.

As of 1986, importation of most inputs and outputs of the industry were being monitored but there were no limits on quantity and value.

#### 3.9.6. Tariff Rates

The tariffs on selected textile items from 1972 to 1978 are presented in Table 3.13. Higher tariffs were levied on imports of fibers which were also produced locally. The duties on fibers were lower than on yarns. Tariffs on yarns were lower than fabrics.

Prior to 1973, tariff rates on woven and knitted fabrics depended on the state and type of fabric. Effective January 1973 with the amendment of the Tariff and Custom Code, the duty on woven and knitted fabrics was fixed at 70% ad valorem. Local independent finishers were therefore less protected since their raw materials were charged the same duty as finished fabrics. Local finishers who had their own weaving and/or spinning facilities were not affected. Technical smuggling through misdeclaration was also prevented.

By 1980, nominal tariff rates again increased as the stage of processing passes from fiber through to fabric. Tariff rates on cotton, man-made fibers, yarn, woven fabrics, and knitted fabrics were at the minimum 10%, 10-

Table 3.13. Ad Valorem<sup>1/</sup> Tariffs on Selected Textile Items,  
1972, 1973, and 1978 (In percent).

Item	Effective Jan. 21, 1972	Effective Jan. 1, 1973	Effectiv 1978
Cotton	Free	10	10
Man-made fibers (discontinuous), not carded, combed or otherwise prepared for spinning:			
A. Articles not included in subheading b hereof	5	10	10
B. Polyester staple fibers, except when imported directly by textile spinning mills under prior joint authorization of the TC and the BOI	30	30	30
Cotton Yarn, not put up for retail sale	70	70	50
Yarn of man-made fibers (continuous), not put up for retail sale:			
A. Articles not included in subheading b hereof	30	30	30
B. Polyester yarn, except when imported directly by textile mills under prior joint autho- rization of the TC and the BOI	50	50	
B. <sup>2/</sup> Polyester yarn, except when imported directly by textile mills under prior joint autho- rization of the TC and the BOI		-	50
Woven fabrics of Cotton	40 <sup>3/</sup> 100 <sup>3/</sup>	70	70
Woven fabrics of man-made fibers (continuous)	75 <sup>3/</sup> 100 <sup>3/</sup>	70	70
Knitted or crocheted fabric, not elastic nor rubberised	65 <sup>3/</sup> 70 <sup>3/</sup>	70	50

<sup>1/</sup> In addition, a sales tax must be paid on imports which is slightly  
higher than the tax on domestic production.

<sup>2/</sup> New subheading, introduced only in P.D. No. 1464..

<sup>3/</sup> When range is given, the presented heading has sub-headings.

Source: Mercado (1986).

30%, 30-50%, 70%, and 50% respectively. Rates of effective protection became higher with the value added in each process in the textile manufacturing chain.

As set out in the Tariff and Customs Code of 1982, from 1980 to 1984 tariffs on cotton remained at 10%, polyester staple fibers changed from 30% to 20%, other man-made fibers from 10% to 20%, cotton yarn from 40% to 30%, polyester yarn and nylon yarn from 50% to 30%, other yarn of man-made fibers remained at 30%, woven fabrics decreased from 60% to 40% and knitted or crocheted fabric, from 50% to 40%. The average tariff on chemicals and dyes was reduced to 31.25% from 41.25%.

The tariff reform program became inoperative in 1984 due to import restrictions. Executive Order No. 926 of December 1983 raised the tariff on polyester fiber imports from 20% to 30% and reduced the import duties on acrylic and rayon from 20% to 10%. Under the 1982 Tariff and Customs Code, polyester fiber could be imported at 10% duty and 30% duty, respectively with and without prior authorization from the BOI. For polyester filament yarn and nylon filament yarn, these items could be imported at 30% duty with prior authorization from the BOI and at 50% duty in 1981 and 40% in 1982 without the authorization. Effective January 1983, the 1982 Code was supposed to remove the requirement for BOI authorization and set a uniform duty of 20% for imports of polyester fiber and 30% for polyester and nylon filament yarn imports. The issuance of Executive Order no. 926 made the tariff changes ineffective.

Table 3.14 shows the new set of tariff rates for 1987 and 1988.

Table 3.14. Tariff rates in 1987 and 1988.

	Duty 1987	Duty 1988
	(%)	(%)
Cotton Fiber	10	10
Acrylic Fiber	10	10
Rayon	10	20 <sup>1/</sup>
Polyester Staple	30	20
Polyester Filament	30	30
Nylon Filament	40	40
Spun Yarns	30	30
Sewing Thread	30	30
Knitted Fabrics	40	40
Woven Fabrics	40	40
Denim	40	40
Garments	50	50

Source: A Review of the Textile Sector, 1986  
Flores (1990)

1/ Raised to 20% on the premature expectation of a Philippine Rayon Plant starting up.



### 3.9.7. Government Programs

The textile industry was in the list of industrial sectors for rehabilitation under the BOI Investment Priorities Plan for 1986. There was also a modernization program for the industry to be financed by a World Bank loan amounting to \$157.4 million but this consisted only of one-third of the total financial requirements of the program. The remaining two-thirds came either from the participating mills or from the government in the form of guaranteed suppliers' credit. There were other requirements from the participating mills such as technical manpower training program, energy conservation, and environmental pollution control measures. The rehabilitation plan was scheduled from 1982 to 1985. Due to depressed economic situation and financial difficulties, there were only few takers of the World Bank loan. The Central Bank then had to administer some of the funds for relending to export-oriented enterprises. Other funds were returned to the World Bank in 1984 (Mercado, 1986).

A tax credit scheme for local textile millers approved by the BOI and the then Ministry of Finance for the industry was implemented in 1985 to be able to reduce its operation costs so that fabrics would be sold at lower prices free of tax and duty to the garments export industry (Mercado, 1986; Flores, 1990). To finance the importation of raw materials by textile mills, \$50 million of the World Bank loan would be utilized.

In selling locally-produced fabrics to the garment industry textile mills would be given tax credit certificates equivalent to the tax and duty that garment firms would have paid should they import the raw materials. The tax rebate to the millers allowed the industry to sell fabrics at lower prices to garment exporters.

### 3.10. Concluding Remarks

On the description and analysis of the marketing systems for inputs and outputs of RNEs, the available reports, studies, and publications do not differentiate the marketing systems for small and big RNEs. The discussions largely focused on the industry as a whole. Therefore, to determine whether the marketing systems for small RNEs differ substantially from those for big RNEs would need a study of specific products from each of these two groups. This would probably necessitate a survey of sample establishments within each type of industry to obtain the needed data and information.

To a certain extent the size of the RNEs has been considered in the discussion. This is based on the type or product handled. For example, the beverage industry was described to have been dominated by a small number of firms and may be characterized as oligopolistic. The beer sector was monopolistic until 1979.

Similarly, it was pointed out that there were only 12 wholesale tobacco dealers (WTDs) in 1989 (which implies that they are relatively large), seven in Virginia tobacco and the others in burley and native tobacco. About 60% of the total Virginia tobacco supply is handled by two WTDs. Furthermore, of the 11 cigar and cigarette manufacturers, it was estimated that two companies control 90% of the market for aromatic cigarettes.

Although limited, some qualitative assessment of the effects of some policies were made. Import restrictions on raw materials used by the textile industry resulted in creating monopolies (or oligopolies). This was a consequence partly of the import substitution policies and high production costs due to high interest rates and power costs. These led to the merging of manufacturers of polyester whose plants were small and the needed economies of scale could not be achieved.

Another example applies to the coconut oil industry. The UNICOM (United Coconut Oil Mills, Inc.) was established in 1979 to adjust the milling capacity to more realistic levels. In the late 1970s, there was an overinvestment in coconut oil mills as a response to incentives granted by the BOI. In 1979, however, copra production was quite low, resulting in fierce competition for the available copra among oil millers, copra exporters, and refiners. This led in turn to a very low utilization and financial difficulties of mills. Hence, UNICOM engaged in and coordinated buying, selling, milling and refining of coconut products and became the largest seller/exporter of copra and coconut oil, thus limiting competition in the milling sector, marketing of copra and coconut oil.

In the fertilizer industry, fertilizer plants were strategically located to satisfy increase in demand particularly due to government incentives for rice, corn, sugarcane and other types of farms to apply fertilizer. However, increased production costs due to high cost of imported raw materials forced two companies to shut down their plants. Fertilizer production was also reduced and eventually stopped by another company. In 1984, fertilizer prices soared due partly to the global oil crisis and to the scarcity of foreign exchange. Production declined to a record low.

## CHAPTER 4

### POLICIES RELATED TO NONFARM ENTERPRISES

#### 4.1. Goals and Objectives of the Medium-Term Philippine Development Plan

The Medium Term Philippine Development Plan for 1993-1998 states that the industrial sector shall be geared towards the attainment of the following major goals: (1) industrial restructuring for worldwide competitiveness and expanded production of goods and services for the domestic and export markets; (2) strong productive and ecologically sound links between agriculture and industry; and (3) increasing income, productivity and access to resources among small entrepreneurs.

To attain these major goals, the specific objectives relevant to rural nonfarm enterprises are defined as follows:

1. Rural industrialization including the dispersal of industries to regions outside the National Capital Region (NCR);
2. Modernization of the production sectors through technology upgrading;
3. Economic employment of men and women workers and employers as partners in the development process.

The Plan envisions GVA in manufacturing to grow at 9.0 percent annually during the Plan period to increase from 25.4 percent in 1993 to 27.7 percent in 1998. Industrial GVA is targeted to have the highest growth rates in Central Visayas, Southern Tagalog, Southern Mindanao, Central Luzon, and Central Mindanao.

To achieve these targets and goals requires strategies and a policy environment conducive to growth. These policies and strategies for the industrial sector include the following:

1. Provide assistance for product development and standardization;
2. Pursue an aggressive and focused export promotion program that is product-and-country-specific, including the provision of financial, marketing, technical and institutional assistance by: (a) ensuring access to export and guarantee scheme; (b) continuing research and development, including improved trade negotiations, publicity and image-building promotions for the country; (c) providing training and technical assistance to exporters in design and packaging and product quality improvement; (d) implementing trade assistance and information networking schemes; and (e) simplifying export procedures.
3. Promote investments consistent with the Agro-industrial Development strategy by: (a) further simplifying registration requirements, (b) further reviewing foreign equity limitations with a view to relaxation; (c) improving the security of foreign land tenure through longer land leases, extension of the condominium law to cover factories/buildings on industrial lands; and (d) improving the investment climate by completing the programs for privatization and deregulation, upgrading infrastructure, and securing peace and order.
4. Strengthen anti-dumping laws and procedures to protect domestic industries from unfair trade practices; and
5. Provide time-bound and performance-based incentives in a few carefully selected areas to promote investment in environment-friendly technology and for other purposes critical to agro-industrialization.

To adopt a location-specific and ecosystem-based approach to agri-industrial development, regional growth centers and growth networks/cores outside Metro Manila will be identified using the following criteria: (a) marketability of products; (b) strategic location; (c) ecosystem implications; and (d) minimum infrastructure requirements.

Regional growth centers will be developed through the implementation of Regional Industrial Centers (RICs) Program the with following order of priority:

<u>REGION</u>	<u>GROWTH CENTER</u>	<u>SITE OF EXISTING/PROPOSED INDUSTRIAL AREA</u>
VII	Metro Cebu	Mactan EPZ
X	Cagayan de Oro	PHIVIDECA IE
IV	Cavite City	Cavite EPZ
III	Mariveles, Bataan Subic, Zambales	Bataan EPZ
CAR	Baguio City	Baguio City EPZ
XII	Iligan City	Ma. Cristina-Fuentes
XI	Davao City	Panacan, Panabo, Ilang
I	San Fernando, La Union	Bacnotan
XI	General Santos City	Hacienda Espina
IV	Batangas City	Tabungao-Bauan
VI	Iloilo City	Pavia
IX	Zamboanga City	Ayala-Recodo
V	Legaspi City	Lamba
VIII	Tacloban City	New Kawayan
II	Cauayan Sta. Ana, Cagayan	Cauayan, Isabela Port Irene
ARMM	Parang	Polloc, Parang, Maguindanao
XII	Cotabato City	(not yet identified)

In addition, growth networks/cores which link two or more growth centers will be developed. In order of priority, the following have been identified:

- a. Cavite-Laguna-Batangas-Rizal-Quezon (CALABARZON)
- b. Cagayan de Oro-Iligan
- c. Northwestern Luzon Growth Quadrangle (Laoag-San Fernando-Dagupan-Baguio)
- d. South Cotabato-Davao-Zamboanga
- e. West Central Luzon (Bulacan-Pampanga-Bataan-Zambales)
- f. Cebu-Iloilo-Tacloban
- g. Naga-Iriga-Legaspi
- h. Tuguegarao-Ilagan-Cauayan

The Regional Development Councils (RDCs) and Local Government Units (LGUs) in the growth centers will be encouraged to direct and manage the development of their respective localities. Moreover, LGUs will be encouraged to promote indigenous activities where their provinces have existing or potential comparative advantage.

Commodities and activities that have competitive potential, are strategic or critical to agri-industrial development will be promoted. Among these goods and services are:

- a. animal feed ingredients;
- b. cutflowers;
- c. cotton;
- d. fiber (abaca, ramie, salago, maguey);
- e. fisheries;
- f. sugar;
- g. coconut;
- h. cattle, carabao and dairy;
- i. swine and poultry;
- j. fruits (tomatoes, pineapple, banana, mango);

- k. vegetables, legumes and nuts (garlic, mongo and peanuts);
- l. essential oils (citronella);
- m. fashion accessories;
- n. metal engineering products (including machinery and equipment, tool and die and metal components);
- o. shipbuilding and repair;
- p. processed fruits and vegetables (including ethnic food);
- q. marine products (including prawn, seaweed, carageenan);
- r. gifts, toys, and housewares;
- s. furniture;
- t. textile filament (silk);
- u. garments; and
- v. electronics (hardware and software).

Basic commodities and industries that are critical to agri-industrial development include rice, corn, basic metals, chemicals and chemical products, electricity and gas and petrochemicals.

Institutional support such as production and post-production facilities, and other support requirements for the above commodities, industries and services will be provided. Likewise, community organizations and cooperatives will be promoted and strengthened to help build the social infrastructure needed to facilitate access to production inputs, organize marketing of products, and mobilize rural credit and savings.

To enhance labor and employment particularly in the rural areas the following programs will be implemented/developed:

- 1. Business program for rural women micro-entrepreneurs in nonfarm enterprises

2. Upgrading of outreach skills training programs
3. Voluntary approaches to labor dispute and settlement
4. Expansion of livelihood programs for rural workers
5. Special employment assistance programs for educated and laid-off workers through the setting up of micro-processing projects with technical assistance and credit component.

Below are some specific policies affecting nonfarm enterprises.

#### 4.2. Exchange Rate Policy

In the late 1950s, the heavy import dependency of the new industries led to a worsening trade deficit and prompted the government to begin rationalizing the exchange rate by having a multiple rate system that effectively devalued the domestic currency in import transactions. In 1962, the peso was freely convertible at the market rate (Bautista et al., 1979).. Controls on all foreign exchange transactions were immediately removed initially by adopting a floating rate. The rate was later established at P3.90 per dollar which was supported by the Philippine National Bank, The Central Bank and by standby credits from international sources, including the International Monetary Fund (IMF). From 1962 to November 1965, however, exporters were not able to take full advantage of the new exchange rate because the Central Bank exchanged their dollar earnings at 80% of the prevailing exchange rate (The 20% retention scheme was designed as a temporary measure to check inflationary pressures and to prevent an undue redistribution of income in favor of the exchange depreciation arising from decontrol). It was only after 1965 that exporters were allowed to convert 100% of their dollar earnings at the prevailing exchange rate thus signalling a more complete devaluation (Sicat, 1972).

CB Circular 289 dated February 21, 1970 provided for the floating of the domestic currency which was passed as a direct response to a balance of payments crisis resulting from the need to service short-term credit that financed the trade deficits of the 1960s (Bautista, et. al., 1979). This exchange rate policy called for the adoption of the flexible exchange rate for the peso for all foreign exchange



transactions except for the surrender of the export proceeds of the leading export products such as logs, centrifugal sugar, copra, and copper ore and concentrates. Eighty percent of all the export proceeds of these products were to be sold at the established par value of ₱3.90 to \$1. Twenty percent of the receipts were convertible at the prevailing free market rate (Sicat, 1972).

Sicat (1972) stressed that the policy was a stark departure from the 1962 decontrol measure, which penalized across-the-board all export receipts by requiring all exporters to surrender 20% of their earnings at the parity rate of ₱2 to \$1. Under this setup, any new export product received its full measure of peso value (derived from the market-determined exchange rate) with the above mentioned exemptions. In May 1970, however, with the passage of the export tax, the 20% retention scheme was abolished. The export tax under RA 6125 imposed a "standardization tax on the gross f.o.b. peso proceeds" in traditional exports or a diminishing rate for two classes of traditional exports, namely:

- a. logs, copra, centrifugal sugar, copper ore and concentrates: 10% for the first year in 1970/71; 8% in 1971/72; 6% in 1972/73; 4% in the last year, 1973/74.
- b. molasses, coconut oil, dessicated coconut, iron ore and concentrates, chromite ore and concentrates, copra meal or cake, unmanufactured abaca, unmanufactured tobacco, veneer and sheets, plywood, lumber, canned pineapples and bunker fuel in the following diminishing rates: 8%, 6%, 4%, 2% in the last year. This export tax was applied also to export products whose aggregate annual value shall have exceeded \$5M.

According to Pante and Medalla (1990), the exchange rate policy embodied in CB Circular 289 seem to have used ineffectively in adjusting imbalances in the country's external accounts. From 1974 to 1982, nominal exchange rates exhibited a generally depreciating trend, but the rate of depreciation was kept at about 3% per year. Meanwhile, the inflation rate in the country accelerated from 5.3% per annum in the 1960s to 14% from 1973 to 1983, a much higher rate of increase as compared with the major trading partners of the Philippines. Thus the limited nominal adjustments in the exchange rate resulted in real effective rates that were appreciating at the same time that trade and current account deficits were rapidly building up.

Hence, real GNP growth progressively slowed down from 1979 to 1983, so with industrial and manufacturing growth rates. In the second half of 1983, unsettling political events triggered by the assassination of the late Sen. Aquino caused international banks to halt further lending to the Philippines and called their short term loans which in turn led into a full blown debt and balance of payment crisis.

The immediate response of the government was to devalue the peso three times between 1983 and June 1984, resulting in 46.1% depreciation of the peso for the period. There were also severe foreign exchange restrictions, wide ranging import controls and additional import duties and export taxes which were quite inconsistent with the long-run goal of rationalizing the protection structure embodied in the trade reform program initiated in 1980. These measures were replaced towards the end of 1984 by better expenditure-reducing policy instruments, which included, among others, the tightening of monetary policy, the reduction of budget deficits and a more flexible exchange rate policy.

From 1986 to 1989, the peso depreciated by only 6.6% against the US dollar while the effective rate depreciated by 16.7% from 1986 to 1988 mainly because of changes in currencies of the major trading partners of the Philippines. Hence, the peso hardly moved in 1989 in spite of the rapid build-up of the country's trade and current account deficits in that year. In mid-1990 when the peso was under heavy pressure in the foreign exchange market due to the uncertainties arising from the Middle East war, among others, the CB tried to stabilize the peso through exchange market intervention. The CB likewise introduced a series of administrative measures such as a tight band imposed on the official exchange rate for commercial foreign exchange transactions and a special arrangement that ensure the supply of foreign exchange to oil importers (Lambarte, et. al., 1991).

According to Krugman, et.al (1992), the Philippine exchange rate regime is best described as managed by the CB in spite of the IMF classification as "freely floating." The CB manages the exchange rate by buying or selling foreign exchange in the interbank market and through monetary policy. The latter is resorted to support the peso when it is weak. When there is an excess demand for foreign exchange, the CB sells debt instruments to make the interest rate high enough to make peso assets attractive to private holders of dollars (In the mid-1980s, the CB borrowed directly, offering the so-called "Jobo Bills"). To buy peso debt, the investors have to sell dollars and buy

pesos. Hence, the debt issue relieves pressure on the foreign exchange market and may even allow the CB to buy dollars without driving up their price.

The interest rate that must be paid to "flush out" dollars in this way must be one that offers an interest premium over that on dollars sufficient to compensate investors for the perceived risk of devaluation. Proximately then, interest rates in the Philippines were driven for the most part by expectations about exchange rate movements. The rising interest differential in 1989 essentially reflected concern that the peso was becoming overvalued, and that a depreciation would eventually become necessary.

Krugman, et al. (1992) asserted that the source of high nominal interest rates in the Philippines is therefore not the competition of the government for a scarce supply of private savings, but the need to offer interest rates high enough to compensate investors for the likelihood of future depreciation of the peso, a likelihood that arises in part because of expected inflation, but also from a perception that the peso is overvalued in real terms.

#### 4.3. Fiscal Policy

##### 4.3.1. Income Tax from Business

- a. Prior to Executive Order 37 of 1986, the tax rate schedule was one to 35 percent for compensation income and five to 60 percent for business, trade and professional income.
- b. E.O. 37 of 1986 provided for the application of a uniform (1 to 35 percent) graduated rate schedule to the sum of compensation, business, trade, and professional income. As before, compensation income was taxed on a modified gross income basis (i.e., gross income less personal exemptions) whereas business/trade and professional income was taxed on a net income basis, i.e., gross income less personal exemptions less deductions for business expense. This deduction can be either a standard deduction or an itemized deduction where allowable itemized expense deductions include interest, ordinary business losses, bad debts, depreciation, charitable contributions, and others.

#### 4.3.2. Tax on Passive Income

- a. Prior to 1986, passive income was taxed as follows: 17.5 percent on interest income, 15 percent on dividends and royalties, and five percent (based on gross selling price) on sales of real property, 0.25 percent (based on gross selling price) on sales of stock listed and traded through a local stock exchange and a 10-20 percent tax on net capital gain from sale of stocks not traded through the local stock exchange.
- b. The 1986 tax reform included the phasing out of the tax on dividends such that by January 1, 1989, the tax rate on dividends was down to zero. It increased, however, the tax on interest income, royalties and winnings to 20 percent. The tax withheld by the payor represents the final tax liability of the payee and the latter is not required to state the income on the individual tax return. The taxation system governing capital gains from stock or real property transactions did not change.

#### 4.3.3. Corporate Income Tax

The 1986 Tax Reform fixed a uniform 35 percent tax on the net income of corporations. Allowable deductions from gross income are ordinary business expenses, interest expenses, depreciation, bad debts, taxes, etc. (Manasan, 1990).

From 1968 to 1986, the tax on corporate net income was on a graduated basis, 25 percent (previously 22%) on the first slab of P100,000 of net income and 35 percent (previously 30%) on net income of more than P100,000 (Manasan, 1990 and Gregorio, 1979). This dual rate system of corporate income taxation was first introduced in 1959 and had increased over the years.

Available fiscal incentives to firms registered with the BOI were said to significantly affect the burden of corporate taxation (Krugman, et al 1992). With regard to tax incentives, registered enterprises are entitled to tax incentives in the form of exemption or reduction of certain taxes, deduction from taxable income or tax credits. These

incentives operate to reduce the initial cost of investment or reduce the income tax burden of enterprises. The following deductions from taxable income are allowed: registered enterprises are entitled to amortize and deduct organizational and pre-operating expenses for 10 years; accelerate depreciation of its capital assets; carry over net operating losses for a period of six years; deduct from taxable income the amount re-invested for expansion of its facilities at varying percentages at 25% to 100% depending on the nature of the industry; and exporters of manufactured products may claim a double deduction of direct labor cost and indigenous raw materials used in the exported product up to an amount of 25% of export revenue.

A registered enterprise is also entitled to an exemption or reduction or deferment of taxes on imported capital equipment for the registered project. For export products, a special tax credit is available for taxes and duties paid for raw materials and supplies used to manufacture the export product. On the other hand, an enterprise engaged in a pioneer project is entitled to exemption from all taxes except income tax on a diminishing scale for a period of 15 years, extendible for another five years for exceptionally large projects. There income tax holidays were introduced in the 1987 Omnibus Investment Code or E.O. No. 226.

#### 4.3.4. Value Added Tax (VAT)

E.O. 273 introduced the value added tax in the Philippines to simplify the sales tax system, lessen its distortive effects, and increase the yield and responsiveness of sales taxes. It was signed in June 1987 but actually took effect on January 1, 1988. The VAT replaced the manufacturer's sales tax (with VAT-like features) and the turnover tax, the miller's tax, the contractor's tax, the broker's tax, the tax on lessors of personal property and a host of fixed taxes. It imposes a uniform 10 percent tax on the sale and importation of most goods and services (Manasan, 1990).

Furthermore, according to Manasan, exports are zero-rated while agricultural products, major inputs to agriculture with no alternative uses, e.g., fertilizers, pesticides, animal feeds, etc., most of petroleum products, books and other printed materials, utilities, financial, medical, educational, transport, communication and other

services and sales and/or services rendered by entities whose gross annual turnover is less than P200,000 are exempt.

Zero-rated and exempt goods do not pay taxes on their outputs. However, zero-rated goods are given a rebate on the taxes paid on their inputs while exempt goods are not.

On the other hand, the manufacturer's sales tax that was in place before the VAT had tax rates differentiated according to the essentiality of the goods; 0, 10, 20, and 30 percent, respectively, for agricultural products, essentials, ordinary, and non-essential goods. In addition, a 1.5 percent turnover tax based on gross selling price was levied on each subsequent sale.

In 1979, non-essential and semi-essential items were taxed at 50 and 25%, respectively. Prior to July 1978, the rates were 70 and 40%, respectively. Under the non-essential category were jewelries, perfumes, cosmetics and juke boxes. The semi-essential items consisted of leather luggages and bags, water heaters, washing machines, electric mixers, lighters, air-conditioning, pianos and most household appliances.

Essential items which included locally processed meat, milk, fish, and other sea foods, wheat flour, locally manufactured medicine, laundry soap, writing pads, notebooks and pencils, animal feeds and cement were taxed at 5%. The tax for agricultural products was 1% and for all other commodities, 10%.

Gregorio (1979) expounded also on some variations on the tax rates. Lower rates of 10 to 25% depending on the price of the item were imposed on the locally produced versions of certain semi-essential goods like watches and clocks, fountain pens and ball pens, electric fans, stoves and ranges, photographs, radios, television sets, refrigerators, etc. Depending on the price, special graduated tax rates from 10 to 200% were charged likewise on domestically manufactured automobiles. Imported automobiles were levied tax rates ranging from 100 to 200%.

Taxes on certain inputs may be credited against output taxes. However, the earlier tax credit system is more limited than the one under VAT. In particular, under the previous system, only taxes on inputs that physically form part of the finished product may be credited against output taxes. Under VAT, tax credits are allowed for taxes on all inputs which are within the VAT ambit.

The VAT is complemented by an excise tax on luxury items.

A lot of problems were encountered in the initial implementation of VAT. These problems could be attributed to the inadequate preparatory steps that were undertaken. The VAT was met with hostility and confusion by the public, the new laws and regulations were unclear and not widely disseminated, etc. Krugman, et al. (1992) states that most of these problems have now been addressed.

#### 4.3.5. Excise Taxes

Before 1986, excise taxes on alcoholic, tobacco and petroleum products were levied in the form of unit taxes based on volume of production combined with an ad valorem component (Manasan, 1990).

The 1986 tax reform completely eliminated the unit tax such that now these excises are on an ad valorem basis. This resulted in a rising tendency for excise tax revenues to go up automatically with economic growth especially with increasing prices. However, Manasan (1990) contended that the reform of excise taxes on tobacco products, the reintroduction of a higher rate on imported (65 percent) relative to domestically produced cigarettes (40 percent and 50 percent, depending on whether the cigarettes carry a foreign brand or not) seemed questionable. Promoting the domestic manufacture of cigarettes could be better done by means of tariff protection.

The excise tax rate on petroleum products rose from an average tax rate equivalent of 26.3 percent of the wholesale price in January 1986 to a peak of 36.8 percent in March 1987. In August 1987, it was reduced to an average rate of 25.4 percent. Concomitantly, the structure of petroleum product taxes across the various products has also undergone some changes. First, the excise tax rate on fuel oil, an important intermediate input, went up relative to that of other petroleum products between January 1986 to August 1987. From then on, the excise tax on fuel oil was abolished. It is worth noting that since taxes on petroleum products have traditionally

been a significant component of tax revenues the revenue reduction was not negligible (Manasan, 1990). Second, the differential taxation of gasoline and diesel widened further in favor of diesel, i.e., gasoline became more heavily taxed relative to diesel.

The excise tax on fuel oil which was increased from a rate of 16.6 percent prior to the Aquino administration to 28.5 percent in March 1987 may have distortionary effects on the production structure. This results from the fact that: (1) fuel oil is a major input in the production of a number of goods like cement, fertilizer, steel, logging and wood processing, textiles, rice, sugar, and coconut oil milling, food processing, etc.; and (2) there is no existing tax credit provision for taxes paid on, petroleum products under either the old sales tax system or the present value added tax.

Under the old sales tax system, taxes on petroleum products are not creditable against the sales tax on the output because petroleum products do not physically form part of the end product. On the other hand, under the value added system that is currently in place, taxes on petroleum products are not creditable against output taxes because petroleum products are exempted from the VAT.

- c. The 1990 tax measures include sharp increases in the excise tax on so-called sin products such as cigarettes and beer.

#### 4.3.6. Export Taxes

- a. To lessen the windfall gains received by producers of traditional export commodities in the early 1970s, the stabilization tax imposed temporary taxes of 4 to 10% ad valorem on such commodities. Furthermore, an additional tax was levied in February 1974 on the premium derived from the increase in export price beginning in 1973. This premium export duty had rates from 20 to 30% and were applied to the difference between the ruling export price and the base price. However, when



increases. in the prices of commodities tapered down towards the end of 1974, the premium tax become ineffective (except for sugar in 1975) and even the regular export tax was temporarily withdrawn on export commodities hardest hit by the recession (Bautista, et al, 1979)

- b. Prior to the 1986 tax reforms, an ad valorem tax levied on the gross f.o.b. value of certain exports amounted 20 percent for logs, 15 percent for copra, nine percent for coconut oil, eight percent for copra meal and desiccated coconut, four percent for abaca, lumber and veneer, pineapple and pineapple juice, and two percent for bananas (Manasan, 1990).
- c. The 1986 tax reform package eliminated all export taxes except that on logs.

#### 4.4. Trade Policies

Past studies of industrialization in the Philippines concluded that the nature of government policies pursued since the 1950s to promote industrialization in the country has caused a low record of productivity growth in the industrial sector and the failure to significantly help in the alleviation of unemployment, underemployment and poverty in the country (Pante and Medalla, 1990). These government policies included import substitution through import controls in the 1950s; high tariffs and quantitative restrictions in the 1960s and 1970s (The tariff code which took effect on January 1, 1973 was said to simplify the previously very complicated tariff schedule by reducing the number of tariff rates to only six. However, ILO indicated that it increased import duties on 796 items in the old tariff code, lowered them on 541 items and did not change the rates in 392 items.); accompanied by liberal financing and investment incentives favoring large and capital intensive industries, particularly in the 1970s; overvalued exchange rates; and increasing direct government participation in industrial production.

The performance of the manufacturing sector during the period was characterized by Pante and Medalla (1990) as having had:

1. Limited labor absorption

2. Declining total factor productivity.
3. Little change in structure. (The structure of production has not changed much since 1970, with the production of consumer goods accounting for the largest share of about one-half of manufacturing value added on the average, followed by the production of intermediate and capital goods).
4. Concentrated production structure in Metro Manila
5. Biased structure against small and medium scale industries. The import and exchange controls of the 1950s and, later, the import restrictions of the 1960s and 1970s undoubtedly favored large enterprises which have both the economic and political power to influence the allocation of import licenses and foreign exchange. In addition, large firms had the advantage over SMIs in terms of their ability to transact business with the BOI for the registration and availment of incentives. With respect to technology, large industries have had access to foreign technologies through licensing agreements or equity participation by foreign firms. The upgrading of the low productivity technology of SMIs has not received adequate government support. Export promotion measures have also not been neutral as to size of firm, especially because of the cost of incentive availment and the late release of imported inputs for exports (Pante and Medalla, 1990).
6. Increasing share of nontraditional exports in total exports but nontraditional manufactured exports concentrated in only three products, namely semi-conductors, garments and handicrafts (which comprised two-thirds of all nontraditional manufactured exports). The share of nontraditional manufactured exports has risen only by 8.3 percent in 1970 to a little over three-fourths in 1988.
7. Biased incentive structure in favor of capital intensity. Capital labor ratios increased significantly in many subsectors of manufacturing, most probably in food, beverages, chemicals, cement, iron and steel, fabricated metals and transport equipment.

The Philippines has employed a restrictive trade regime to promote import-substituting industries, starting as early as the 1950s. There were short periods of decontrol but on the whole, the import-substitution bias has persisted (Pante and Medalla, 1990).

Major trade reforms were undertaken in the 1980s. These trade reforms started in 1981 and contained three components, namely: (1) the 1981-85 Tariff Reform Program (TRP) the main feature of which was reduction of the maximum rate of duty from 100 percent to 50 percent; (2) import liberalization; and (3) indirect tax realignment. While TRP proceeded as planned, the indirect tax realignment was implemented only in the later part of 1985 because of the balance of payments crisis which erupted in August 1983.

The import liberalization program initiated in the early 1980s was later expanded. From 1986 to 1989, import restrictions on 1,477 PSSC lines were lifted, reducing the number of regulated items as a percentage of the total number of PSSC lines from around 34.1 percent in 1985 to 8.0 percent by the end of 1989. In addition, all export taxes were abolished, except for logs.

On the whole, the trade reform program from 1986 to 1988 succeeded in bringing down nominal and effective rates of protection and in reducing variation across sectors. Nonetheless, Pante and Medalla (1990) opined that the implemented reforms have not been sufficient in altering the biases of the protection system against exports. Assessing the trade policy regime as of the mid-1990s Krugman, et al. (1992) concurred with the same conclusion that the policy is highly biased against trade. Accordingly, further reforms are needed to lower the level and dispersion of effective protection. Moreover, it is important for the government to continue the implementation of the import liberalization program as scheduled in order to give a consistent policy signal to the private sector.

The current thrust of government policy in this area is towards greater trade liberalization and a near-uniform tariff of 15 percent. Hence, quantitative restrictions such as import bans and licensing requirements for importation on various items have been removed. Also, the tariff range has been narrowed down through E.O. No. 470. While removing a number of items from the list of regulated imports, tariffs on these items were simultaneously raised through E.O. No. 8. The issue raised by these reforms, however, is that there would be no gains in efficiency (although the government augments its revenue) if the new tariffs would be

as high as the quantitative protection (PIDS Poverty Study Group, 1992).

Reforms in the tariff structure under EO 470 began in August 1991 when the total number of harmonized tariff lines were reduced by 10% from 6193 PSCC lines to 5561 lines. Reforms will end in July 1995, by which time tariff rates would have been clustered around four levels: 3%, 10%, 20%, and 30% (DTI, July 1992). The tariff adjustments cover 80% of the items in the Tariff and Customs Code adhering to the basic text of the International Harmonized Coding System for easier customs administration. DTI also reported that imports of raw materials, semi-processed materials and capital equipment were levied lower tariffs under E.O. No. 470 effective July 1, 1992. DTI added that before the lower rates became effective, packaging materials such as cartons, crates and similar articles were slapped a 50% tariff duty. The current rate which is 40% is scheduled to be reduced to 30% in 1994 and to 20% in 1995.

In 1991, tariffs on dryers for agricultural products, paper and paper board, bulldozers and machine tools were lowered from 20% to 10%. Such reduction is expected to cut prices of essential inputs; lower price of consumer goods; and enhance the competitiveness of local industries in the domestic and overseas markets. Import-dependent industries such as packaging and paper, metal and engineering, electronics and consumer durables, and the agricultural sector would benefit from the tariff cuts.

#### 4.5. Financial Policies

The objectives of the government's reform program in the financial sector are: (1) improvement of the financial structure through the strengthening of CB supervision and regulation of financial institutions, freer entry into all areas of banking and finance to encourage competition and enhance the efficiency of financial intermediation, rehabilitation and rationalization of the operations of the Philippine National Bank (PNB) and the DBP, and divestiture of at least the majority stockholdings of government-acquired banks by the end of 1988; (2) improvement of the rural credit market through the rationalization and strengthening of the rural banking system; (3) rationalization of government regulations affecting intermediation cost, including the gradual reduction in reserve requirements when circumstances so warrant, repeal

of the agri-agra requirements and abolition of the gross receipts tax; (4) continued adoption of a market-determined interest rate policy through the elimination of all remaining forms of interest rate subsidies to specific sectors; and (5) development of the domestic capital market through the strengthening of the securities market and the development of a secondary market for government securities. (See Lamberte and Relampagos (1990) for a more detailed discussion of reforms in the financial sector during the period 1986-1988). A \$300 M Financial Sector Adjustment Loan has been extended by the World Bank to the Philippines to assist the government in the implementation of its reform program covering the financial sector (Pante and Medalla, 1990).

To improve the financial structure, the government has taken the following major actions: (1) expansion of the coverage of the single borrower's limit to include contingent liabilities in the determination of the limit; (2) imposition of ceilings on outstanding guarantees that a bank can issue; (3) adoption of the policy whereby the CB will refrain from sustaining weak banks except in times of general financial emergency or when specific banks face problems of liquidity rather than of solvency; (4) relaxation of barriers to entry by terminating the moratorium on new bank licenses and eliminating the prerequisite investment in government securities for purposes of opening bank branches; (5) completion of the rehabilitation of PNB and DBP; and (6) divestiture of government stocks held in acquired banks (Pante and Medalla, 1990).

#### 4.4.1. Interest Rate Policy

The Anti-Usury Law which gives a ceiling on the interest rates that maybe charged on loans is implemented to control the rate and direction of investment by influencing the structure of interest rates. Prior to 1978, the Law restricted the nominal interest rate of lending by banks to 12% on secured loans and 14% on unsecured loans. Banks employ, however, various ways such as imposition of service charges and deduction of the interest charges upon approval of the loan instead of at maturity thus making the effective interest rates as high as 15% and 16% in the early 1970s. Hence, in early 1978, the CB imposed a statutory limit on the effective rate of interest (nominal rate plus bank charges, etc.) instead of on the nominal rate - 12%

effective interest rate for secured loans and 14% for unsecured loans (Mejia, 1979).

The Anti-Usury Law also sets a 7.5% and 7% ceiling on deposit rates for savings bank and commercial banks, respectively. These rates are far below the ceilings on lending rates.

The setting of ceilings on interest rates on savings deposits and loans were, however, criticized for creating distortions in the capital market. To control the allocation of investments the CB granted differential interest rates on loans for priority activities. Such loans were generally granted by government supported institutions but private banks were likewise encouraged to grant preferential rates to priority industries. From December 1971, the maximum interest rate that can be charged by commercial and thrift banks, including other charges, on loans for export activities was 9%; for small-scale industries (also for the production of rice and corn, poultry and piggery, fishing, feed grains and sorghum), 12%.

In May and October 1978, adjustments were made to expand the coverage to include, among others, those listed under Priority I-A of CB Circular No. 223 and activities involving the production of copper, nickel metal and nickel and cobalt in mixed sulphides.

Listed below are nonfarm enterprises falling under Priority I of CB Circular 223 as amended:

- A. Economic Activities Eligible for Credits up to Eighty Percent (80%) of Loan Value of Credit Instrument:
  - 1. Base Metal Industries
    - a) Blast furnaces, steel work and rolling mills
    - b) Iron and steel basic industries
    - c) Iron and steel foundries
    - d) Nonferrous metal basic industries
  - 2. Chemical and Chemical Products
    - a) Basic chemicals
    - b) Drugs and other pharmaceutical preparations
    - c) Fertilizer
  - 3. Coconut Products and Their Preparation
    - a) Coconut oil, edible
    - b) Coconut oil, inedible
    - c) Copra meal and cake

4. Electrical Machinery, Apparatus and Appliances
  - a) Transmission and distribution equipment
5. Food Manufacturing
  - a) Canning and preserving of fish and other sea foods
    1. Fish canning
  - b) Canning and preserving of fruits and vegetables
    1. Canning, drying, brining, pickling or otherwise preserving or preparing vegetables
    11. Canning, drying or otherwise preparing and preserving fruits
  - c) Slaughtering, preparation and preserving of meat
  - d) Sugar factories and refineries
    1. Sugar refining plants
  - e) Miscellaneous food preparation
    1. Prepared feeds for animal and fowls
6. Furniture and Fixtures Manufacture
  - a) Rattan and bamboo furniture
7. Leather and Leather Products
  - a) Tanning and finishing
8. Lumber and Wood Products
  - a) Veneer, plywood and prefabricated products
9. Machinery, Equipment, Accessories and Parts
  - a) Agricultural machinery
  - b) Engines and turbines
  - c) Industrial, construction and mining machinery
10. Nonmetallic Products
  - a) Cement
11. Paper and Paper Products
  - a) Pulp, paper and paperboard
12. Petroleum and Coal Products
  - a) Coke
13. Textile, Cordage and Twines Manufactures
  - a) Cordage, rope, twines and nets
  - b) Hemp milling, abaca stripping and baling establishments
  - c) Knitting mills
  - d) Spinning, weaving and finishing of textile

14. Transportation Equipment and Parts
  - a) Aircrafts and parts
  - b) Motor vehicles, equipment and parts
  - c) Motorcycles, bicycles and parts
  - d) Railroad equipment
  - e) Ships and boats

15. Miscellaneous Manufacturing Industries

- a) Laboratory, engineering and medical instruments

B. Economic Activities Eligible for Credits up to Sixty-Five Percent (65%) of the Loan Value of the Credit Instrument

1. Chemical and Chemical Products
  - a) Dyeing and tanning materials
  - b) Explosives (excluding firecrackers)
2. Coconut Products and their Preparations
  - a) Desiccated coconut
3. Electrical Machinery, Apparatus and Appliances
  - a) Communication equipment
  - b) Dry cells and storage batteries
4. Food Manufacturing
  - a) Canning and preserving of fruits and vegetables
    - i. Fruits and vegetables, sauces and seasoning
  - b) Dairy products
    - i. Milk processing
  - c) Miscellaneous food preparations
    - i. Coffee roasting, grinding and/or processing
5. Furniture and Fixture Manufacture
  - a) Wood furniture
6. Lumber and Wood Products
  - a) Cork
  - b) Sashes and doors
  - c) Sawn and planed lumber
  - d) Wood chips
7. Machinery, Equipment Accessories and Parts
  - a) Office and store machines and devices



8. Metal Industries
    - a) Cutlery, handtools and general products
    - b) Fabricated structural and metal products
    - c) Tin and aluminum ware
  9. Nonmetallic Products
    - a) Glass and glass products
    - b) Structural clay products
  10. Textile, Cordage and Twines Manufactures
    - a) Jute bags and sacks
  11. Miscellaneous Manufacturing Industries
    - a) Cottage native handicraft industries
    - b) Footwear (other than rubber)
    - c) Photographic and optical goods
- C. Economic Activities Eligible for Credits up to Fifty Percent (50%) of the Loan Value of the Credit Instrument
1. Apparel and Other Finished Products Made from Fabrics and Similar Materials
    - a) Embroidery shops
    - b) Wearing apparel
  2. Chemicals and Chemical Products
    - a) Paints, varnish and lacquers
    - b) Soaps and other cleansing preparation
  3. Coconut Products
    - a) Copra
  4. Electrical Machinery, Apparatus and Appliances
    - a) Electrical lamp
    - b) Household appliances
    - c) Radio, television, telephone receiving sets, electronic tubes and components
  5. Food Manufacturing
    - a) Canning and preserving of fish and other sea foods
      - i. Fish sauce (patis) manufacture
      - ii. Shellfish curing, smoking, salting or pickling n.e.c.
    - b) Cocoa, chocolate and sugar confectionery
      - i. Cocoa and chocolate processing factories
    - c) Grain Mill Products
      - i. Corn mills

- ii. Rice mills
  - iii. Tuber flour mills
  - iv. Wheat flour
- d) Miscellaneous food preparations
  - i. Salt manufacture
  - ii. Starch and its products
  - iii. Vegetable lard and margarine manufacture
  - iv. Vermicelli and noodles manufacture
- 6. Lumber and Wood Products
  - a) Creosoting and other wood treating
- 7. Metal Industries
  - a) Fabricated wire products
  - b) Metal stamping, coating and engraving
- 8. Non-Metallic Products
  - a) Plastic products
  - b) Pottery, china, earthenware
  - c) Concrete aggregate
  - d) Concrete products
    - i. Cement products light weight aggregate
    - ii. Pre-mold concrete light weight aggregate
- 9. Paper and Paper Products
  - a) Coated and glazed paper products
- 10. Printing, Publishing and Allied Industries
  - a) Book publishing and printing
  - b) Newspaper and periodical publishing
- 11. Tobacco
  - a) Cigar and cigarette factories (native)
- 12. Miscellaneous Manufacturing Industries
  - a) Oxygen, acetylene and similar products
  - b) Silver and gold work without precious stones
  - c) Musical instrument and parts
  - d) Blank recording disc
  - e) Metal stampers

The maximum lending rates that can be charged by commercial and thrift banks to various types of priority onfarm enterprise borrowers are as follows:

- 1. Those engaged in export-oriented activities, small-scale cottage industries, and activities

- under Priority I-A of Circular No. 223 - 9% plus charges not greater than 1%.
2. Those engaged in the production of cobalt and nickel metal - 6% plus bank charges not greater than 2%.
  3. Those engaged in non-export oriented small-scale/cottage industries under Priority I-B and C of Circular No. 223 - 10%.

Financial policies were liberalized when the Monetary Board was authorized to set maximum lending rates starting in 1993 rendering obsolete the Usury Act of 1916. The period from 1974 to 1980 was considered the transition period for such financial liberalization. Interest rates were still fixed but the Monetary Board constantly adjusted the rates to reflect market conditions.

The floating interest period began in 1981 when interest rate ceilings on all types of deposits and loans except short-term were lifted. However, the ceiling on short-term loans were only lifted in 1983.

In 1984, a liquidity and balance of payments crisis speeded up new financial liberalization efforts in the form of floating interest rates. The rates on time deposits increased from 14% per year in 1980 to 15.6% per annum in 1981. It then soared to 32.5% in 1984 due to a 50% inflation rate (Gochoso, 1989).

Rediscount privileges were given by the CB to banks granting loans to people engaged in priority production activities. The CB allowed lower rediscount rates for the more preferred activities, e.g. food production and export-oriented activities. In 1971, small-scale and cottage industries began to receive preferences in terms of rediscount privileges while in 1978, copper, nickel metal and nickel and cobalt in mixed sulphides were among the preferred areas.

In 1968, the rediscount rates which the CB charged for all banking institutions, except rural banks were 5.75% on borrowing secured by eligible credit instruments pertaining to export activities falling under Priority I and 7.5% on borrowing based on all other credit instruments. In 1971, the Rural Banks were given a rediscount rate of 3% per year for papers covering loans under a supervised credit system, including the production of essential food items, export-

oriented industries, cottage industries, and exportable manufactured products where no imported materials are used.

For commercial and thrift banks (savings and mortgage banks, stock savings and loan associations), the rediscount rates were adjusted in 1974. For financing and export activities, the rediscount rate was lowered from 5.7% to 5%. For small-scale industries, a rediscount rate of 5% was also set by the CB. Borrowings on all credit instruments pertaining to economic activities under Circular No. 223 were granted the following rediscount rates: Group A - 6%, Group B - 7%, and Group C - 8%, for 80%, 65% and 50% of their loan values, respectively. When a bank grants a loan to a borrower under Group A, the CB can lend the bank an amount equivalent to 80% of the value of the loan of the bank to the borrower at an interest rate of 6%.

From May 1978 till March 1979, the following were the rediscount rates granted for the various nonfarm priority activities:

- 1) Small-scale and cottage industries; export-oriented activities; copper and nickel metal production; and those listed under Priority I-A of Circular No. 223 - 4% for 80% of the total loan value.
- 2) Activities under Priority I-B and C - 9% for 60% of the loan value

Under this scheme, banks obtained a gross profit margin of slightly less than 4% for loans granted to copper and nickel metal production and almost 6% for the others.

In April 1979, the CB revised its credit policies by relaxing its rediscount rules so as to provide more funds to production. The rediscount rate on loans for export-oriented small-scale and cottage industries was lowered from 4% to 3%. The loan value for papers of this type was also increased from 80% to 100%. Loans for food processing, domestic fertilizer production and food manufacturing for domestic consumption were likewise granted a 3% per year rediscount rate for 100% of the loan value. Loans for non-export oriented small-scale and cottage industries under Priority I-B and C of amended Circular No. 223 received a 6% rediscount rate as compared with the previous rate of 9%, for 80% of the loan value instead of 60%.

The medium and long-term rediscounting facility allowed banks to rediscount papers for the acquisition of assets,

working capital, and investment in affiliates and high grade securities. Whatever is the maturity, the CB allowed any paper to be accepted as security to encourage the transformation of short-term loans to medium and long-term loans. Banks, however, tended to just borrow from the CB rather than attempt to increase the supply of loanable funds by mobilizing savings. This caused a reduction in the volume of financing vis-a-vis requirements (Gochoco, 1989).

Another CB regulation is the requirement from banks in the regions (outside Metro Manila) to invest within the region where they are located at least 75% of their total deposits. When a bank has two or more offices in a particular region, the policy is considered complied with if the aggregate investment of such banks' offices is not below 75% of its deposits held in that region, and provided that the bank devotes at least 60% of the 75% ratio of aggregate investment for loans financing agricultural and export industries.

In line with the promotion of export-oriented activities and cottage industries, investment is aimed to be stimulated further by relaxing the rediscount ceiling for such activities. Starting 1978, any bank that was eligible to rediscount and whose rediscount ceiling had already been reached was entitled to an increase in its existing rediscount ceiling by 50% provided that the loan would be used exclusively for the financing of nontraditional exports, small-scale and cottage industries. In March 1979, commercial banks, for purposes of rediscounting their export papers with the CB, were allowed to avail themselves of additional 50% beyond their existing basic rediscount ceiling.

Foreign borrowings and foreign investments are likewise channeled to preferred areas. In the approval of foreign borrowings and foreign investments, the CB gives preference to the following:

- a) Export-oriented industries
- b) BOI-approved industries
- c) Non-export-oriented industries not utilizing domestic credit resources
- d) Firms using relatively labor intensive methods, and
- e) Firms implementing geographical dispersal (i.e. located outside Metropolitan Manila)

#### 4.6. Labor Policies and Programs

The government's overall policy direction for the labor sector is contained in the Medium Term Development Plan of the Philippines for 1987-1992. The Plan underscores the promotion of employment through the use of more labor-based techniques in all productive sectors, the provision of means for labor to receive its fair share and for capital to obtain a reasonable return on investments. The setting of wages and other terms and conditions of employment through collective bargaining is being promoted. In addition, the workers have the right to organize, to free collective bargaining, and to strike in accordance with the law.

The Philippine Constitution which was ratified in 1987, likewise provides the general policy setting for the labor sector. The Constitution recognizes labor as a primary social economic force thus the state is mandated to provide full protection to labor, local and overseas, organized and unorganized, and promote full employment and equality of employment opportunities for all. The creation and promotion of employment, being a key factor in the reduction of poverty is one of the major concerns of the government.

##### 4.6.1. Labor Laws

Some of the laws concerning labor and employment relevant to rural nonfarm enterprises are the following:

##### A. Wages, salaries and other forms of compensation

1. Republic Act (R.A.) No. 6640 - Passed in 1987, this act provides for an increase in the statutory minimum wage and salary rates of employees and workers in the private sector.

2. R.A. No. 6727 - Wage Rationalization Act - This act rationalizes the fixing of minimum wage to promote productivity improvement and gain showing to enhance employment in the countryside through industry dispersal; and to allow business and industry reasonable returns on investment, expansion and equitably considering existing disparities in the cost of living and other socioeconomic factors.

## B. Labor Relations

1. R.A. No. 6715 - An Act to extend protection to labor, strengthen the constitutional rights of workers to self-organization, collective bargaining and peaceful concerted activities, foster industrial peace and harmony, promote the preferential use of voluntary modes of settling labor disputes, and reorganize the National Labor Relations Commission, amending the Labor Code of the Philippines.

2. E.O. No. 47 - reorganized the National Labor Relations Commission in 1986 to professionalize the labor dispute settlement machinery and to clear NLRC of sectoral interest.

## C. Labor Standards and Workers' Welfare

1. E.O. No. 28 - further amended in 1986, certain provisions of RA No. 1161 or the Social Security Law. The E.O. provides for the feasible increases in benefits and addition of new ones without increasing the contribution and for the constant upgrading of the benefit structure for the low income group. Amendments cover monthly pension, funeral benefit and sickness benefit.

The most recent adjustments in the minimum wage is Republic Act No. 6727 also known as the Wage Rationalization Act, which allows for a 25-peso increase in the minimum wage effective July 1989 of workers in the National Capital Region and outside except for those in the cottage/handicraft industries and business enterprises with a capitalization of not more than ₱ 500,000 and employing not more than 20 workers. These workers would receive an increase of ₱ 15 per day.

With the implementation of EO No. 178, RA 6640, and RA 6727, the legislated money wages of workers in both the public and private sectors increased. RA 6640 raised the minimum wage of Metro Manila non-agricultural workers to ₱ 69.33 per day. Effective July 1989, the legislated minimum wage was ₱ 94.33. In real terms, however, these increases are very small for they have been eroded by rising prices of goods and services.

The National Wage Council (NWC) formulated a Wage Policy Review Program which was aimed at determining an

alternative system of minimum wage fixing that will bring about better income distribution. The program consists of regular price monitoring and cost of living analysis including the effects of price changes on wages and the purchasing power of the peso. It likewise generates occupational wage data in the various industries.

EO 111 strengthens trade unionism by abolishing provisions in the Labor Code which limit the workers' rights and hinder them from bargaining collectively with their employers. In essence, the law which strictly pursues the one-union-one-industry policy was repealed. Likewise, reduced the required percentage for union registration was from 30 to 20 percent while the two-thirds strike vote requirement was revised to a simple majority vote. The EO also allows unions to ignore the 15-day cooling-off period in case of union busting, and orders the military and the police forces to keep out of the picket lines in cases of strikes. Moreover, LOI 1458 which allows management to replace striking workers who defy return to work orders was repealed.

EO No. 807 issued in 1987 established the Occupational Safety and Health Center (OSHC) under the supervision of the Employee's Compensation Commission in order to upgrade the capability of the government to eliminate or reduce work-related injuries, illnesses and deaths.

Dept. Order No. 16-A Series of 1987 provides for the creation of a Tripartite Review Committee that will study the existing labor relations provisions of the Labor Code, with the view of determining changes and improvements on the laws which can be recommended to the President and to congress to bring about the effective promotion of industrial peace, social justice and national recovery.

BLR-DOLE also launched projects such as the UP-IIR/DTI Promotion of Harmonious Industrial Relations Project (PHIR) and the Labor Education Program (LEP). The former has the promotes industrial peace through the implementation of activities that support preventive efforts and enhance cooperation between labor and management. The latter aims to provide information on labor laws, policies, rules and regulations, to labor and management through dialogues and seminars.



#### 4.6.2. Job Creating Programs

Some specific programs to create employment opportunities include the following:

a. National Reconciliation and Development Program (NRDP)

The NRDP was established to coordinate and integrate the programs, projects and other efforts of all government and non-governmental organizations towards national reconciliation. Legal, technical, financial and educational assistance is provided to rebel returnees for them to be able to engage in economic activities by finding productive employment or becoming self-employed.

It involves 15,291 insurgency affected barangays and at least 5000 of the regular armed members of the insurgency movement. Local jobs are provided through the CEDP projects whereas the processing of overseas job applications are facilitated by POEA.

The other NRDP program components include the Rebel Returnees Livelihood Assistance Financing Program of DTI which extends loans to finance small scale business like bakery, basket weaving, dressmaking, tailoring and other related single proprietorship and income-generating activities.

b. Tulong sa Tao (TST) Employment Creation Program

Under the auspices of the Bureau of Small and Medium Industries of the DTI (BSMI-DTI) and accredited financial institutions, the TST Program is designed to increase employment opportunities and income in the rural areas. TST offers financial and technical assistance to micro entrepreneurs, government retirees, and ex-detainees to expand or start livelihood projects as well as to potential contractors and subcontractors on machinery acquisition or transaction financing.

c. Movement for People's Livelihood and Welfare (MPLW) Program

The objective of this program is to promote livelihood or self-employment opportunities in the rural areas.

d. Self-Employment and Entrepreneurial Development (SEED) Program

This program offers training on self-employment and entrepreneurship for the unemployed and idle families of overseas workers.

An inter-agency committee on employment programs monitoring (IAC-EPM) was set up at the Department of Labor and Employment (DOLE) in early 1989 to monitor the various employment programs.

#### 4.7. Regional Dispersal of Industries

The government's objective and strategy in the regional dispersal of industries are spelled out in the Medium Term Philippine Development Plan 1987-1992 as follows:

The dispersal of industries to the regions shall be pursued to create employment and income opportunities in the countryside and to slow down rural out-migration. Towards this end, emphasis shall be given to labor-intensive, rural-based industries that are consistent with the region's natural and human resources. Specifically, the development of micro, cottage, small and medium resource-oriented and agro-based types of industries shall be supported.

Efforts in industrial dispersal shall focus on the promotion of rural credit, the selective decentralization of government services to facilitate administrative processes and procedures, and the provision of better and more reliable industrial support services such as infrastructure, access to markets and technology, product development and skills upgrading.

Among the major instruments for industrial dispersal are: (1) fiscal incentives; (2) development of industrial estates and export processing zones; (3) credit and financial policies, particularly those supporting small and medium scale industry development; and (4) zoning regulations. While infrastructure expenditure policy has been recognized as a potentially effective tool for the regional dispersal of industries, this has not been pursued actively (Pante and Medalla, 1990).

#### 4.7.1. Fiscal Incentives

a. The use of fiscal incentives to promote industrial dispersal started in 1973 with the amended Export Incentives Act (PD 6135 as amended). A registered export producer whose plant is located in a BOI-designated area obtains additional incentives such as: (1) increased deduction from taxable income by doubling its direct labor costs up to 25.0 percent of export revenues; (2) a tax credit equivalent to 100 percent of the cost of such necessary infrastructure facilities as portworks, waterworks and roads put up by the export producer.

b. BP44, the "Investment Promotions Act for Less Developed Areas," was enacted in 1979 under which all BOI-registered enterprises locating in BOI-designated "less developed areas" could avail of all incentives previously granted only to pioneer enterprises, except the exemption from sales tax payment.

c. The Omnibus Investments Code of 1987 provided fiscal incentives for industrial dispersal. The incentives available under BP 44 were combined with those provided for in the 1973 Export Incentives Act, i.e., tax deduction of up to 100 percent of the cost of necessary and major infrastructure works undertaken by the investor.

#### 4.7.2. Development of Industrial Estates (IEs) and Export Processing Zones (EPZs)

One of the mechanisms utilized by the government to promote the regional dispersal of industries is the development of industrial estates and export processing zones. Export processing zones under the Export Processing Zone Authority (EPZA) were provided with a host of fiscal incentives including: (1) exemption from customs duties and internal taxes of capital equipment, raw materials and supplies, local taxes and licenses, except real estate taxes, contractor's tax, wharfage dues and export tax; (2) deduction of labor training expenses, organizational and pre-operating expenses; (3) tax credit on taxes paid on supplies and raw materials; and (4) net operating loss carry-over and accelerated depreciation.

Past studies of the performance of EPZs and IEs in the Philippines (COWIConsult 1983; Louis Berger International, Inc. 1986) concluded that on the whole, these policies have been underutilized and have not been effective instruments in the regional dispersal of industries. Moreover, the EPZs and IEs have been concentrated within the periphery of Metro Manila. The IE program has also been characterized by deficiencies in the institutional set-up, exemplified by the multiplicity of agencies involved in IE development and by lack of coordination among them.

#### **4.7.3. Credit and Financial Policies**

The majority of the special government credit programs were aimed at promoting the development of small and medium scale enterprises. The same credit programs were utilized to provide credit support for the regional dispersal of industries. For instance, the Development Bank of the Philippines (DBP) financed SMIs in a massive scale starting 1973. It gives priority to activities that are export-oriented, import substitutes, labor-intensive, and largely dependent on locally produced raw materials and to projects located in the rural areas. Financial assistance is granted to individuals, partnership and corporations with capitalization of at least 60% by Filipino citizens, engaged or intending to engage in preferred industrial projects. Assistance is given in the form of straight peso loans; foreign currency loans under the IBRD credit line; guarantees to peso and foreign currency loans extended by other financial institutions; and equity investments, either in common stocks or preferred shares of firms. Financing is extended to projects which are in line with the national investment priorities, preference being accorded to projects registered with the BOI under the Investment Incentives Act or the Export Incentive Act.

In 1975, the government directed the DBP and the Industrial Guarantee and Loan Fund (IGLF) to channel 60.0 percent of their loan portfolios to areas outside Metro Manila. The following year, the CB required commercial banks and thrift banks to invest 75.0 percent of the total deposits of their branches in the areas where these were located.

The lending programs, however, have not been effective in encouraging the regional dispersal of industries (Tecson, et al, 1989). There was heavy concentration of special

lending operations in Metro Manila and adjoining Regions III and IV, for a number of reasons such as: (1) centralization of the credit decisionmaking process in the head offices of participating institutions; (2) almost exclusive reliance, particularly in the case of IGLF, on accredited commercial banks whose branches are generally located in cities and whose head offices are usually in Metro Manila, as conduit of funds; and (3) lack of information on the availability of special credit programs, particularly in the remote regions of the country (Pante and Medalla, 1990).

#### 4.7.4. Zoning Regulations

Zoning is a more direct way of addressing the problem of overconcentration of industry in a particular area. In December 1973, the government banned the establishment of all new plants and factories within a 50-kilometer radius of Metro Manila. In order to implement this directive, all new industrial projects were required to secure a locational clearance from the Human Settlements Regulatory Commission (HSRC). Subsequently, the Commission formulated and issued a comprehensive zoning ordinance which formed the basis for the zonal plan in Metro Manila. However, due to weak enforcement characterized by the liberal grant of exemptions and grace periods, the zoning regulations did not work (Pante and Medalla, 1990).

New strategies and measures have recently been considered to facilitate the regional dispersal of industries. The DTI has proposed an industrial dispersal program involving the development of identified alternative industrial locations outside of Metro Manila into attractive and viable industrial centers. The developmental activities in the identified areas consist of "(1) decentralization and strengthening of trade and industry-related services and facilities; (2) improvement of infrastructure facilities, utilities and credit delivery system; and (3) adoption of a more competitive and rational pricing of transport and utilities."

According to DTI, priority in the program implementation shall be accorded to cities/municipalities with strong industrial potential and with fairly developed infrastructure and utilities. More specifically, DTI's set of criteria for the selection of industrial centers is composed of seven factors, namely (1) market size, including the export market; (2) availability of labor;

(3) manufacturing base; (4) business services; (5) social amenities; (6) infrastructure and utilities; (7) other considerations such as availability of raw materials, peace and order situation, distinct comparative advantage, and business dynamism in the locality.

#### 4.7.5. Kalakalan 20

On December 14, 1989, Republic Act No. 6810 establishing the Magna Carta for Countryside and Barangay Business Enterprises otherwise known as "Kalakalan 20" was signed into law by President Aquino. It provides that all Countryside and Barangay Business Enterprises (CBBEs), defined as those whose employees do not exceed 20, with assets not exceeding P500,000 before financing, and located in the "countryside", shall be exempted from local and national taxes, license and building permit fees and other business taxes, except real property and capital gains taxes, import duties and other taxes on imported articles. They shall also be exempt from any and all government rules and regulations covering assets, income, and other activities connected with the business of the enterprise. These exemptions are applicable for a period not exceeding five years from the date of registration of the CBBE. The CBBE, however, shall pay a registration fee of P250.00 and some form of a license fee starting on the second year of operations which ranges from P1,000 to P5,000 per annum depending on the net assets before financing.

To promote the regional dispersal of industries, measures should be made to mitigate or remove the major constraints (such as provision of basic infrastructure and access to credit) faced by the enterprises in the regions. Also, policies on regional dispersal of industries should not be considered separately from the overall economic development strategy of the country.

#### 4.7.6. Program for the Development of Small and Medium-Scale Industries

One of the goals of the government has been the development of small and medium-scale industries (SMIs). The role of SMIs can be seen in job creation, creating general and entrepreneurial skills, in the regional

dispersal of industries, and in lessening to some extent the problem of income inequality. However, the major distortions which created biases against the SMIs were induced by trade policies especially foreign exchange and import controls as well as investment incentives policies particularly the complex rules and procedures which were outside the reach of SMIs. Likewise, the major export promotion programs have created some biases against SMIs due to similar complexities in rules and procedures (Pante and Medalla, 1990).

In view of such built-in policy biases against SMIs financial and technical assistance programs have been implemented by the government to spur SMI development.

Designed for cottage, small and medium scale enterprises, the financial assistance programs were intended to serve as a lending and/or guarantee mechanism. As a lending mechanism, the more important programs include the Industrial Guarantee and Loan Fund (IGLF), The Development Bank of the Philippines (DBP) SMILE Program (Small and Medium Industries Lending), and the various programs under the Technology and Livelihood Resource Center (TLRC).

The IGLF is a revolving fund administered by the CB to cater to the financing needs for working capital and acquisition of fixed assets of SMIs. A special feature of the IGLF program is the relaxation of the collateral requirements for borrowers with insufficient collaterals. Banks can lend to these borrowers at a minimum collateral because the IGLF shoulders up to 80% of the ultimate loss which the banks may incur in case of default by the borrowers. In addition, the special time deposit program transfers a certain amount from the IGLF to a commercial, investment, development, rural or savings bank, in the form of special deposits to raise the amount available for making loans to their clientele.

Some of the important considerations in evaluating projects for possible financing are the essentiality of the project, especially with respect to its dollar-earning or dollar-saving capacity and the number of jobs that are expected to be generated.

IGLF loans were charged a maximum interest rate of 12% per annum.

The DBP SMILE program is intended to offer the wide array of DBP lending facilities to SMIs.

The TLRC manages six major lending programs to SMIs, namely: (1) Agro-Industrial Technology Transfer Program which was established in 1984. (2) Export-Industry Modernization Program (EIMP); (3) Enterprise Development Funding Scheme (EDFS); (4) Purchase Order Financing Program (POFP); (5) Bagong Balikatan sa Kabuhayan Program (BSKP); and (6) Technology Utilization Financing Program (TUFP).

Under the guarantee schemes are three major programs, namely, Guarantee Fund for Small and Medium Enterprises (GFSME), the Export Credit Guarantee Program for Small and Medium Industries under the Philippine Export and Foreign Loan Guarantee Corporation (PHILGUARANTEE) and the Quedan Fund.

Overall, two main weaknesses were identified by Pante and Medalla (1990) in the various financial assistance programs. These are the tendency to cater to the larger segment of the SMI sector and the concentration in the NCR. Hence, they recommended a reduction in the reliance on commercial banks and greater utilization of rural banks (with improved selection process) as conduits of SMI finance and the more extensive dissemination of information on the available SMI lending programs. Technical assistance in the field was found to be quite weak and deficient.

A support mechanism in the promotion of Cottage, Small and Medium Industries (CSMIs) is the Venture Capital Concept which is an equity financing scheme jointly undertaken by government and private sectors organized primarily to provide capital to CSMIs (NCSO, 1985). It features no collateral loans and risk-sharing. Other technical assistance extended to CSMIs are tapping nontraditional sources of funds, development of technological centers and common facilities and providing effective linkages between small entrepreneurs and the rest of the business world.

Livelihood projects launched at the barangay level to help strengthen the CSMIs around the countryside include the Kilusang Kabuhayan sa Kaunlaran (KKK) which is a support system to enhance the attainment of balanced agro-industrial development.

#### 4.7.7. Small and Medium Enterprise Development (SMED)

A significant step taken by the then Ministry of Trade and Industry to expand the development of small and medium industries was the launching in 1983 of the Small and Medium



Enterprises Development (SMED) Program funded by the USAID. The implementation of the \$30.2 M project initially focused on five regions of the country (Ilocos, Cagayan Valley, Bicol Region, Western Visayas and Central Mindanao) and three major industry sectors, namely, garments, furniture and handicrafts. SMED is divided into three components: (1) Institutional Development which develops and improves the capacity of the private sector indirectly acting as conduits for extension services to small and medium enterprises; (2) Micro Enterprises Development which identifies different approaches in the solution of problems faced by micro entrepreneurs; and (3) Employment and Enterprises Policy Research which develops the capacity of the government to obtain better information on small and medium enterprises and facilitates effective policy dialogues between the public and private sectors on issues affecting the growth and development of small and medium enterprise.

#### 4.7.8. Improvement of the Rural Credit Market

Rural banks were granted subsidies (e.g. tax exemption, training, etc.) and special time deposits by the government under special lending programs to enable them to serve rural based clientele. Supported with subsidies, the rural banking system grew rapidly and reached its zenith of 1,168 banks in 1981. When internal weaknesses in the Philippine financial system started to emerge in 1981 and the CB initiated a vigorous program of financial and banking reforms including the freeing of control on interest rates, the rural banks began to "face the vigors and discipline of the market" (Dominguez, 1988). Coupled with a large amount of arrearages from agricultural loans. Rural Banks which were not ready for market competition had to close shop. By 1986, only 856 Rural Banks remained in operation.

To help these banks recover, the Rural Bank Rehabilitation Program was introduced in 1987. The program aims to strengthen the rural banking system through a capital build-up and conversion scheme and/or a plan of payment covering rural banks experiencing financial difficulties. The former involves the conversion of arrearages into paid-in capital of the government in the form of shares of stock issued in the name of the Land Bank of the Philippines (LBP), while the latter involves an arrangement with the CB whereby the rural bank would amortize its arrearages with the CB within a period not exceeding 10 years.

#### **4.8. Investment Incentives**

A government agency with both planning and implementing functions, the Board of Investments, is charged with the task of accelerating the economic development of the country by restructuring its industrial pattern. Through a package of incentives, the BOI encourages projects that will effect dispersal of industries in the rural areas, generate employment opportunities, promote labor-intensive manufactured goods for export, develop small and medium-scale industries and increase the utilization of indigenous raw materials. These policies are calculated to bring about long run benefits to the economy in the form of foreign exchange earnings, increased export opportunities, progressive increase in domestic content, fuller utilization of existing facilities and development and improvement of management methods, technical know-how and marketing strategies.

The BOI annually prepares priorities plans indicating the preferred areas of economic activities considered essential to the development of the economy. Guidelines are formulated for the rationalization of industries to ensure that development of industries would not result in economic dislocation or overcrowding. Among such industries are car and motorcycle assembly, electrical appliance assembly, banana, shipbuilding, cement, textile, abaca and others.

The investment incentives extended by the government since 1967 are presented below. Enterprise have to be registered with the BOI for them to avail of these incentives.

##### **4.8.1. Investment Incentives Act of 1967**

A set of investment incentives was institutionalized with the Investment Incentives Act of 1967 or R.A.5186 which granted incentives to firms that undertake projects in preferred areas. It likewise encouraged foreign capital to establish pioneer enterprises which would utilize substantial amount of domestic raw materials in joint venture with Filipino capital whenever this is available.

#### 4.8.2. Export Incentives Act

In 1970, RA 6135 or the Export Incentives Act was passed encouraging new exports of manufactured products as well as the utilization of excess manufacturing capacities for export, particularly those that are labor-intensive. It also grants incentives to export trading houses which collect and export the products of fragmented and dispersed existing capacities.

#### 4.8.3. Foreign Business Regulation Act

The Foreign Business Regulation Act, R.A. 5455 of 1968 covers the entry of foreign investments in areas of business activity not listed in either the Investment Priorities Plan or the Export Priorities Plan. Through this, the BOI is able to channel foreign investments away from areas which are already adequately exploited by Filipino nationals into areas which are expected to contribute to a sound and balanced development.

#### 4.8.4. Omnibus Investment Code

Presidential Decree No. 1789, also known as the Omnibus Investment Code, was signed on January 16, 1981 to consolidate all previous investment laws, to refine and harmonize the various incentives given by the BOI, and to effectively streamline registration and availment procedures. This was sought to be achieved by implementing four investment laws, namely: R.A. 5186 or the Investment Incentives Act, R.A. 6135 or the Export Incentives Act, R.A. 5455 or the Foreign Business Regulation Act and P.D. 1159 or the Agricultural Investment Incentives Decree. These laws were designed to hasten the pace of industrialization and increase economic opportunities as well as distribute more equitably the benefits of development.

The Omnibus Investment Code was amended by the Investment Incentives Policy Act of 1983 or Batas Pambansa 391 (BPI 391) which added two incentives under the system, namely tax credit on net value earned and tax credit on net local content. Net value earned refers to the value of sales less cost of raw materials and components, factory supplies

and utilities (gas, fuel, electricity and water) and depreciation of capital equipment. Under the new system, all new and expansion projects of domestic producers will be awarded annually tax credits equivalent to 5% of net value earned, for non-pioneer projects and 10% of net value earned, for pioneer projects. Availment of this incentive is for a period of five years from start of commercial operation. Unused tax credits may be deferred and utilized in subsequent years (not exceeding 10 years) and are transferrable only to the registered firm's domestic material/equipment supplies.

Net local content refers to the value of export sales less applicable depreciation of capital equipment and the value of imported raw materials, components, supplies and indigenous commodities which the BOI may exclude if they are available under clearly more favorable terms in the local market than in the international market. These commodities are copper concentrates, tuna (raw or frozen), logs, banana or other products of similar nature which are easily available domestically at very advantageous prices but are competitive as final export products. New expansion projects of final exporters are allowed a tax credit equivalent to 10% of net local content of export sales. The period of availment of this incentive is five years from date of registration and a further five-year period on an incremental basis. Like the tax credit on net value earned, unused tax credits may also be deferred and utilized in subsequent years and are also transferrable only to the registered firm's domestic raw material supplies.

Registered and existing direct export producers are also entitled to a tax credit equivalent to 10% of net local content of export sales for five years from date of registration, based on the increment in real terms, i.e. without inflation of each year's export sales over the average export sales during the three-year period immediately preceding the date of registration. EO No. 226, known as the 1987 Omnibus Investment Code superseded BP 391. It replaced the tax credit equivalent to a certain percentage of net value earned and net local content provided for in the latter by the income tax holiday for a duration ranging from three to eight years. Some evidence were cited by Pante and Medalla (1990), however, showing that BP 391 was superior to E.O. 226 with regard to promotion of labor intensive and export industries.

The Omnibus Investment Code provided the following incentives to registered enterprises to the extent engaged in a preferred area of investment.

a. Income Tax Holiday

For six years from commercial operation for pioneer firms and from years for non-pioneer firms registered new firms are fully exempted from income taxes levied by the national government. Subject to guidelines prescribed by BOI, the income tax exemptions can be extended for another year in each of the following cases:

- 1) the project meets the prescribed ratio of capital equipment to number of workers set by the Board;
- 2) utilization of indigenous raw materials at rates set by the Board;
- 3) the net foreign exchange savings or earnings amount to at least \$500 thousand annually during the first three years of operation.

b. For a period of three years from commercial operation, registered expanding firms are exempted from income taxes levied by the national government proportionate to their expansion under such terms and conditions as the BOI may determine; provided that during the period of availment of the incentive, the firm is not entitled to additional deduction for incremental labor expense.

c. Additional Deduction for Labor Expense

For the first five years from registration, a registered enterprise is allowed an additional deduction from the taxable income of 50 percent of the wages corresponding to the increment in the number of skilled and unskilled workers if the project meets the prescribed ratio of capital equipment to number of workers set by the BOI. This additional deduction is doubled if the project is located in less developed areas.

d. Tax and Duty Exemption on Imported Capital Equipment

Within five years from the effectivity of the Omnibus Investment Code (1987), importations of machinery and equipment and accompanying spare parts of new and expanding registered enterprise is exempted to the extent of 100 percent of the customs duties and national internal revenue tax payable thereon.

e. Tax Credit and Domestic Capital Equipment

A tax credit equivalent to 100 percent of the value of the national internal revenue taxes and customs duties that would have been waived on the machinery, equipment and spare parts, had these items been imported is given to new and expanding registered enterprise which purchases such items from a domestic manufacture.

f. Exemption from Contractors's Tax

The registered enterprise is exempted from the payment of contractor's tax, whether national or local.

g. Simplification of Customs Procedures

Customs procedure for the importation of equipment, spare parts, raw materials and supplies, as well as exports of processed products by registered enterprises is simplified by the Bureau of Customs.

E.O. 226 aims to make the incentive package competitive with those offered by other ASEAN-member countries. Apparently, however, it only reinstated the capital bias of the incentive system; reduced the inducements given to exporters vis-a-vis non-exporters; eliminated the linkage between incentive availment and performance; and had a bias in favor of larger firms.

In August 1992, the DTI reported that it will initiate moves in Congress to overhaul the Omnibus Investment Code to make it more responsive to present needs. Other investment incentives will likewise be reviewed in order to stimulate capital formation by introducing new forms of fiscal and non-fiscal incentives.

Under the proposed 1993 investment priorities plan (IPP) the BOI may continue granting tax incentives to expansion programs for industrial estates (MB, March 30, 1993). The proposed IPP gives preference to the registration of new projects and expansion will be limited to export-oriented projects and those costing less than P40 million or small and medium scale enterprises that meet good performance criteria. The BOI will retain the five-year lag time for registered firms to bring in their importation of capital equipment instead of the planned two-year program. This is in line with the government's tax and duty-free importation of capital equipment that is due to expire in 1997.

However, the government will require companies and their principal shareholders to submit a tax clearance before they could avail of government incentives and services (Manila Bulletin, June 5, 1993). This is in line with the government's efforts to improve tax collections and to deter tax evasion. Tax clearance will have to be obtained from the Bureau of Internal Revenue (BIR) and/or the Bureau of Customs and/or any appropriate government agency to show that an enterprise is properly paying taxes to the government. This requirement will be imposed on existing companies as well as those intending to do business. Garment companies will be asked to secure tax clearance before they can avail themselves of quotas and other benefits from the Garment and Textile Export Board (GTEB). Enterprises availing tax and duty drawbacks will be required to submit a tax clearance from the one-stop-shop center.

Other incentives have been granted to the garments and electronics industry. The Monetary Board has granted the garment industry partial exemption from the pre-shipment inspection of the Swiss-based Societe Generale de Surveillance (SGS) (Manila Bulletin, March 24, 1993). The exemption is limited to pre-cut fabrics since these could not be diverted to the domestic market. The confederation of the Garment Exporters of the Philippines (CONGEP), through its President, however said that the exemption of pre-cut fabrics serves no purpose. According to CONGEP, such importation had been concentrated from the United States in the amount of \$71 million which largely favored only one company. Shipments of pre-cut fabrics from other countries amount to less than \$1 million.

The Monetary Board, however, is reportedly keen on allowing certain imports of the garment sector other than the pre-cut fabrics and accessories to be exempted from the pre-shipment scheme of the SGS (Manila Bulletin, March 30, 1993). But the DTI is not yet inclined to free the entire industry's raw material importations from the pre-shipment monitoring mechanism despite the clamor of garment exporters.

The government has already exempted the electronics and semi-conductor sectors from the SGS pre-shipment inspection. The sector being a 100 percent export-oriented industry (Manila Bulletin, March 30, 1993). This along with the garment sector contributes the bulk of the foreign exchange earnings of the Philippines.

Under the revised medium term Philippine Export Development Plan (PEDP) which outlines a 19 percent annual export growth between 1993 to 1998, the country hopes to reach the \$27.7 billion export level by 1998 by pushing 14 major export groups instead of promoting exports in broad terms and distributing limited resources thinly. Under the nonfarm enterprises, those which have been identified as fast growing, short-gestating export products include carageenan and seaweeds, marble, processed tropical fruits, shrimps and prawns, ceramics, furniture, garments, gifts and houseware, jewelry, electronic components and computer software.

In terms of markets, the focus will be the major expansion of blocks such as Europe, Japan and the United States.

Private sector participation will be increased by setting up a system of accountability and responsibility based on specific performance standards. The government will reorganize the Export and Investment Development Council into the Export Development Council as the central agency that will review and assess policy issues affecting the export sector (Manila Bulletin, June 7, 1993).

#### 4.8.5. One Stop Action Center for Investment

This was enacted in February 1987 through E.O. 136 in order to facilitate the entry of investments and processing of investment applications. It was designed to extend assistance to local and foreign investments by providing information, advice and guidance on pertinent laws and procedures relative to foreign and local investments and the conduct of business in the Philippines. It houses in one place all the agencies needed to deal with in the processing of investment applications such as the BOI, the Central Bank, Securities and Exchange Commission (SEC), Immigration Commission, Department of Foreign Affairs, Department of Tourism, Department of Agriculture and the Export Processing Authority.



#### 4.9. Special Investor's Resident Visa

P.D. 1851 signed in November 6, 1982 liberalizes investment requirements for foreigners desiring to obtain Special Investor's Resident Visa in the Philippines. The issuance of this decree is in line with the government's long standing policy of attracting foreign investments to supplement domestic resources.

Under this decree, foreigners willing to investment at least \$200,000 in any business or industrial undertaking in any part of the country may be issued Special Investor's Resident Visas. As a holder of this visa an alien is entitled to reside in the Philippines while his investments subsists.

This decree broaden investment opportunities for potential investors. Formerly under P.D. No. 1623, such investment were limited only to economically depressed priority areas. The opportunities available to foreign investors range from investments in shares of stocks on corporations to investments in real estate such as condominiums.

To further encourage the entry of small foreign investors, P.D. No. 1893 signed on Dec. 13, 1983 grants Special Investor's Resident Visa to aliens willing and able to invest at least \$75,000 in the country.

Upon issuance of the resident visa, the investor is given a special return certificate allowing multiple entries into the country, without obtaining appropriate re-entry visa, for a period of one year and renewable every year. For monitoring purposes, he is required to submit an annual report to prove that he has maintained his investment in the country.

The Foreign Investments Assistance Center (FIAC) was established within the Board of Investments by virtue of Executive Order No. 845 to provide easy access to information and assistance to potential and existing foreign investors in the Philippines. In order to facilitate the entry and maintenance of foreign investments through the minimization of bureaucratic "red tape" and speeding up of the processing time for applications, clearances and the like, the FIAC provides a "one-stop shop" that is equipped to handle all facets of foreign investment in the country. Executive Order No. 845 signed on November 8, 1982, empowers the FIAC to act on all matters relative to foreign investors.

Although under the administrative supervision of the BOI, the FIAC is authorized to enlist the assistance and cooperation of any other government agency with which a foreign investor may have to transact business. The services of the center are provided free of charge and are available to all foreign investors upon entry into the country and throughout the maintenance of the investment in the Philippines.

#### **4.10. Export Promotion Program**

Aside from BOI export incentives provided under the Omnibus Investment Code, other export promotion measures aimed at providing intermediate inputs at world market prices, thereby putting exports under a "free trade" status. Tax and duty-free access to intermediate inputs is extended through outright tax and duty exemptions, or the tax and duty drawback mechanism (Pante and Medalla, 1990).

Tax and duty exemption on imported inputs may be availed by: (1) locating an export processing zone (EPZ), (2) Using bonded manufacturing, warehouse (BMW) facilities, and (3) Importing under Customs Administrative Order 3-78 (CAO 3-78). Tax and duty drawback on imported intermediate inputs used in export production may be availed of either through individual drawback scheme of the Bureau of Customs (BOC) or fixed drawback scheme of the BOI.

Other programs being undertaken by the government through the Bureau of Small and Medium Industries are: 1) the Export Development Program of DTI, CB and the Department of Finance which assists small and medium scale exporters of priority products, like garments, gifts and houseware, food and furniture; 2) the Market Encounter Program, which organizes buyers, shows and product development programs for the finest Philippine products; and 3) the Exports Assistance Network (EXPONET) which assists small and medium entrepreneurs who want to get started in exports.

#### **4.11. Program for Technology Upgrading and Development**

The level of technological development in the country has been observed to be poor compared to other developing countries. Among the reasons which have been cited are: lack of motivation provided by the system of industrial

protection, underutilization of R&D results, underinvestment in R&D development, and weak linkage between technology generators and end-users. In order to promote a higher level of technological development in the country, the following measures have been proposed by Pante and Medalla (1990): (1) integration of technology policy into the national development strategy; (2) development of the country's technological manpower; (3) strengthening of the technological infrastructure (information system, linkages, product standards, testing services, etc.); and (4) promotion of technology-enhancing activities (greater private sector spending for R&D and more emphasis on the dissemination of existing technology, particularly to SMIs).

## CHAPTER 5

### TREND ANALYSIS OF RURAL NONFARM ENTERPRISES

This chapter discusses the growth in rural nonfarm enterprises focusing on the number of establishments, output, employment, and prices. The analysis covers the period 1975 to 1989. As indicated earlier the data were obtained from the Census and Annual Survey of Establishments undertaken by the National Statistics Office. The scope of the survey varied and sometimes covered both small and large establishments but for some years only the large industries defined as establishments with 10 or more workers were surveyed. The definition of establishment also differed over the years with small ones defined as those with one or five workers for some years and one to nine workers for other years.

Geographically, data were reported for the Philippines as a whole before 1975. Thereafter, the NSO published data for the Philippines, Metro Manila, and the various administrative regions. For purposes of the present study, rural nonfarm enterprises (RNEs) are defined as manufacturing establishments located outside Metro Manila. In analyzing the trends, the distribution of number of establishments, output, and employment between Metro Manila and the rural areas is presented. The rural nonfarm enterprises were grouped into twelve industry sectors, namely: food, beverages, tobacco, textile, paper, wood, petroleum, chemicals, basic metals, machineries, electrical, and others. The commodity components of these industries are defined in Chapter 2.

Thus, all basic data on output, employment, and number of establishments for trend analysis in this chapter were obtained from the NSO. Where percentages are presented, these were computed also from NSO data. The implicit price indices in Fig. 5.60 (a and b) were obtained from the NSCB Statistical Yearbook.

#### 5.1. Number of Establishments

Data on the number of establishments in manufacturing industries are available only for the period 1975 to 1983 and 1988 to 1989. The total number of all establishments for the country as a whole grew from 77,291 in 1975 to 85,310 in 1980 but went down to 77,805 in 1989. Most of these establishments have less than ten workers. These small

industries comprised 92 percent of all establishments in 1975 and 87 percent in 1989. Geographically, about one fifth of the establishments are located in Metro Manila and four fifths in the regions outside the metropolis (Fig. 5.1) Over the period under study, the distribution of establishments between Metro Manila and the rural areas did not vary very much and changed only from 79.4 percent in the rural areas in 1976 to 81.8 percent in 1978 and 1979. In 1988 and 1989, 80 percent of the establishments are located in the rural areas.

Focusing on the rural nonfarm enterprises, 47 percent of the number of establishments were engaged in food manufacturing in 1989 (Fig. 5.2 in 2 parts). During the same year, the second largest concentration was in the textile industry which accounted for 20.8 percent of all establishments. This was followed by machineries with 10.73 percent and wood with 10.02 percent. The group called "other" manufacturing industries constitutes 6.54 percent of the total number of establishments. The rest are in paper, beverage, chemicals, basic metals, electrical, tobacco, and petroleum industries in that order. Over time, the percentage distribution among industry groups has not changed very much except a decline in the percentage of textile industries between 1983 and 1988 and an increase in food industries during these same years. The year 1983 is a census year and the number of establishment data may not be comparable with the annual data.

During the period 1975 to 1982 and 1988 to 1989, the total number of establishments in the manufacturing sector in the rural areas did not differ much and ranged only from 62.3 thousand in 1976 and 1989 to 69.7 thousand in 1978. The total number of rural establishments increased from 62.7 thousand in 1975 to 69.7 thousand in 1981 after which it declined and reached only 62.3 thousand in 1989 which is even slightly lower than the number in 1975. Excluding the year 1983, the number of food establishments in the rural areas ranged from 23.2 thousand in 1975 to 29.8 thousand in 1988.

The number of firms in the beverage industry remained practically the same between 1976 and 1982 but went down slightly in 1988 and 1989. The tobacco and petroleum industries had the least number of firms among the RNEs. It is worth noting that from 1976 to 1983, the number of firms in the tobacco industry was almost the same, 10 to 12 firms.

The textile industry had the second largest number of firms averaging about 26,080 between 1976 and 1982. However, this number went down to 13,130 in 1988 and then 12,981 in 1989.

Fig. 3.1. Percentage Distribution of Number of Establishments Between Rural and Metro Manila, in Selected Years

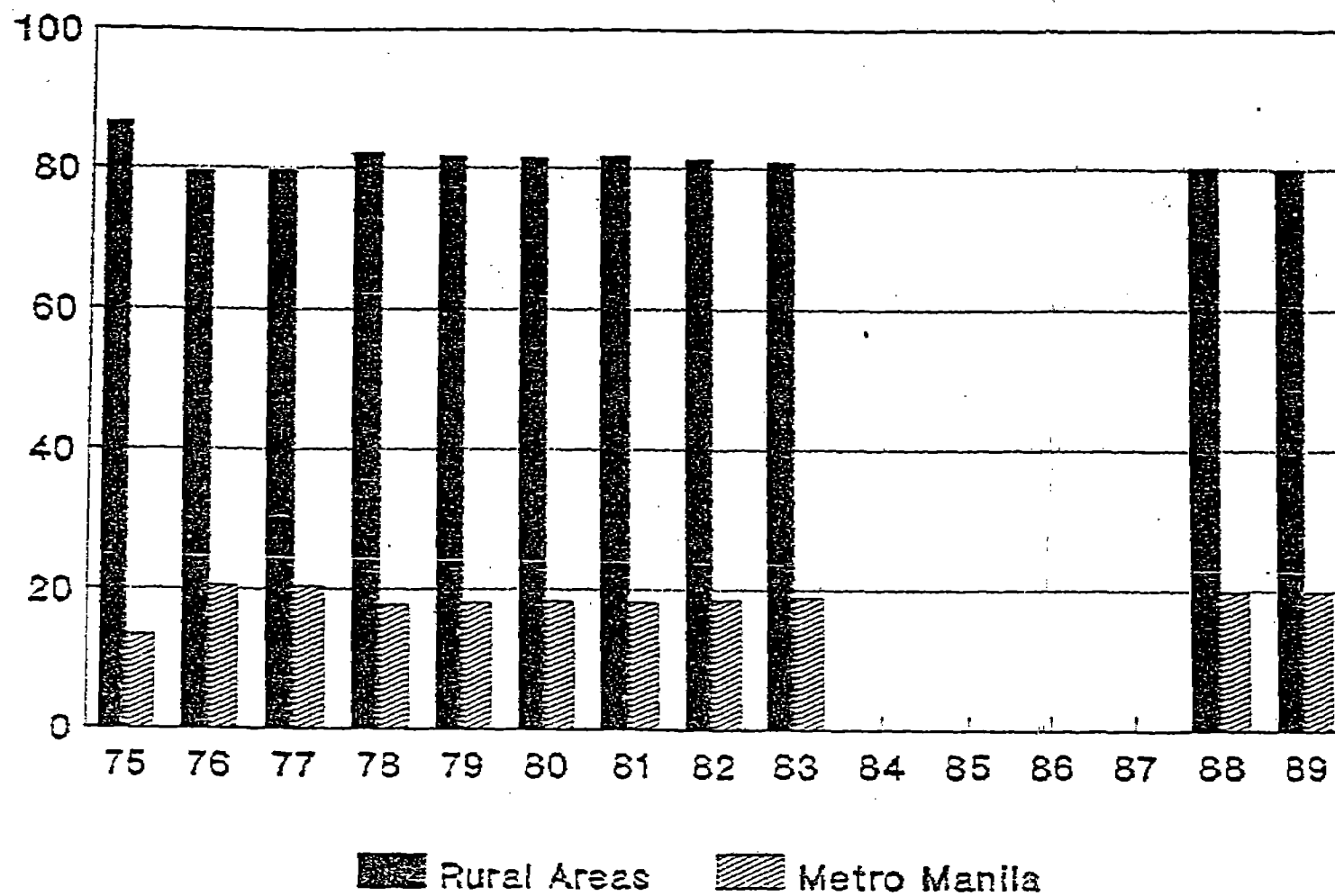


Fig 5.2 Distribution of Number of Establishments in RNEs by Industry

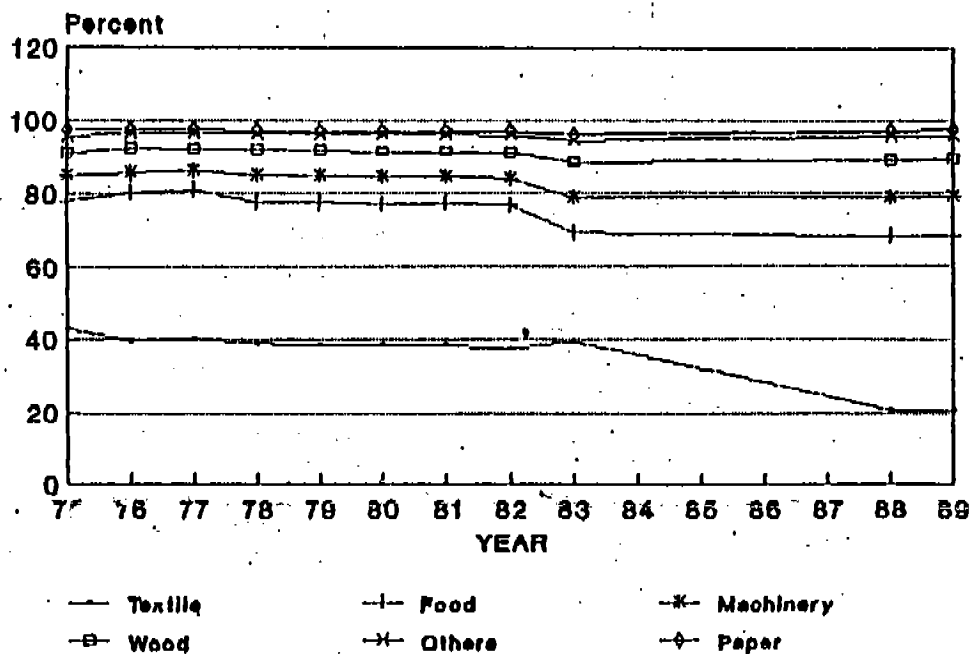
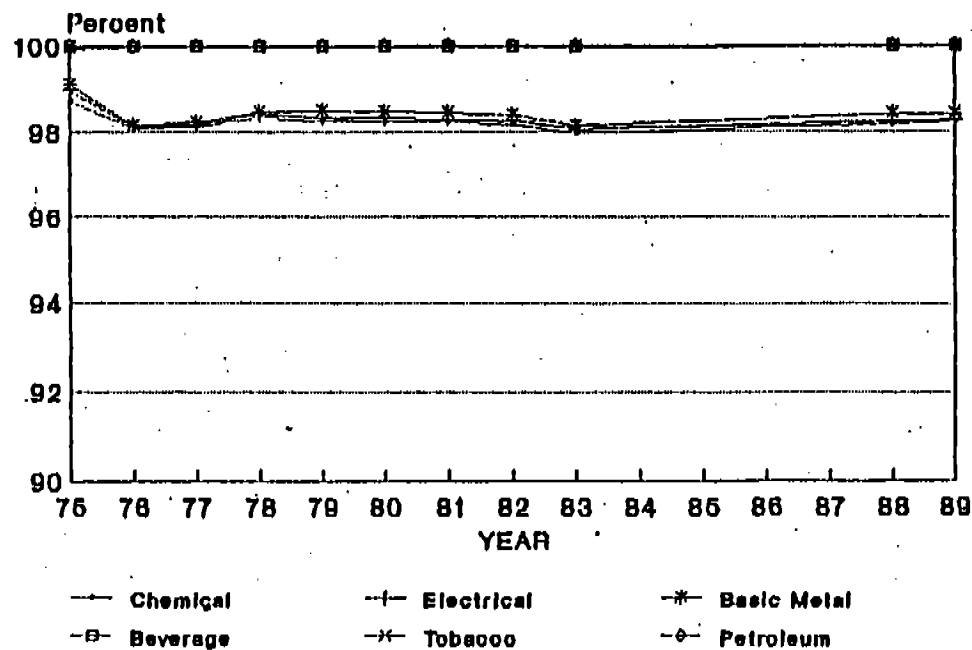


Fig 5.2 Distribution of Number of Establishments in RNEs by Industry



For the period 1975 to 1982, the number of establishments in the wood and chemical industries varied from 3.7 thousand to 4.8 thousand and from 274 to 866, respectively. The number of wood establishments went up by about 2000 in the late 1980s but that of wood declined by about 300.

On the relative proportion of the number of firms between Metro Manila and the rural areas, 79 to 81 percent are located in the latter. Figures 5.3 to 5.14 show the distribution of firms between the two areas for each industry sector. A large proportion of the establishments in the food, beverage, textile, wood, machinery, and other industries is located in the rural areas. Looking at the period 1976 to 1982 and 1988 to 1989, 89 to 92 percent of the food manufacturing establishments are in the rural areas. The corresponding proportions for the other industries are: 96 to 98 percent for beverages; 71 to 79 percent for textile; 73 to 84 percent for wood; 68 to 76 percent for machineries; and 83 to 86 percent for others.

On the other hand, the tobacco, paper, basic metals, and electrical industries have relatively more establishments in Metro Manila than in the rural areas. Only about 23 to 30 percent of tobacco manufacturing firms were in the rural areas in the second half of the 1970s to the early 1980s, however, in the late 1980s this proportion has increased to about 50 percent.

The number of establishments by size is available for five years and the distribution of RNEs by size is shown in Figure 5.15. Note the very high proportion of small establishments, that is, those with one to nine workers, in the rural areas. About 90 to 95 percent of the RNEs are small establishments. It seems, however, that the proportion of small RNE establishments is declining. In 1975, 95 percent of the firms were small; this proportion went down to 94 percent in 1978, to 93 percent in 1983, and to 92 percent in 1989.

Although still predominantly small, Metro Manila has a smaller proportion of small establishments. About two-thirds of the Metro Manila manufacturing firms in 1981 were small. Only 32 percent has 10 or more workers. Like those in the rural areas, the proportion of small firms seems to be going down. The percentage of small firms in 1977 was 77 percent which is higher compared with the 74 percent in 1983 and the 68 percent in 1989. Thus, approximately one third of the Metro Manila manufacturing establishments in 1989 are large firms.



Fig. 5.3 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Food Industries, in Selected Years

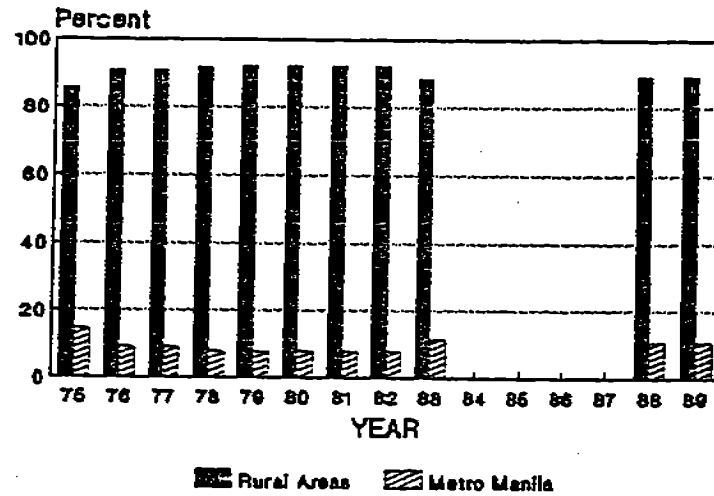


Fig. 5.4 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Beverage Industries, in Selected Years

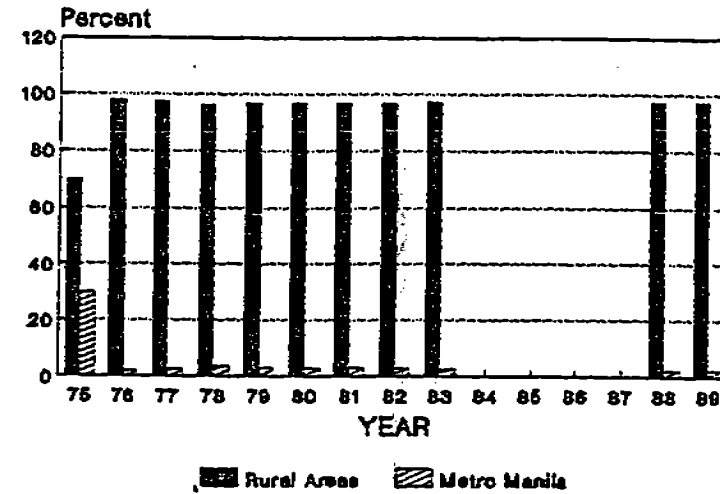


Fig. 5.5 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Tobacco Industries, in Selected Years

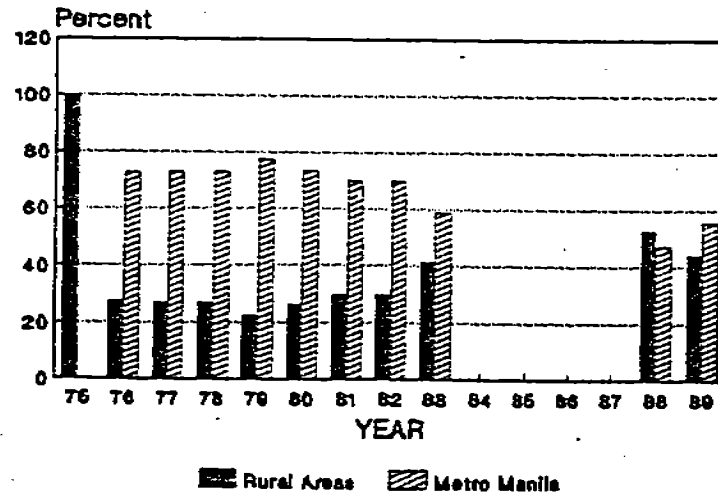


Fig. 5.6 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Textile Industries, in Selected Years

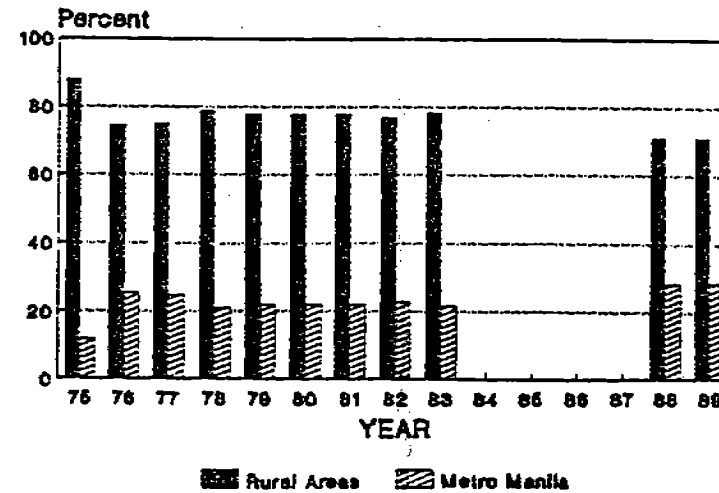


Fig. 5.7 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Wood Industries, in Selected Years

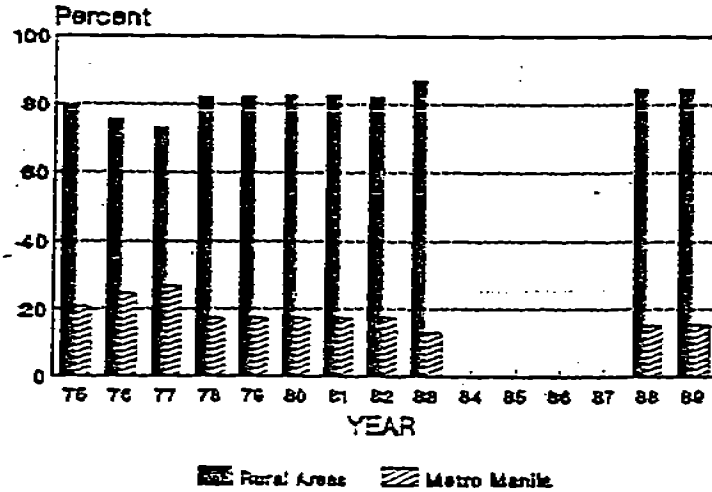


Fig. 5.5 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Paper Industries, in Selected Years

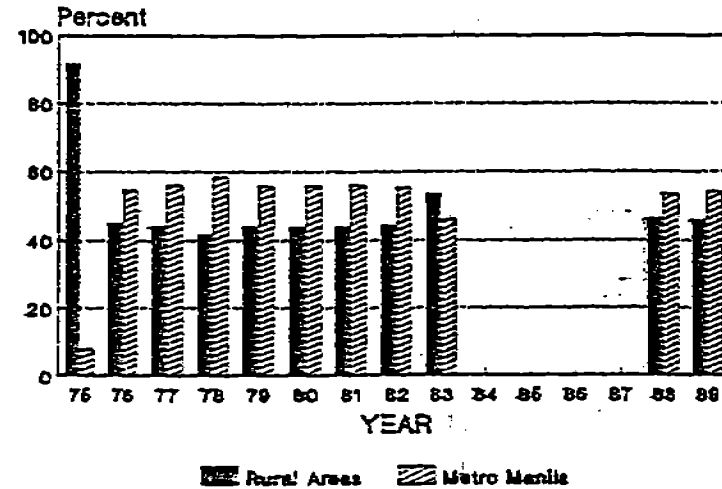


Fig. 5.9 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Chemical Industries, in Selected Years

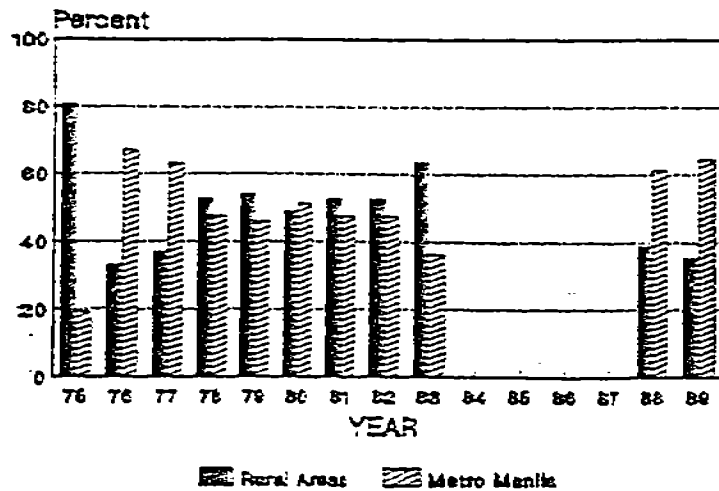


Fig. 5.10 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Petroleum Industries, in Selected Years

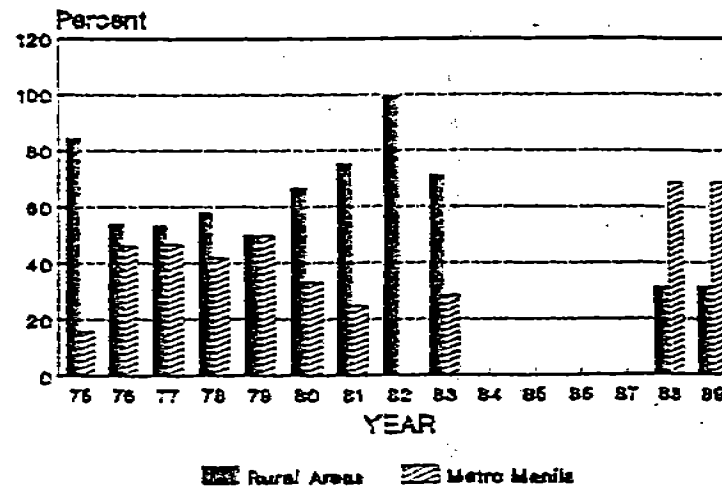


Fig. 5.11 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Basic Metal Industries, in Selected Years

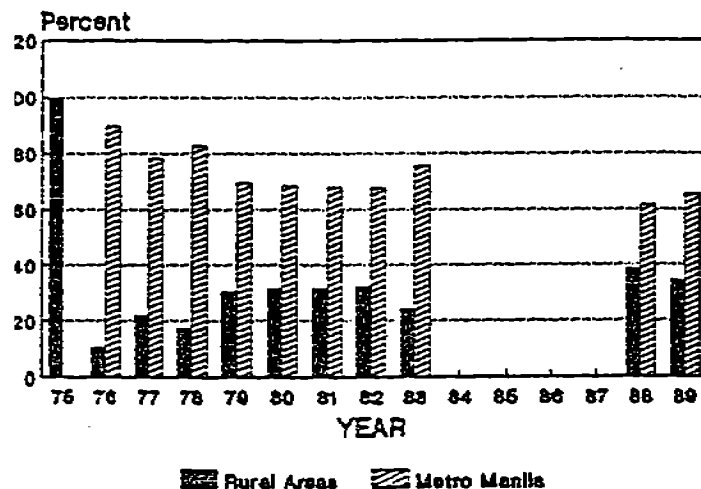


Fig. 5.12 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Machinery Industries, in Selected Years

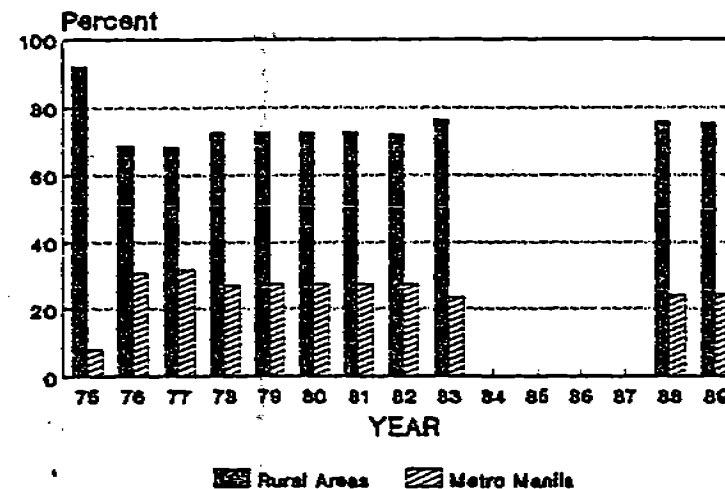


Fig. 5.13 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Electrical Industries, in Selected Years

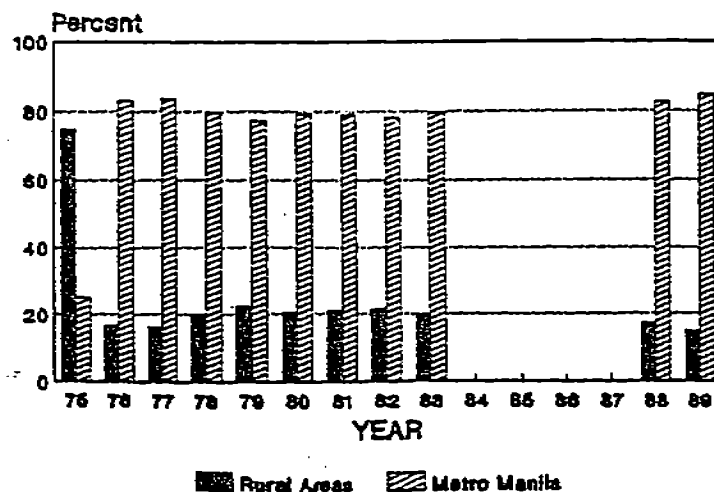
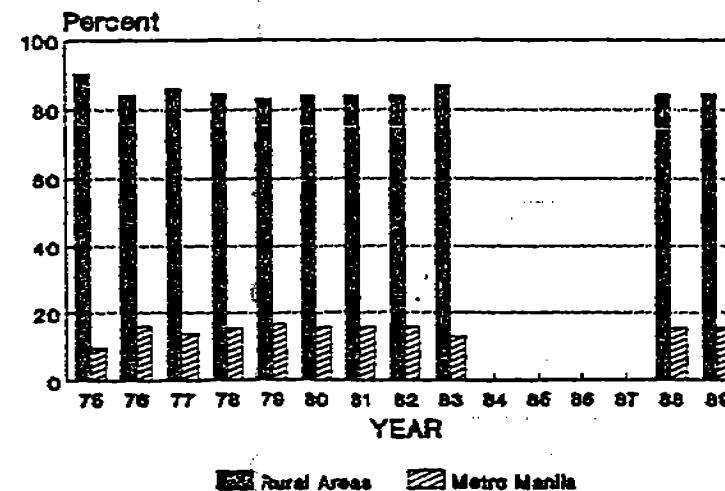
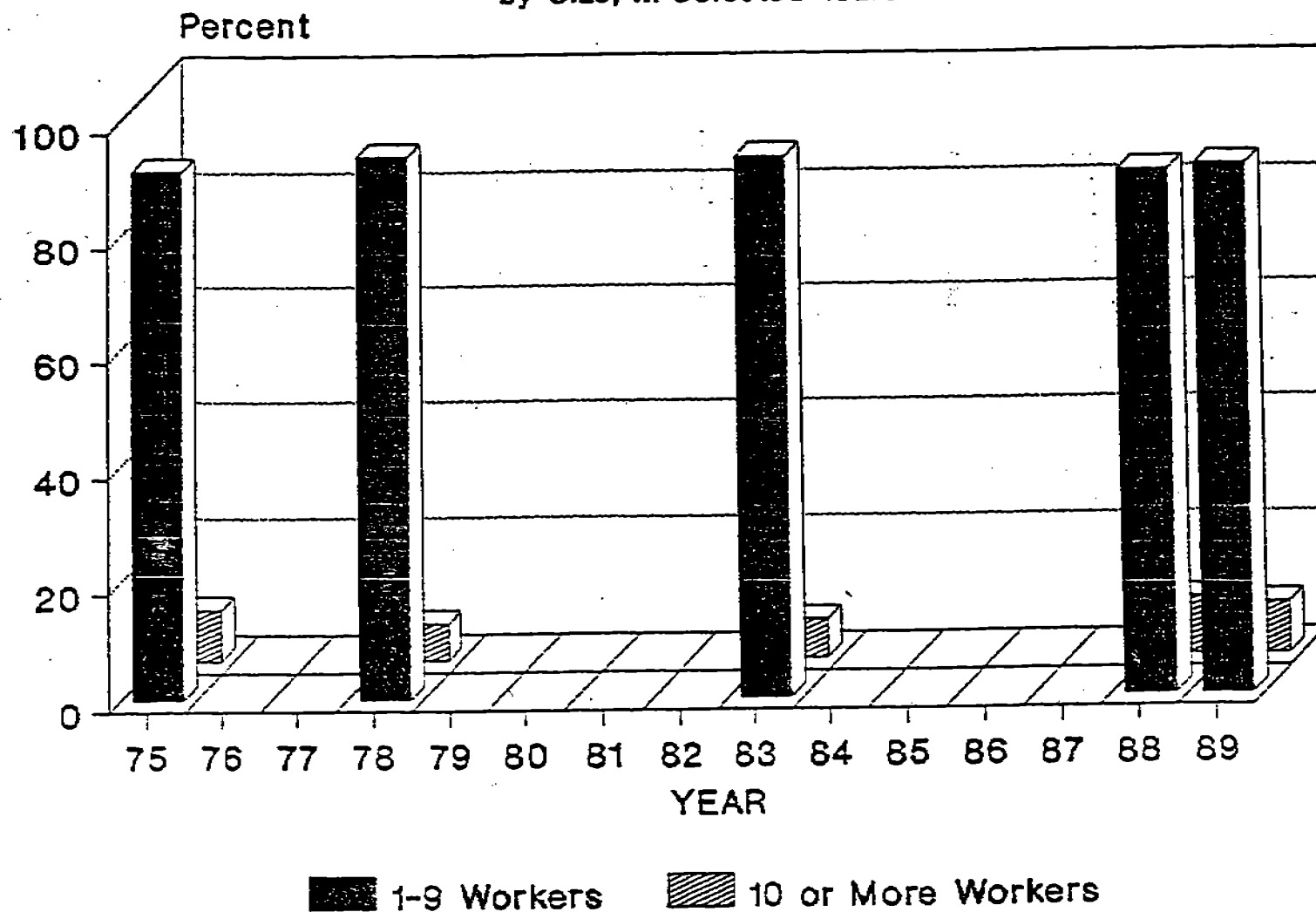


Fig. 5.14 Percentage Distribution of Number of Establishments Between Rural and Metro Manila in Other Industries, in Selected Years



**Fig. 3-15 Percentage Distribution of  
Number of Establishment of RNEs,  
by Size, in Selected Years**



For the Philippines as a whole, 87 percent of the manufacturing establishments in 1989 is small while the corresponding percentage in 1977 was 92 percent.

By industry, the percentage distribution of rural nonfarm enterprises by size is presented in Figures 5.16 to 5.27. Dominated by small firms are the following industries: food, beverage, textile, wood, paper, chemicals, machineries, and others. In particular, 92 to 95 percent of food establishments in the rural areas are small. In contrast, all tobacco firms in the rural areas in 1989 were large. Petroleum establishments are also large; so with electrical firms. The trend in the size of basic metals firms is such that all establishments were large up to the early 1980s but the proportion has gone down to 44 percent in 1989.

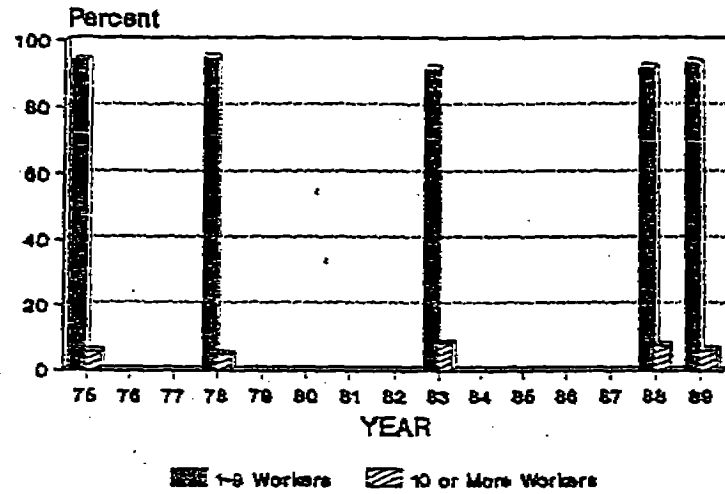
## 5.2. Gross Value Added from Rural Nonfarm Enterprises

In the estimation of the submodel equations for rural nonfarm enterprises, gross value added (GVA) was used in the demand and employment functions. GVA as estimated by the NEDA represents aggregate values, that is, it is not subdivided between Metro Manila and the regions outside the metropolitan area. The NSO survey of establishments contains data on total output by region. The proportion of total output in each of the two areas for each of the twelve industry sectors therefore was applied to GVA from manufacturing to obtain the GVA from the RNEs.

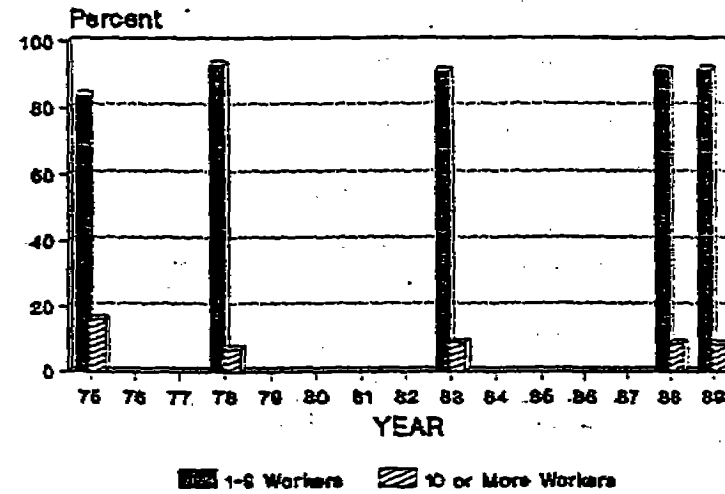
Considering the years 1975 to 1989, about 45 to 58 percent of the total output came from the rural enterprises and 42 to 55 percent from Metro Manila establishments. There was not much difference then between the contribution of the establishments in Metro Manila and that of the establishments in the rural areas to total output. It can be observed though that in all the years except the three years from 1977 to 1979, the output in the rural area was always higher than that in Metro Manila (Fig. 5.28). The share of Metro Manila to total output was highest at 55.12 percent in 1978 and lowest at 42.11 percent in 1985. The contribution of rural industries ranged from 44.88 percent in 1978 to 57.89 percent in 1985.

Figures 5.29 to 5.40 show the relative contribution of Metro Manila and rural enterprises to total manufacturing. It was only in 1983 wherein the output of the food industry in Metro Manila was higher than that in the rural areas (Fig. 5.29). The difference, however, was quite

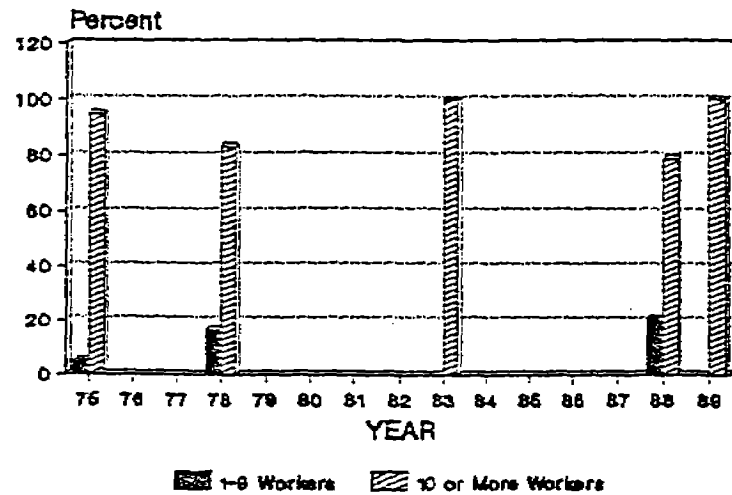
5.16  
Fig. Percentage Distribution of Number of Establishments of RNEs in Food Industries, by size, in Selected Years



5.17  
Fig. Percentage Distribution of Number of Establishments of RNEs in Beverage Industries, by size, in Selected Years



5.18  
Fig. Percentage Distribution of Number of Establishments of RNEs in Tobacco Industries, by size, in Selected Years



5.19  
Fig. Percentage Distribution of Number of Establishments of RNEs in Textile Industries, by size, in Selected Years

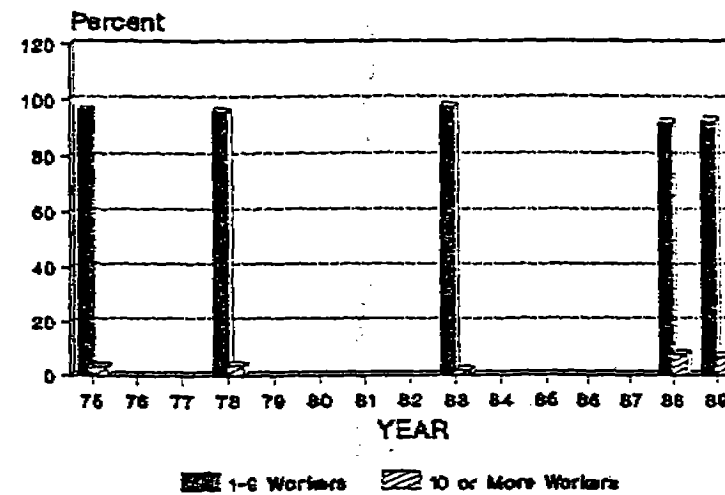


Fig. 5.20 Percentage Distribution of Number of Establishments of RNEs in Wood Industries, by Size, in Selected Years

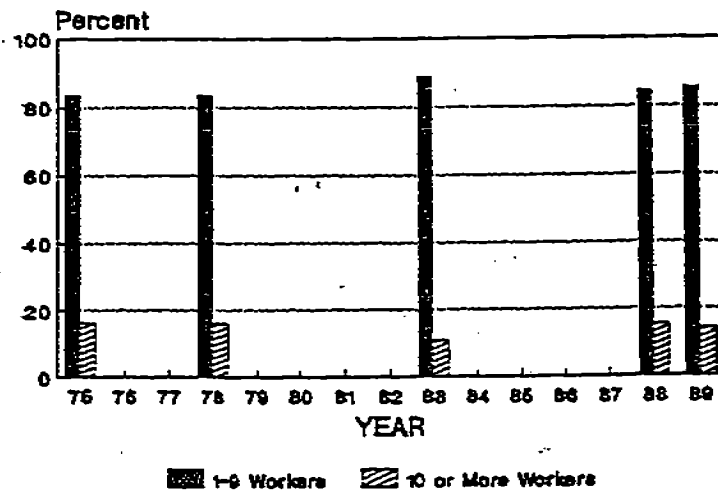


Fig. 5.21 Percentage Distribution of Number of Establishments of RNEs in Paper Industries, by Size, in Selected Years

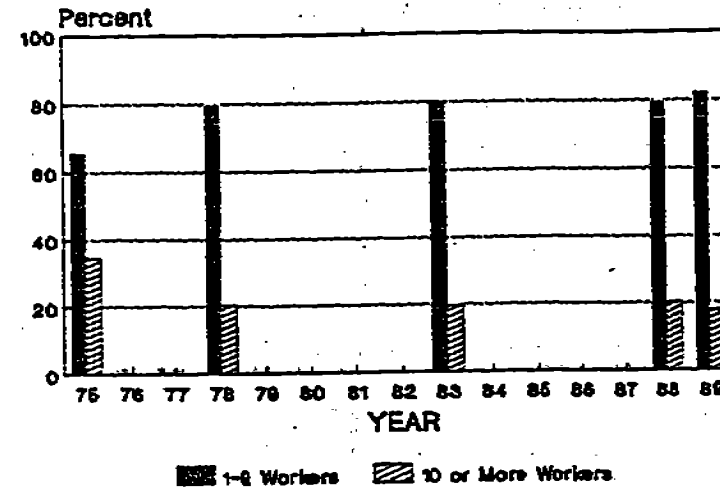


Fig. 5.22 Percentage Distribution of Number of Establishments of RNEs in Chemical Industries, by Size, in Selected Years

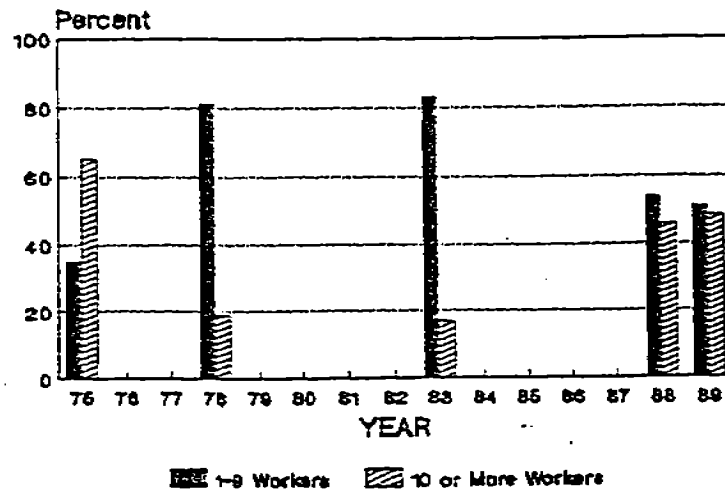


Fig. 5.23 Percentage Distribution of Number of Establishments of RNEs in Petroleum Industries, by Size, in Selected Years

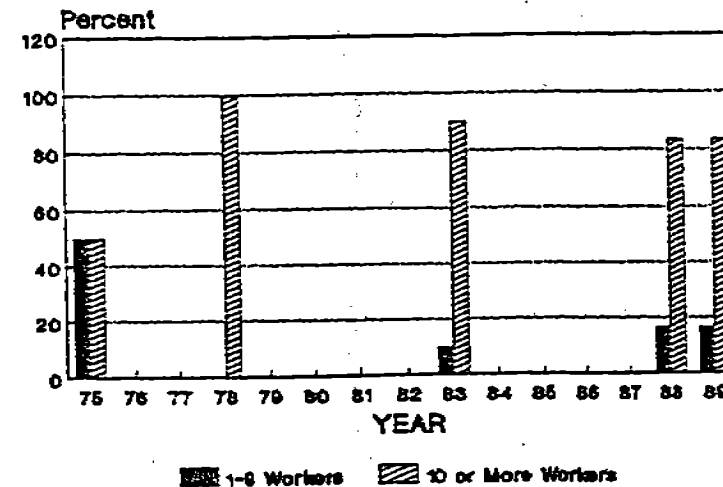


Fig. 5.24 Percentage Distribution of Number of Establishments of RNEs in Basic Metal Industries, by Size, in Selected Years

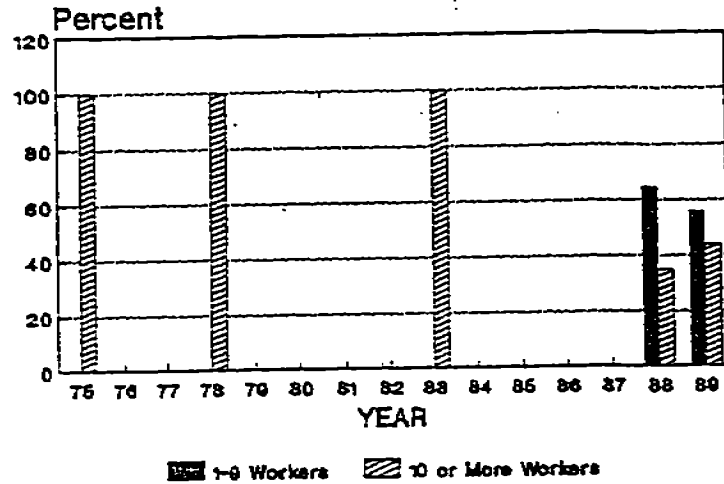


Fig. 5.25 Percentage Distribution of Number of Establishments of RNEs in Machinery Industries, by Size, in Selected Years

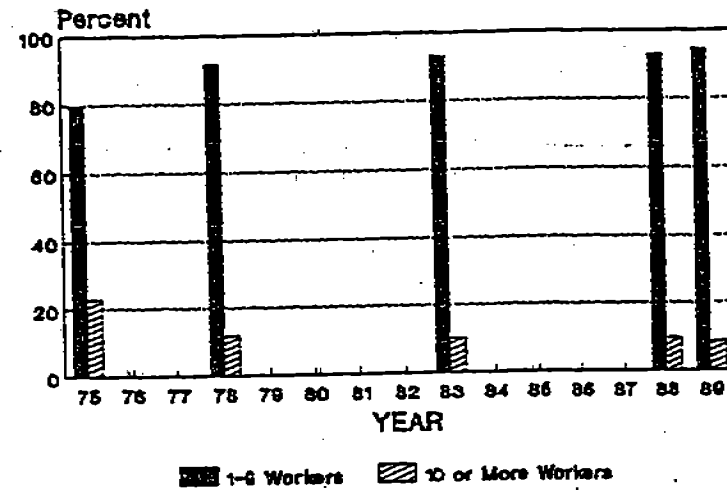


Fig. 5.26 Percentage Distribution of Number of Establishments of RNEs in Electrical Industries, by Size, in Selected Years

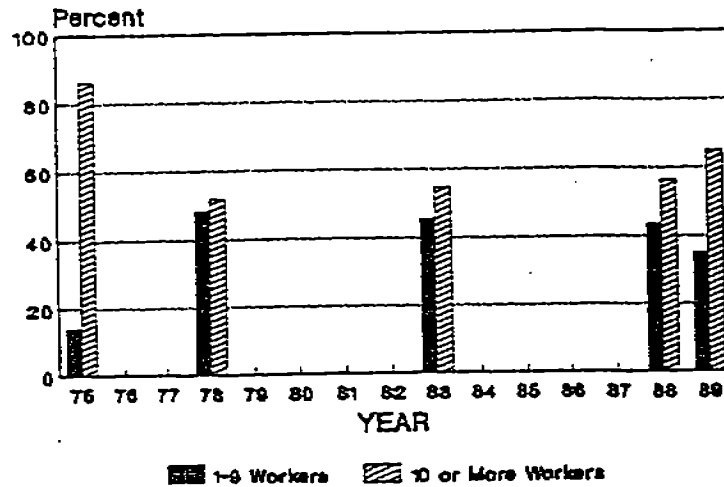


Fig. 5.27 Percentage Distribution of Number of Establishments of RNEs in Other Industries, by Size, in Selected Years

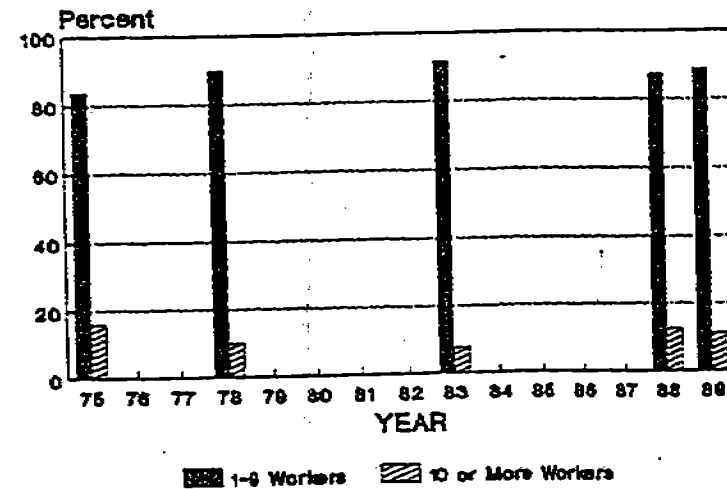




Fig. 5.28 Percentage Output in Rural Areas and Metro Manila, 1975-89

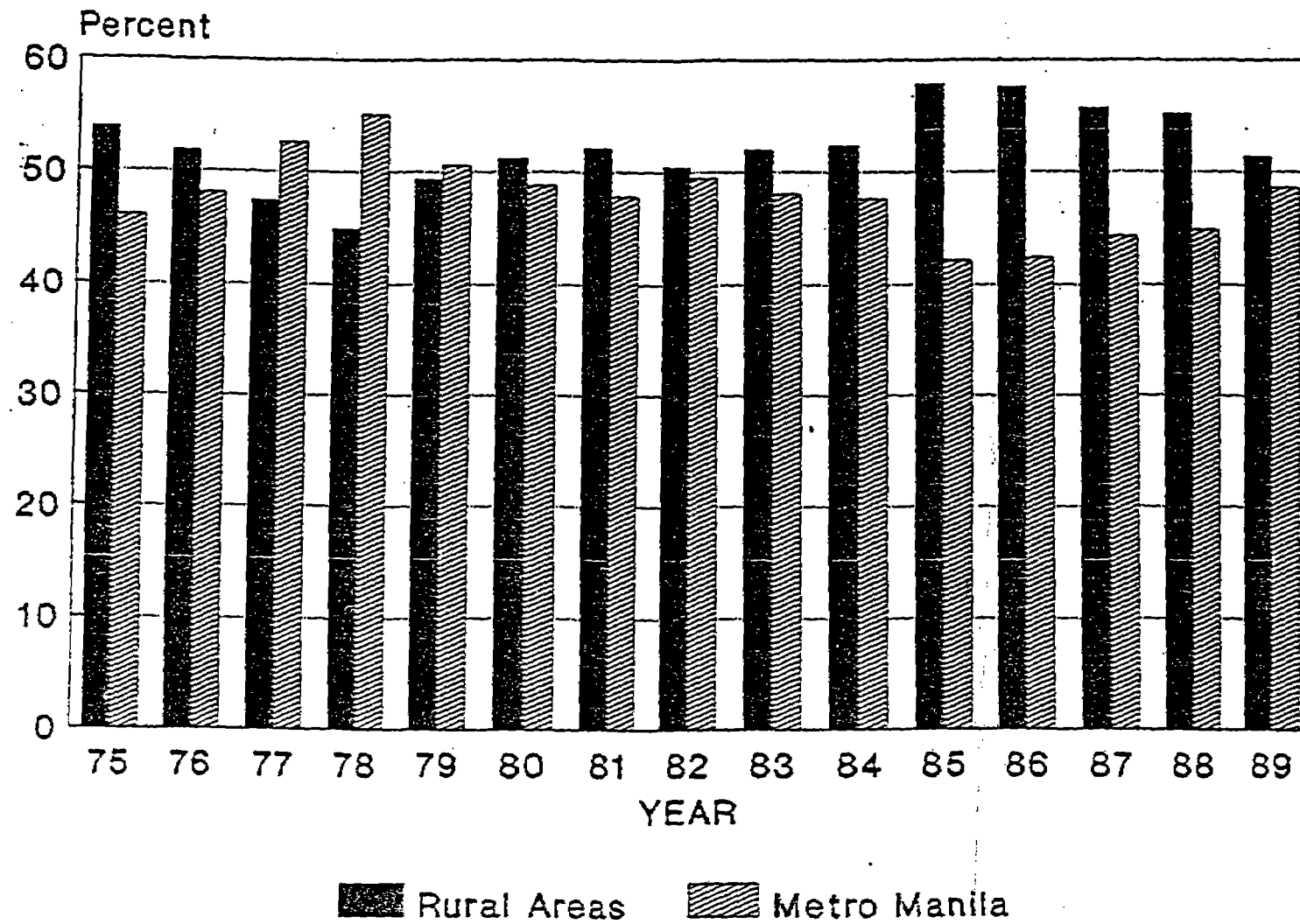


Fig. 5.29 Percentage Output in  
Food Industries in Rural Areas and  
Metro Manila, 1975-89

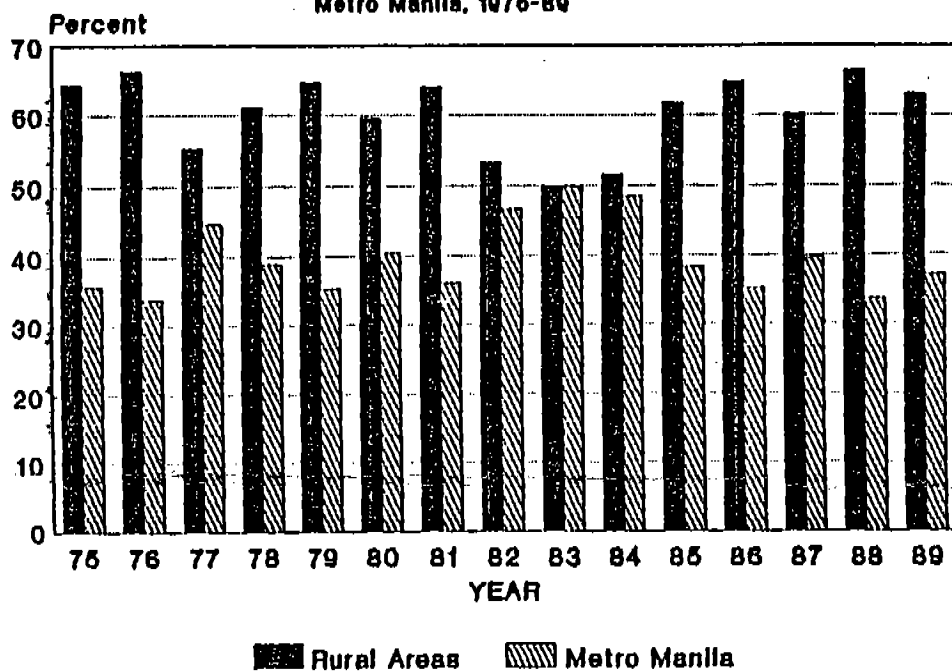


Fig. 5.30 Percentage Output in  
Beverage Industries in Rural Areas and  
Metro Manila, 1975-89

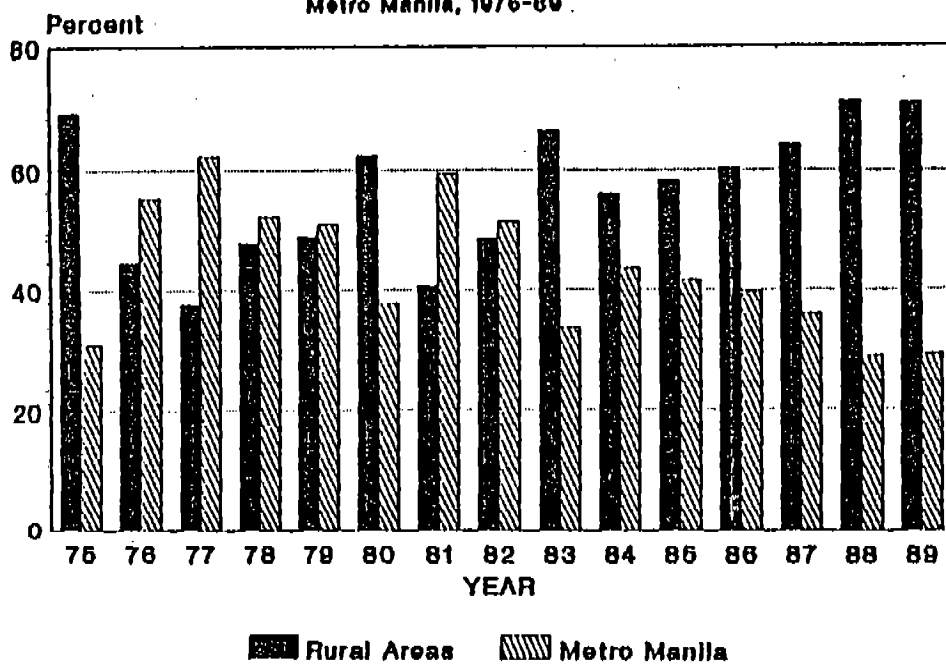


Fig. 5.31 Percentage Output in Tobacco Industries in Rural Areas and Metro Manila, 1975-89

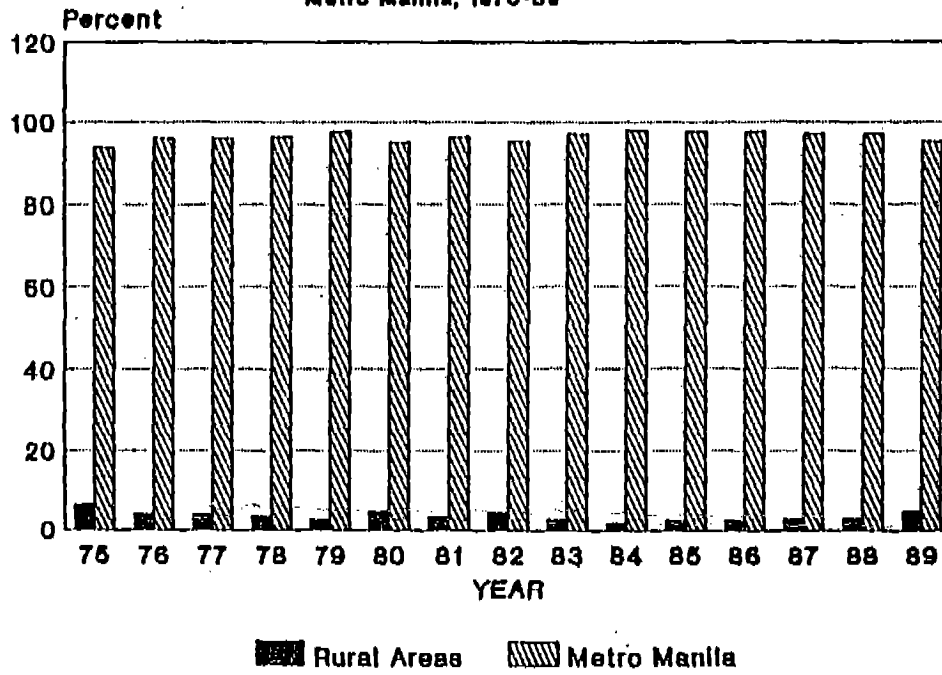


Fig. 5.32 Percentage Output in Textile Industries in Rural Areas and Metro Manila, 1975-89

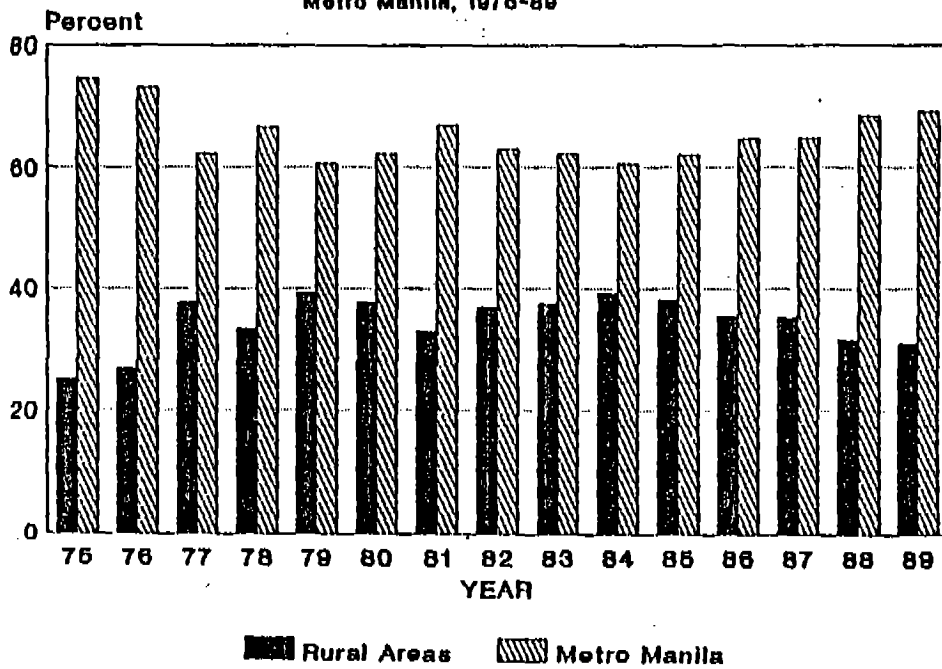


Fig. 5.33 Percentage Output in  
Wood Industries in Rural Areas and  
Metro Manila, 1976-89

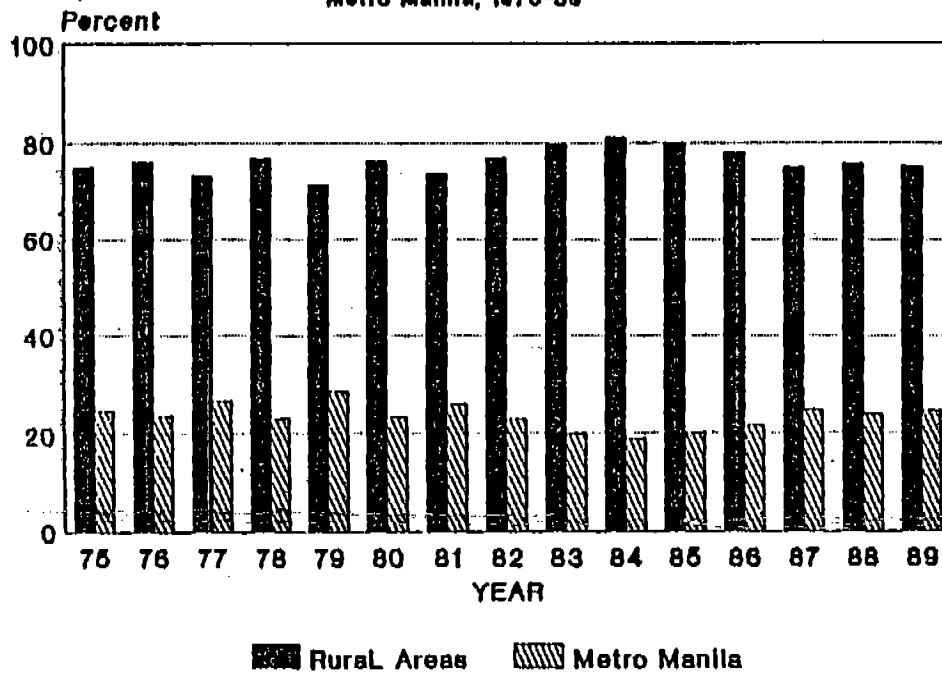


Fig. 5.34 Percentage Output in  
Paper Industries in Rural Areas and  
Metro Manila, 1976-89

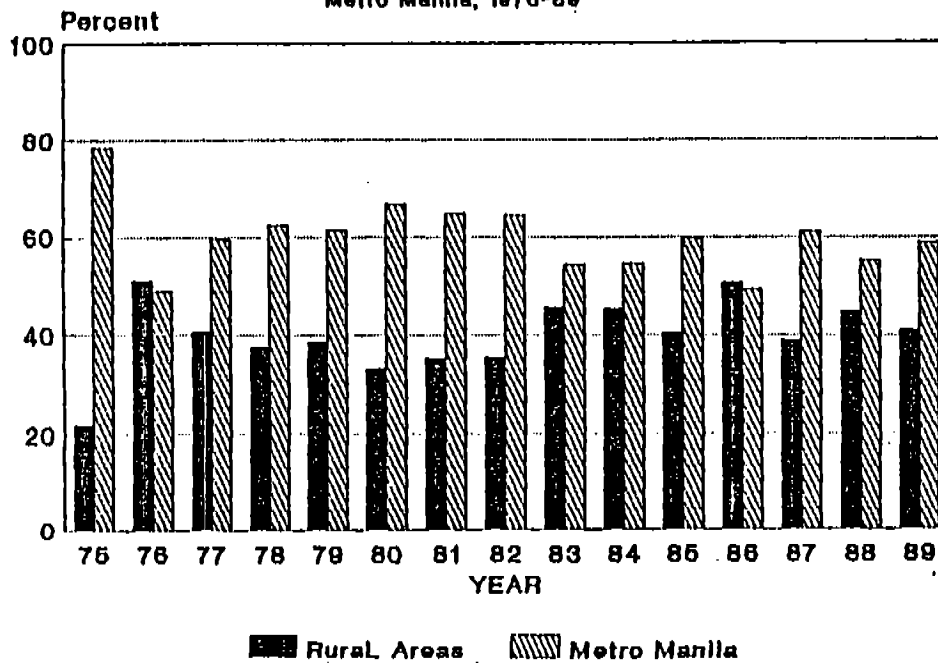


Fig. 5.35 Percentage Output In  
Chemical Industries In Rural Areas and  
Metro Manila, 1975-1989

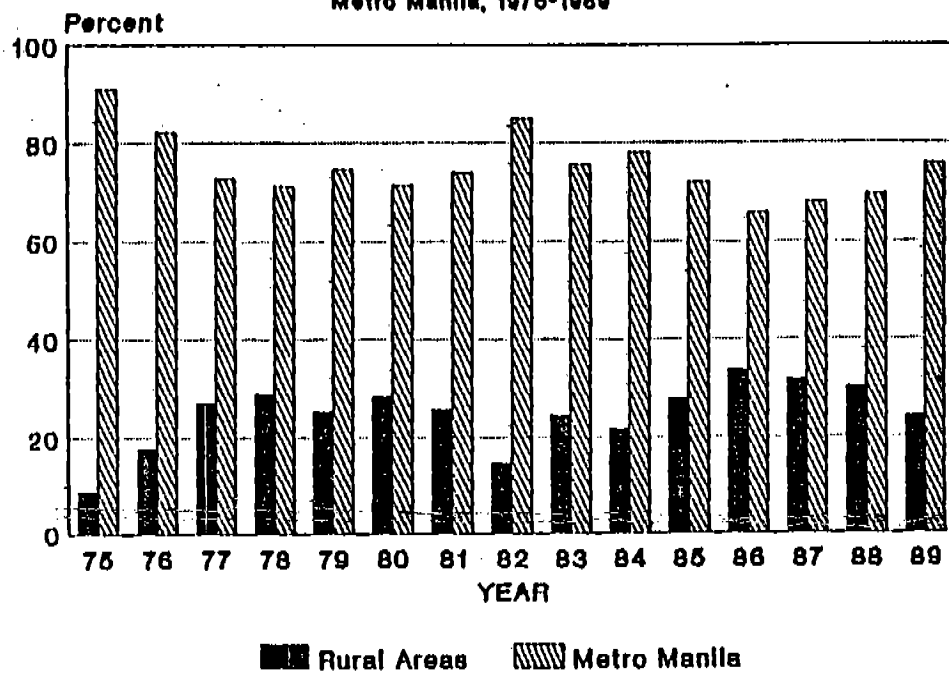


Fig. 5.36 Percentage Output In  
Petroleum Industries In Rural Areas  
and Metro Manila, 1975-89

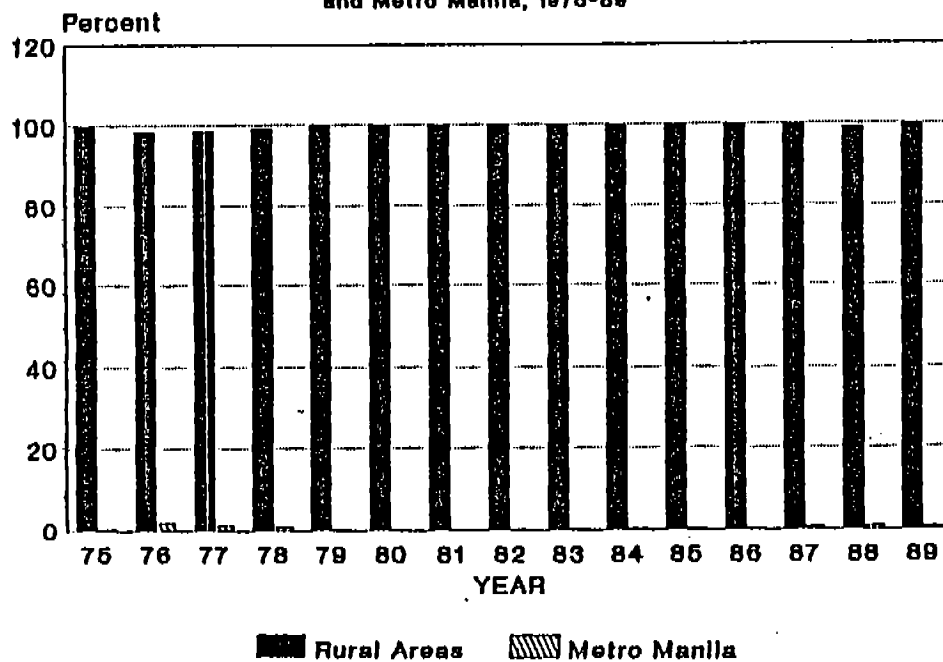


Fig. 5.37 Percentage Output in  
Basic Metal Industries in Rural  
Areas and Metro Manila, 1975-89

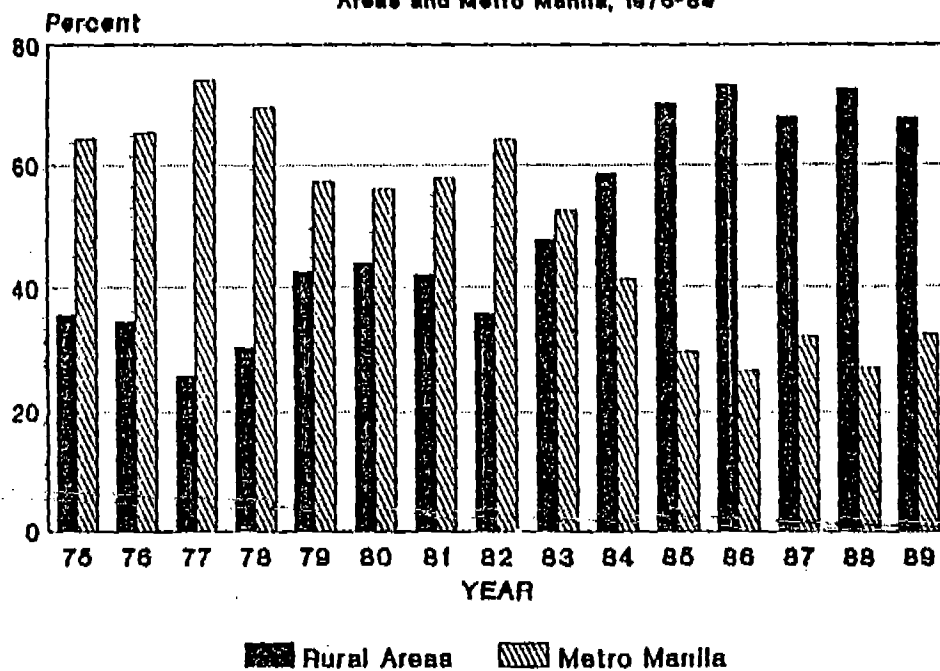


Fig. 5.38 Percentage Output in  
Machinery Industries in Rural  
Areas and Metro Manila, 1975-89

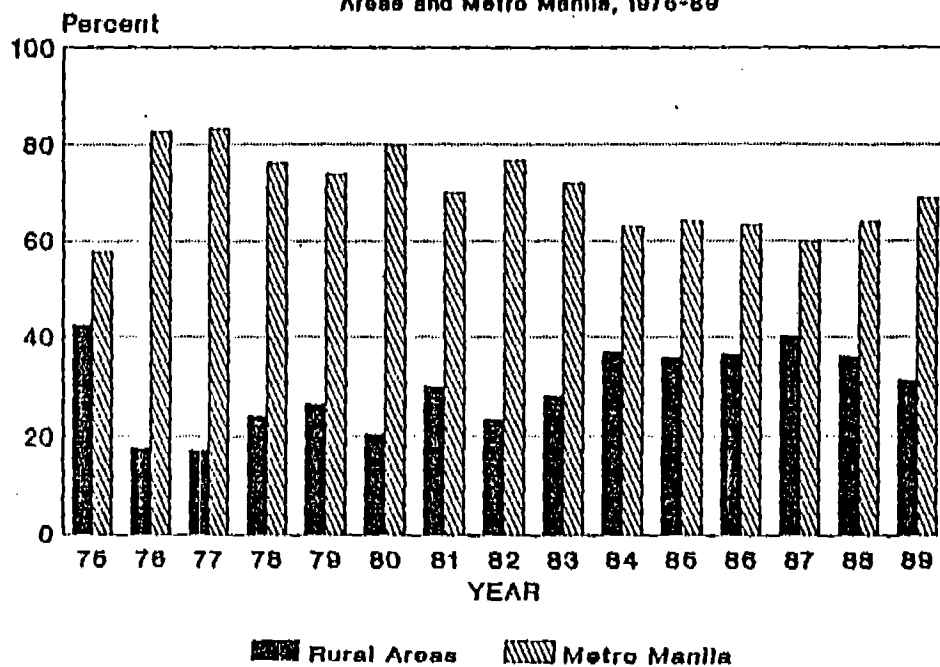


Fig. 5.39 Percentage Output in  
Electrical Industries in Rural Areas  
and Metro Manila, 1975-89

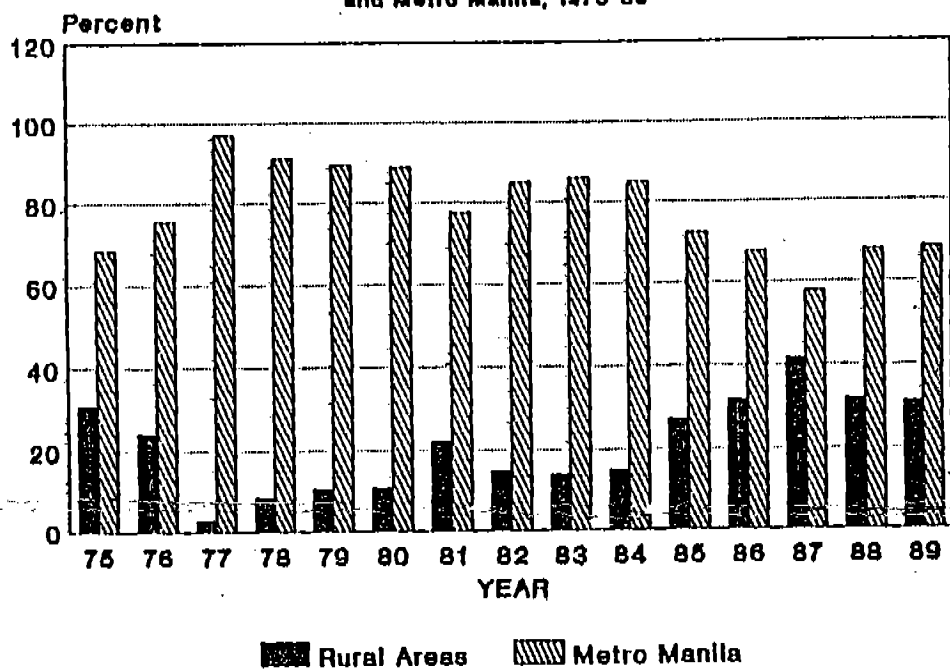
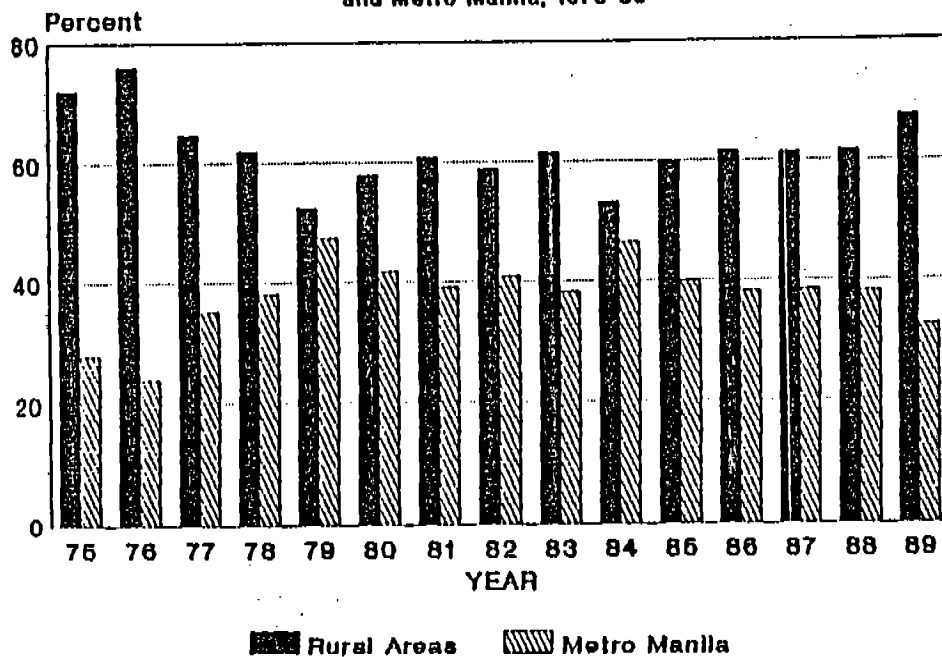


Fig. 5.40 Percentage Output in  
Other Industries in Rural Areas  
and Metro Manila, 1975-89



insignificant. During the year, Metro Manila produced 50.07 percent of total output compared to the 49.93 percent share of the food industry in the rural areas. The lowest contribution of Metro Manila and the highest for the rural areas at 33.52 percent and 66.48 percent, respectively were noted in 1988.

There was a generally increasing trend in the share of the rural areas in the output of the beverage industry particularly from 1981 to 1989 (Fig. 5.30). The relative proportion of the share of the rural areas to total output went up from 37.68 percent in 1977 to a high of 70.79 percent in 1989. The opposite was true for Metro Manila. The latter's share in the total output of the beverage industry declined to only 29.21 percent in 1989 from 62.32 percent in 1977.

Tobacco manufacturing was concentrated in Metro Manila with a total output share of 93.51 percent in 1975 to 97.99 percent in 1984 (Fig. 5.31). The difference of 2.01 to 6.49 percent in the output was provided by the tobacco industrial establishments in the rural areas.

A large proportion of the total output of the textile industry came from Metro Manila from 60.72 percent in 1979 to 74.72 percent in 1975 (Fig. 5.32). The rest was produced in the rural areas.

Unlike the textile industry, most of the output of the wood industry was obtained from the rural areas. Of the total industry output, 71.40 percent (in 1979) to 81.10 percent (in 1984) were produced by firms outside of Metro Manila (Fig. 5.33).

Except for the years 1976 to 1986, the share of the Metro Manila paper industry to total output was always higher than that in the rural areas, from 54.41 percent in 1983 to 78.24 percent in 1975 (Fig. 5.34). In 1976 and 1986, Metro Manila contributed only 49.04 percent and 49.33 percent, respectively to the total output of the paper industry.

The share of the chemical industries in the rural areas to the total chemical output was always lower than that of Metro Manila fluctuating from 8.94 percent in 1975 to 33.99 percent in 1986 (Fig. 5.35).

Among the twelve industries, industry which had the highest concentration of output coming from the rural areas. Almost all its output from 1975 to 1989 came from the RNEs with high percentage shares of 98.15 percent to 99.89 percent (Fig. 5.36). Metro Manila contributed less than two percent to total output.



For the years 1975 to 1983, the output of the basic metal industries in the rural areas was lower compared to that in Metro Manila, ranging from 25.82 percent in 1977 to 47.66 percent in 1983 (Fig. 5.37). From 1984 to 1989, the reverse was observed with the basic metal industries in the rural areas contributing more to total output than those in Metro Manila with the highest of 73.43 percent in 1986.

The output of the machinery and electrical industries in the rural areas was always lower than those in Metro Manila (Fig. 5.38 and 5.39). The share of the machinery industry varied from 17.04 percent in 1977 to 42.35 percent in 1975 while that of the electrical industry fluctuated from a very low 2.93 percent in 1977 to 41.92 percent in 1987.

It should be pointed out that the electrical industry contributed very little to total RNE output in the 1970s and early 1980s, however, the reverse trend was quite noticeable in the latter half of the 1980s. In fact, the Philippines has become a large exporter of electrical products which are now one of the principal nontraditional exports of the country.

The other manufacturing industries had more output in the rural areas than in Metro Manila (Fig. 5.40). The share of the former to total output was lowest in 1979 at 52.54 percent and highest in 1976 at 75.98 percent. The contribution of the latter was in the range of only 24.02 to 47.46 percent.

In summary, the tobacco, textile, paper, chemical, machinery, and electrical industries produced higher quantities of output in Metro Manila. The rural areas contributed more to total output in the food, wood, petroleum and other manufacturing industries. The beverage and the basic metal industries exhibited an increasing concentration of output in the rural areas. During the first half of the 15-year period from 1975 to 1989, more of the output of the two industries came from Metro Manila. In the second half of the period, the rural areas supplied greater amounts of beverage and basic metals.

Figure 5.41 presents the trend in GVA from all rural enterprises from 1975 to 1989. GVA increased from P8.5 billion in 1975 to P14.4 billion in 1989 representing an annual growth rate of 3.55 percent.

Figure 5.42 (in 2 parts) show the cumulative percentage distribution of total output in RNEs. Like the food industry, the output of the petroleum industry comprised a big portion of the total RNE output. Adding the outputs of

Fig. 5.41 Trend in Gross Value Added  
from RNEs, 1975-1989

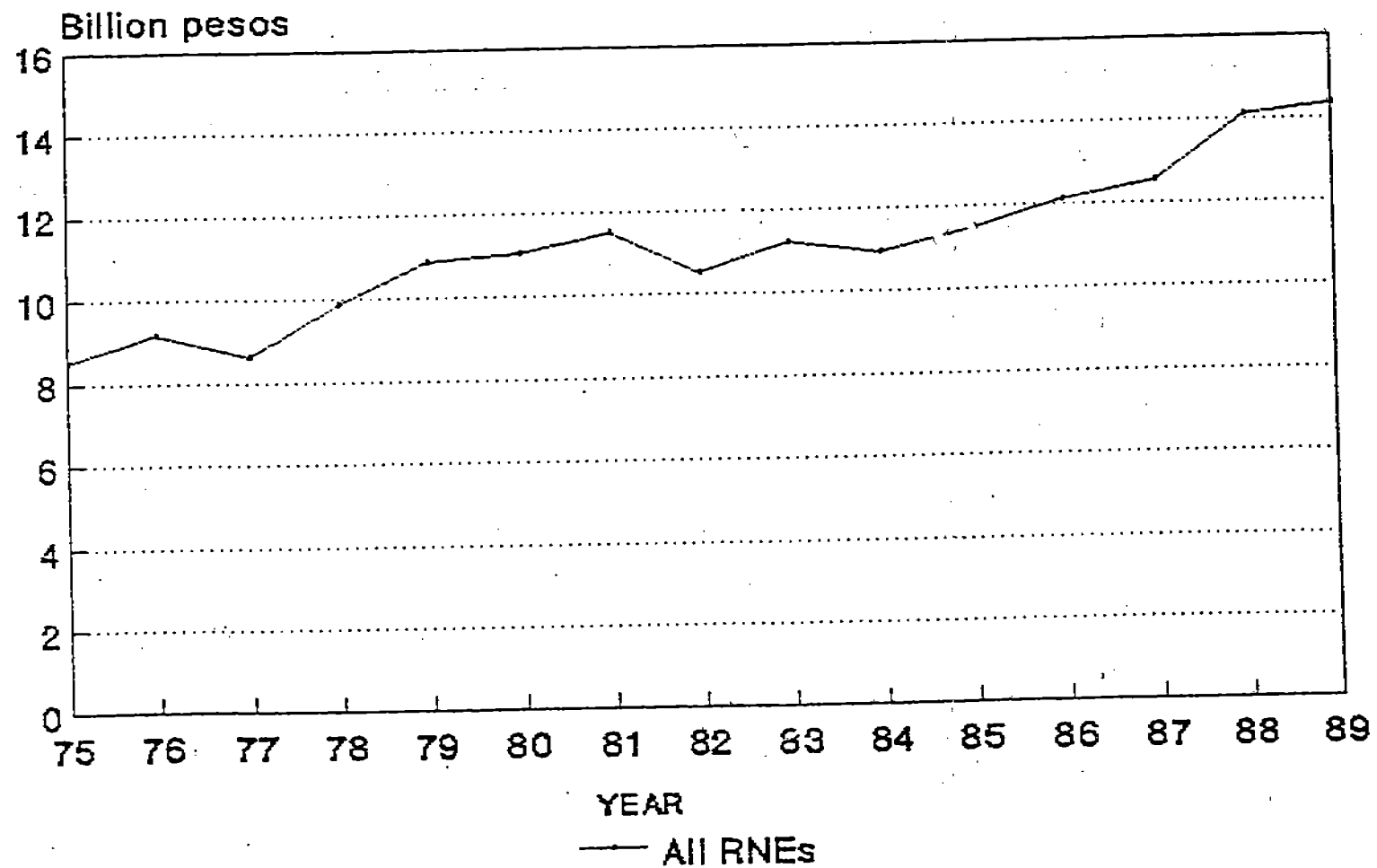


Fig. 5.42 Trend in the Distribution of Output  
in RNEs in Different Industry Group; 1975-1989

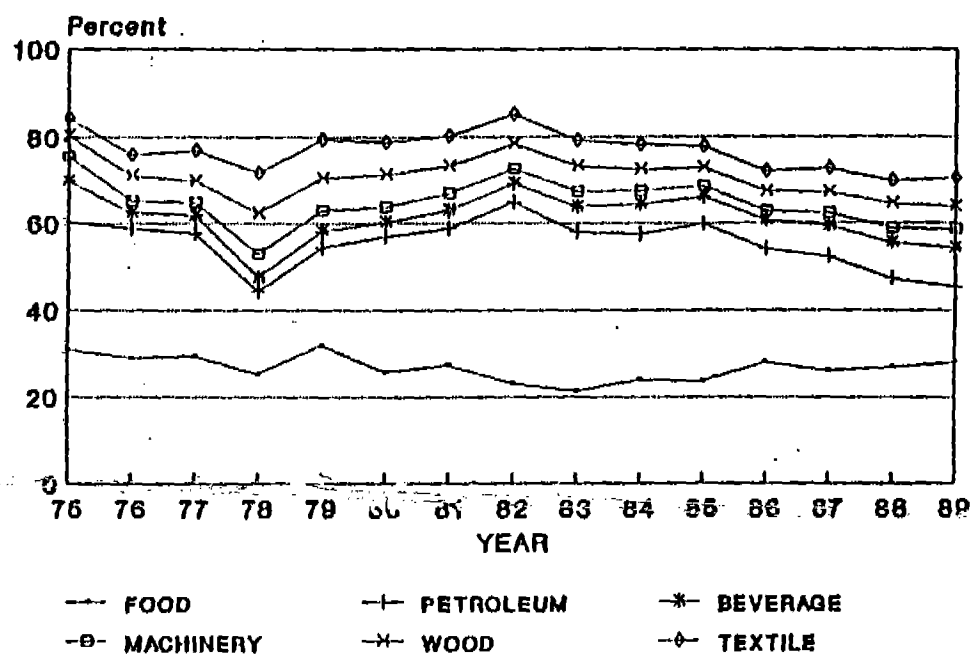
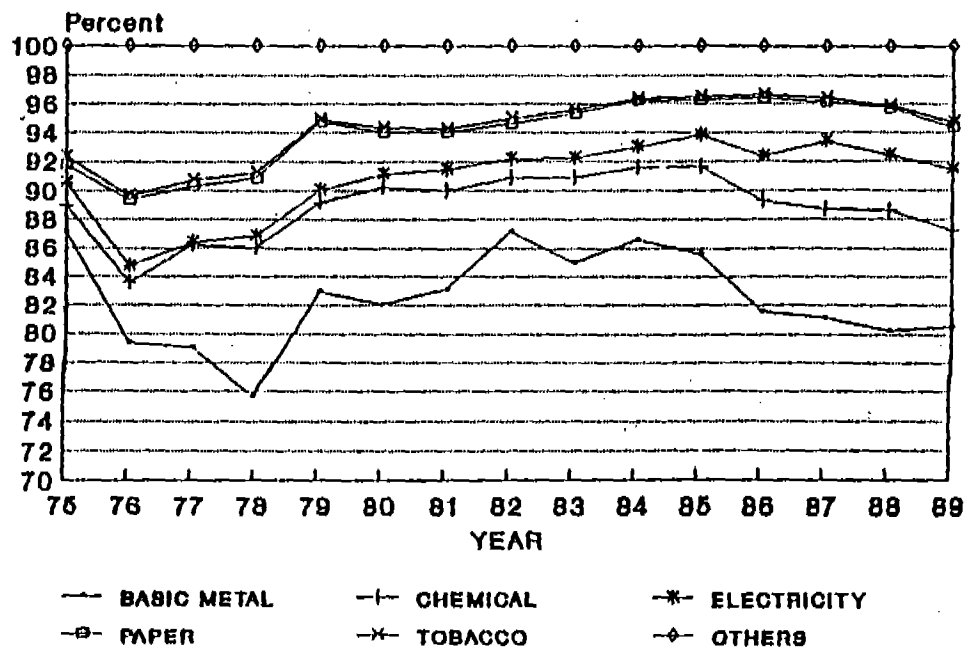


Fig. 5.42 Trend in the Distribution of Output  
in RNEs in Different Industry Group; 1975-1989



the food industry and petroleum industry gave a percentage share as high as 64.72 percent in 1982. The lowest combined share of 44.46 percent took place in 1978. The further addition of each of the percentage shares of the beverage, machinery, wood and textile industries created more or less similar trends, declining from 1975 to 1978, then increasing until 1982, and declining again in general until 1989. The highest cumulative share was obtained in 1975 and 1982. Adding up the contribution to the total output of the basic metal industries resulted in total percentage shares ranging from 75.70 percent in 1978 to 87.16 percent in 1982.

The vertical difference between any two lines in Figure 5.42 shows the percentage contribution of each industry. Thus petroleum had the largest contribution to total RNE output reaching as high as 41.57 percent in 1982. The second largest contribution was made by the food industry which accounted for more than one-fourth of the total RNE output during the period. The food industry made the highest share of 32 percent in 1979. In 1989, its share amounted to 28.17 percent of total RNE output.

Next to food and petroleum, the four industries that made relatively large contribution to total RNE output in 1989 were basic metals, 10.09 percent; beverage, 8.95 percent; chemicals, 6.74 percent; and textile, 6.62 percent. These were followed by other manufacturing which contributed 5.26 percent and then wood industries, 5.21 percent.

Figure 5.43 (in 3 parts) shows the trend in the gross value added of RNEs from each industry group. As indicated above, the two industries which contributed the most to the gross value added from RNEs were the food and petroleum industries. The value added from food rose from P4.01 billion in 1975 to P6.56 billion in 1989 or an annual growth rate of 3.33 percent for the period 1975 to 1989. The value added from the petroleum industry was more or less stable with a narrow range from P1.15 billion in 1985 and 1986 to P1.40 billion in 1989.

The tobacco industry had the lowest value added among the RNE sectors. For the period 1976 to 1989, its value added fluctuated between P17 million and P51 million. The gross value added from the electrical industry exhibited an increasing trend from P20.63 million in 1977 to P838.40 million in 1987, a very high growth rate of about 96 percent per year. Mild fluctuations were noted in the gross value added from the paper industry in contrast to the large variations in the value added from the chemical industry. The gross value added from the paper and chemical industries varied from P103.8 million in 1975 to P386.53 million in 1989 and from P159.76 million in 1975 to P760.36 million in 1980, respectively.

Fig. 5.43a-Trend in Gross Value Added  
from RNEs, by Industry Group, 1975-1989

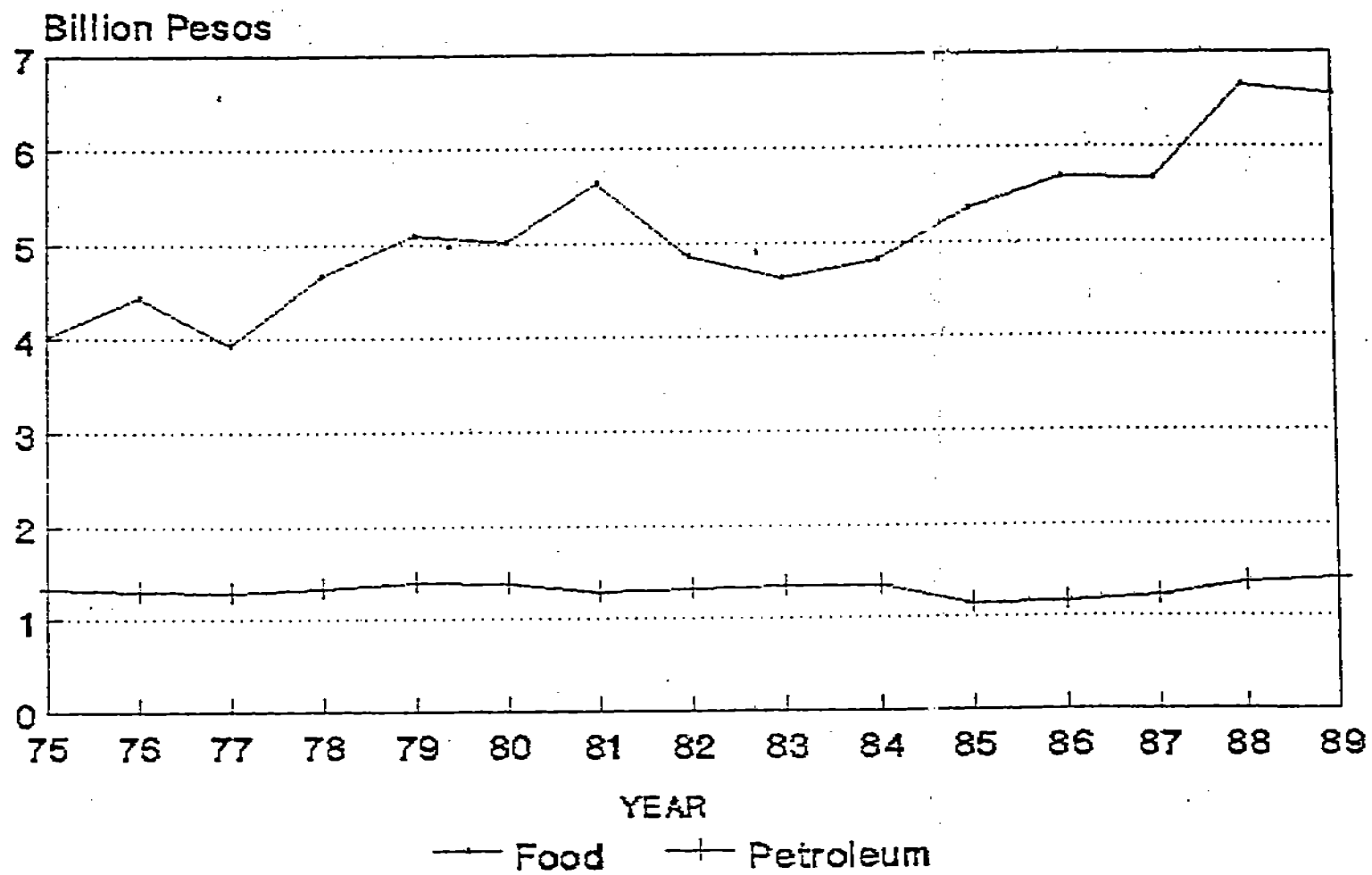


Fig.5.43b. Trend in Gross Value Added  
from RNEs, by Industry Group, 1975-1989

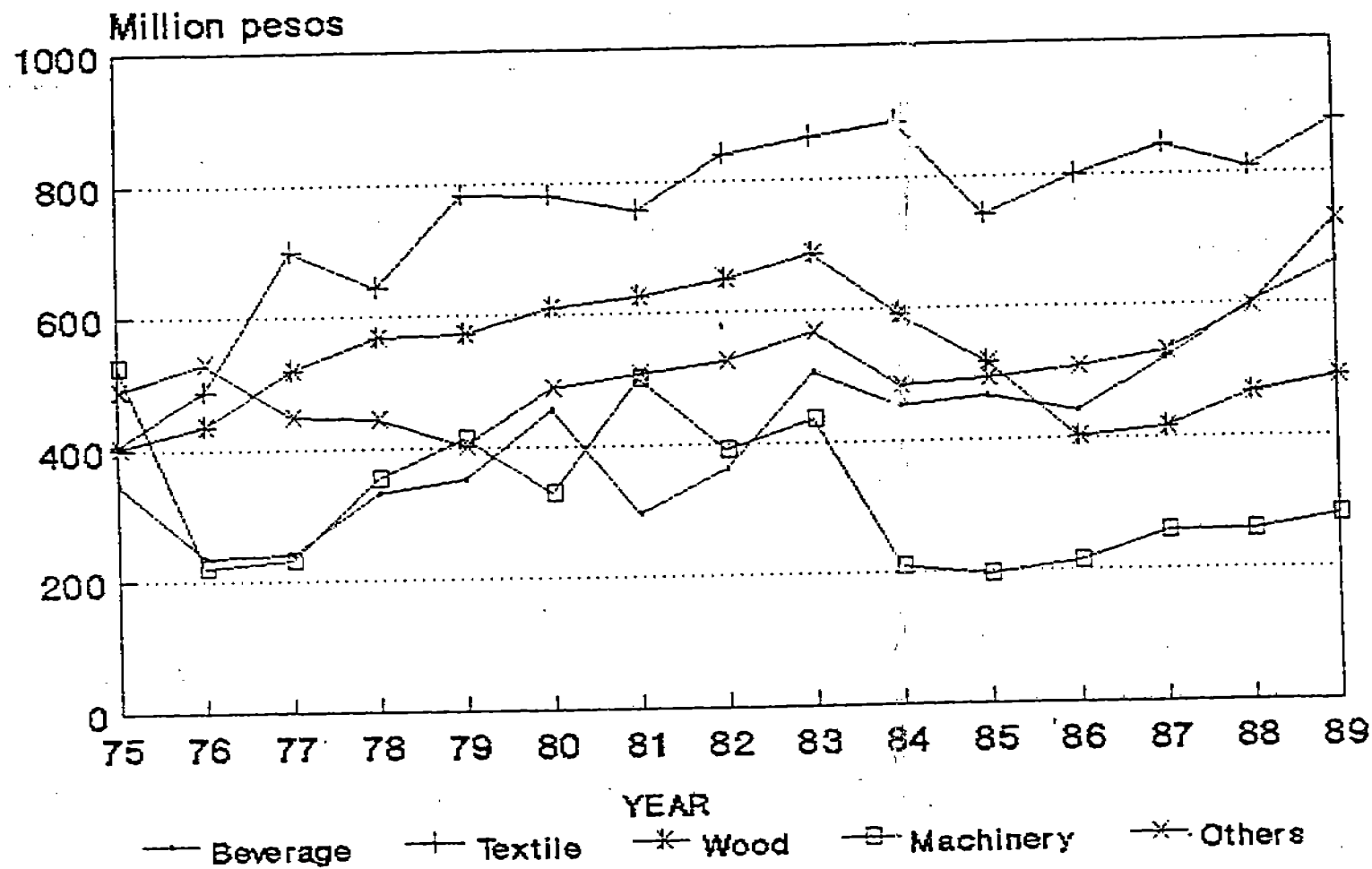
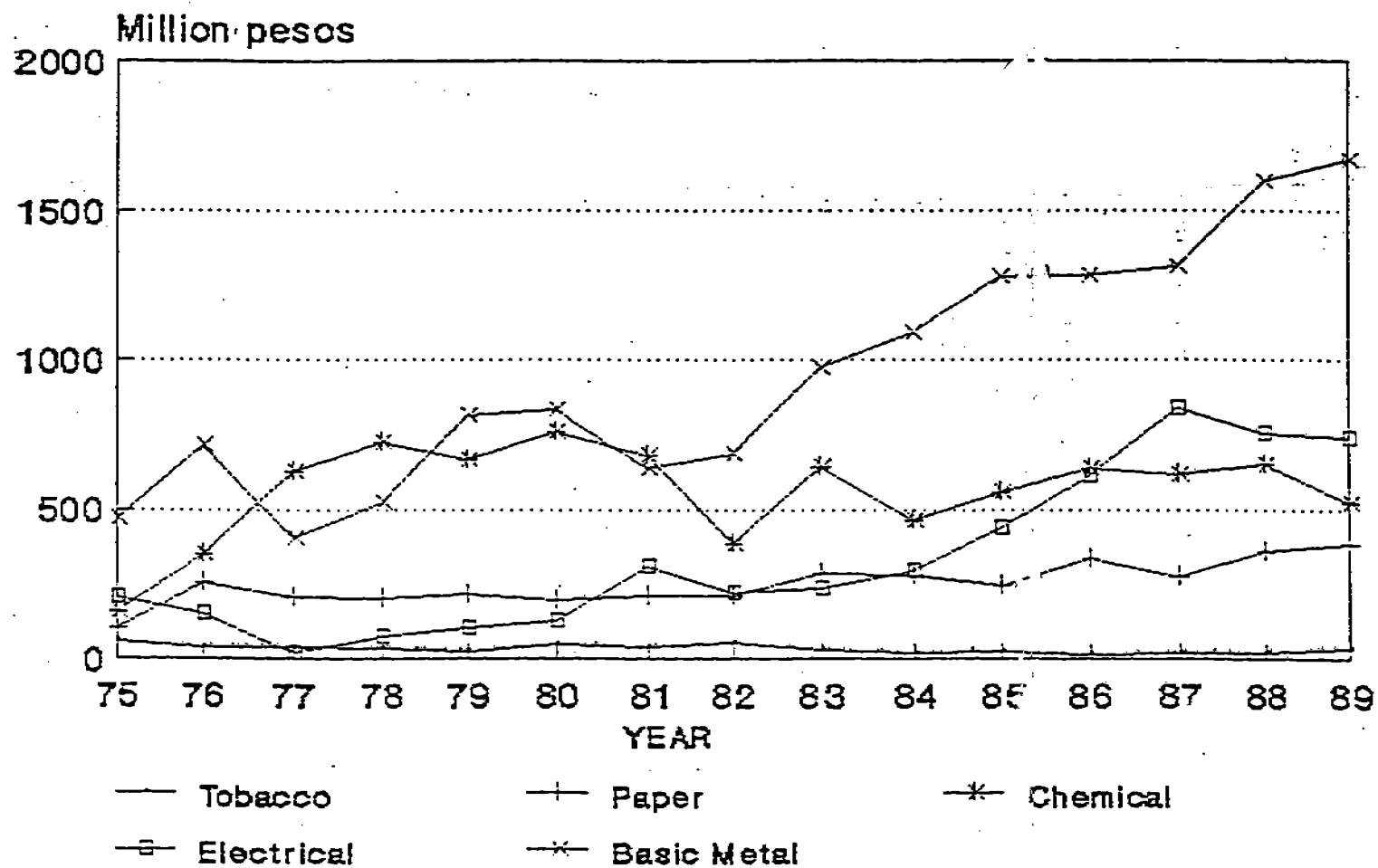


Fig5A3. Trend In Gross Value Added  
from RNEs, by Industry Group, 1975-1989



An increasing trend for the gross value added coming from the beverage industry, a somewhat declining trend for the machinery industry, a fluctuating pattern for the textile industry, and an overall fluctuating pattern but with rising value added from 1985 to 1989 for the other industries can be observed in Figure 5.43. The value added ranged from P236.99 million in 1976 to P663.3 million in 1989 for the beverage industry; P405.74 million in 1975 to P882.79 million in 1984 for the textile industry. A sharp decline in output in the textile industry occurred from 1984 to 1985, however, this has recovered so the value added in 1989 reached a level of P879.03 million. For the basic metal industry, the GVA was quite variable from 1975 to 1982. It went up continuously, however, from P685.16 million in 1982 to P1673.82 million in 1989. As regards the wood industry, the gross value added increased from 1975 to 1980 but showed a generally declining trend until 1986 after which it picked up again reaching a level of P490 million in 1989.

### 5.3. Employment

The manufacturing industry employed more than 1.2 million people in 1989 about 50 percent of whom were in rural enterprises and the other half in Metro Manila. The trend in the percentage distribution of employment followed almost a similar pattern as that of total output. The total number of workers was almost equally divided between the rural areas and Metro Manila especially from 1977 to 1981 (Fig. 5.44) But rural nonfarm enterprises seem to absorb more employment in the 1980s.

Figures 5.45 to 5.56 show the percentage labor absorption of each of the twelve industry sectors from 1975 to 1989. During the period, the food, beverage, wood, and petroleum industries in the rural areas employed more workers than those located in Metro Manila. The food industry is mainly rural in terms of the proportion of labor employed which is about three fourths of total employment within the industry. For the beverage industry, about two-thirds of the laborers are working in beverage firms located in the rural areas. The wood and petroleum industries have a large proportion of workers in the rural areas - about 66.92 percent and 88.52 percent respectively in 1989.

More people were employed in Metro Manila's tobacco, paper, chemical, and electrical industries than in the same types of enterprises in the rural areas. The percentage share, however, of employment in the electrical industry



Fig. 5.4. Percentage Employment in  
Rural Areas and Metro Manila, 1975-89

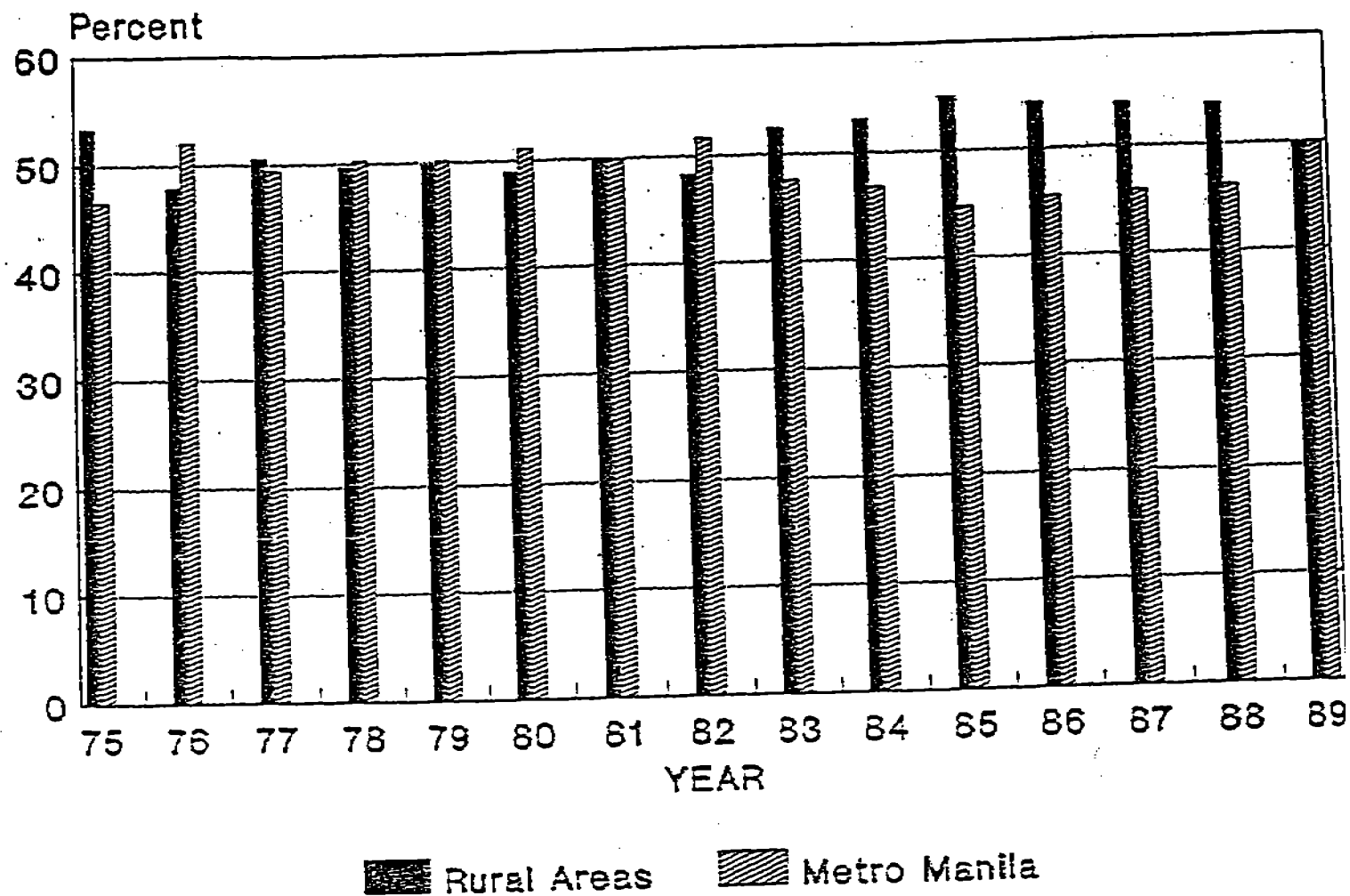


Fig. 5/45. Percentage Employment in Food Industries in Rural Areas and Metro Manila, 1975-89

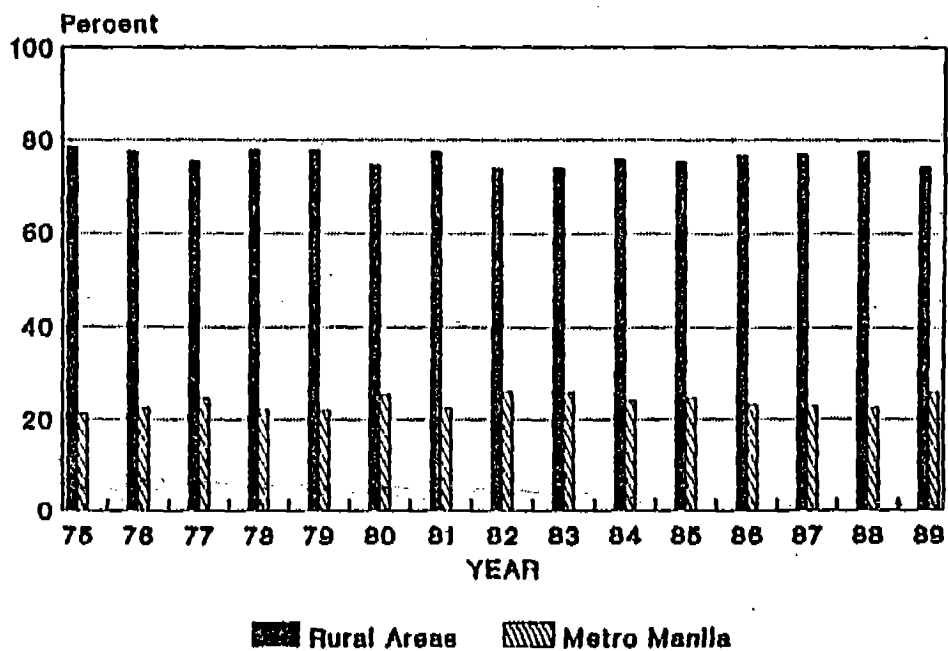
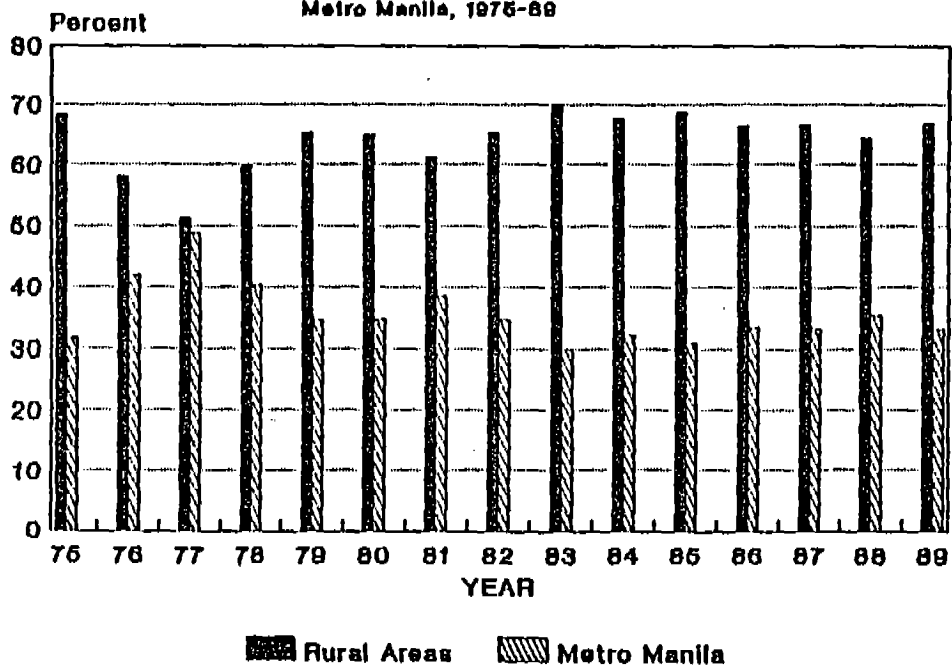
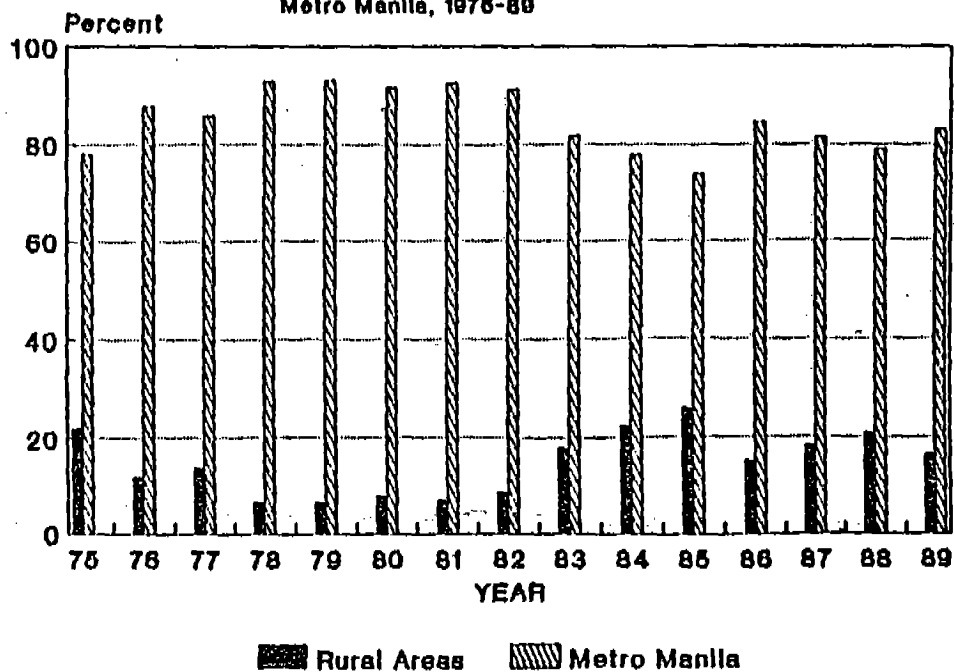


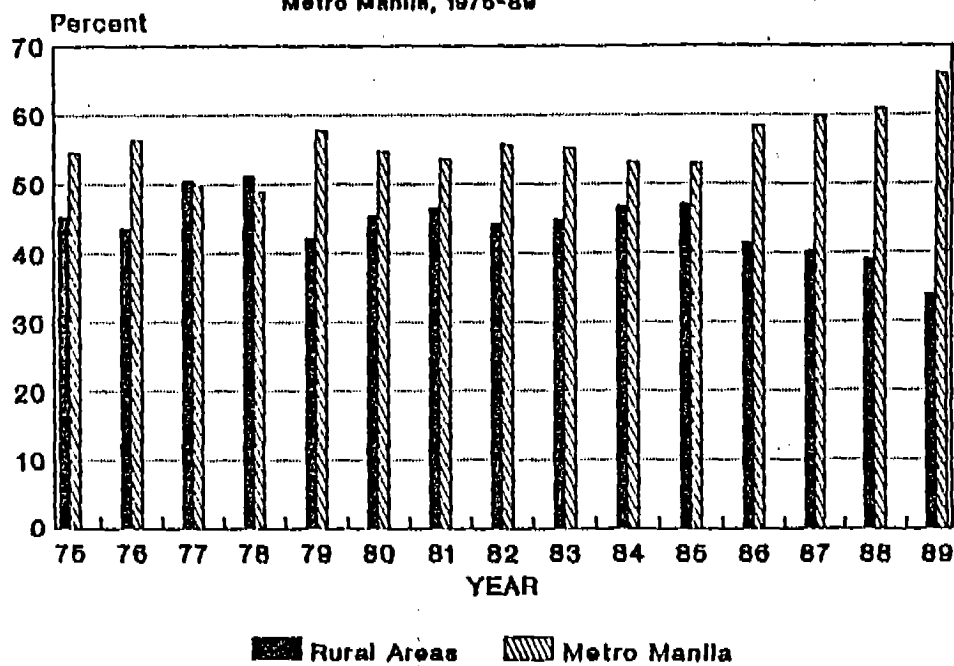
Fig. 5/46. Percentage Employment in Beverage Industries in Rural Areas and Metro Manila, 1975-89



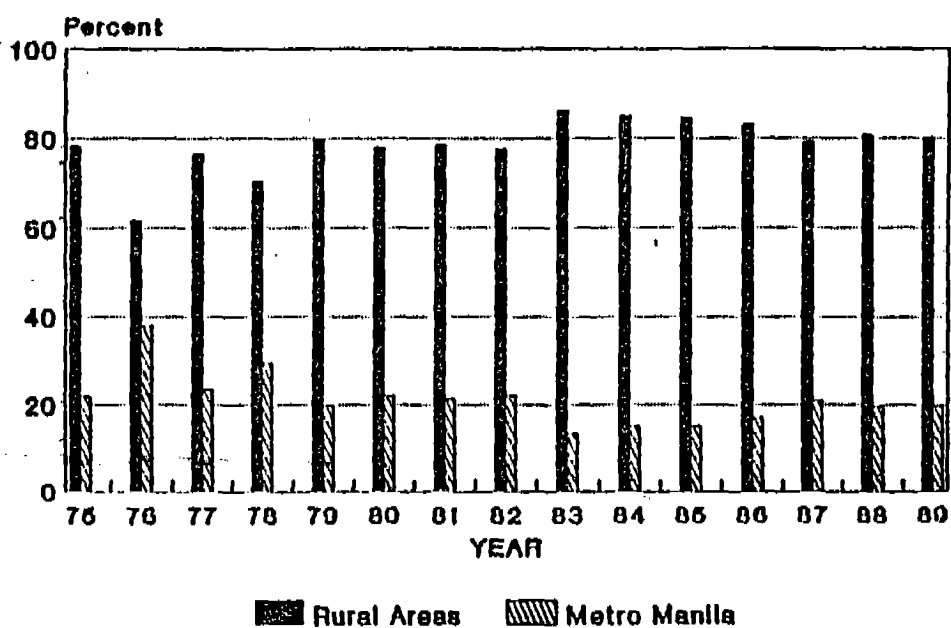
**Fig. 5.47** Percentage Employment in Tobacco Industries in Rural Areas and Metro Manila, 1975-89



**Fig. 5.48** Percentage Employment in Textile Industries in Rural Areas and Metro Manila, 1975-89



**Fig. 5.49** Percentage Employment in  
Wood Industries in Rural Areas and  
Metro Manila, 1976-89



**Fig. 5.50** Percentage Employment in  
Paper Industries in Rural Areas and  
Metro Manila, 1976-89

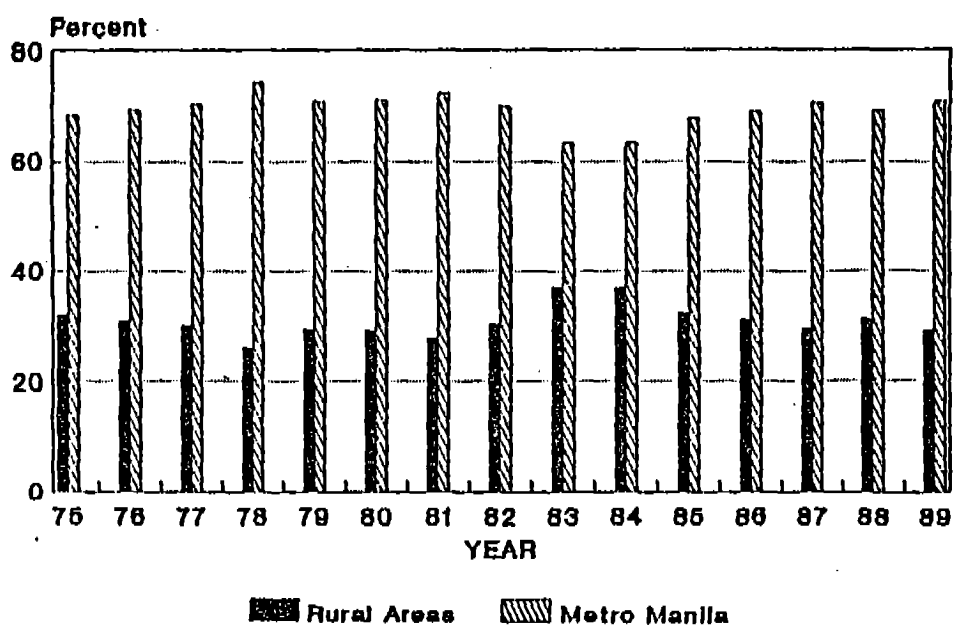


Fig. 5.51 Percentage Employment in Basic Met. Industries in Rural Areas and Metro Manila, 1976-89

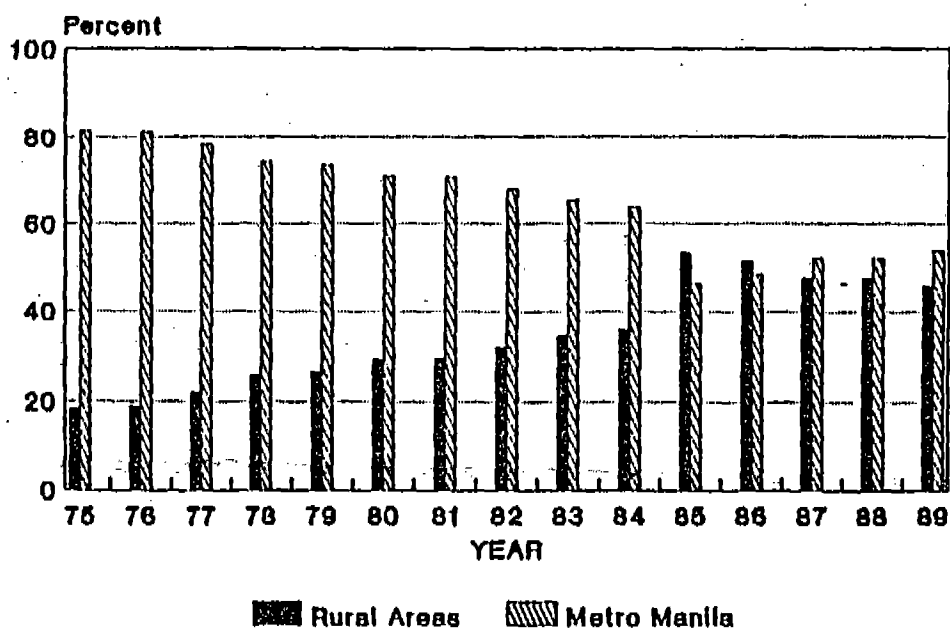


Fig. 5.52 Percentage Employment in Mach. Industries in Rural Areas and Metro Manila, 1976-89

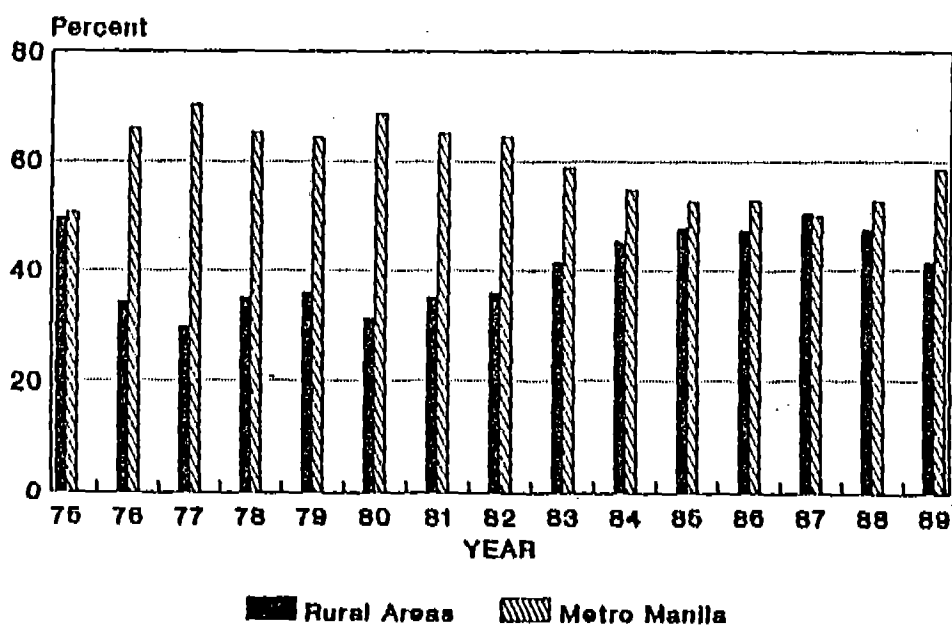


Fig. 5.53 Percentage Employment in  
Chemical Industries in Rural Areas and  
Metro Manila, 1975-89

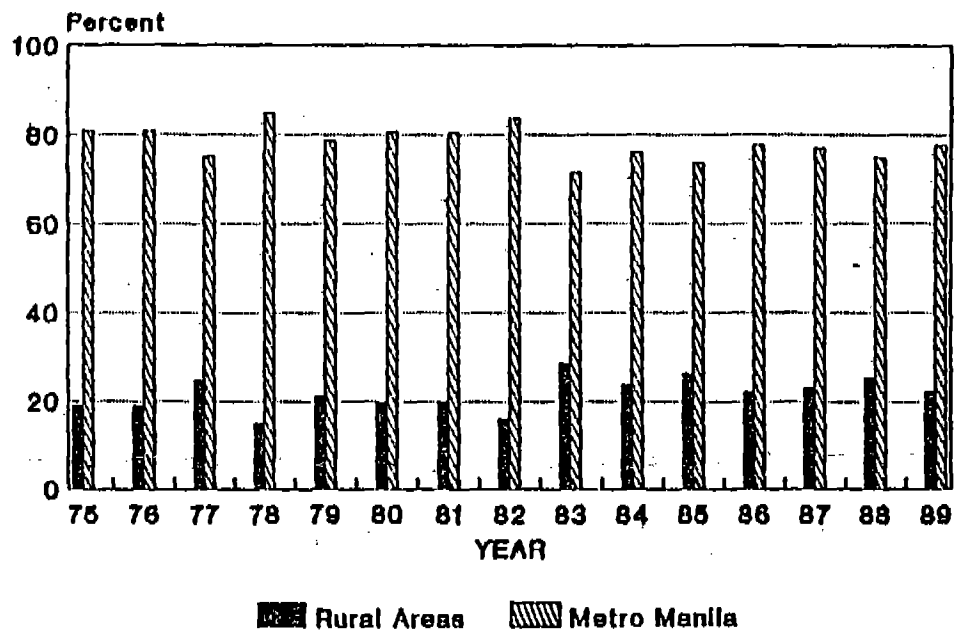
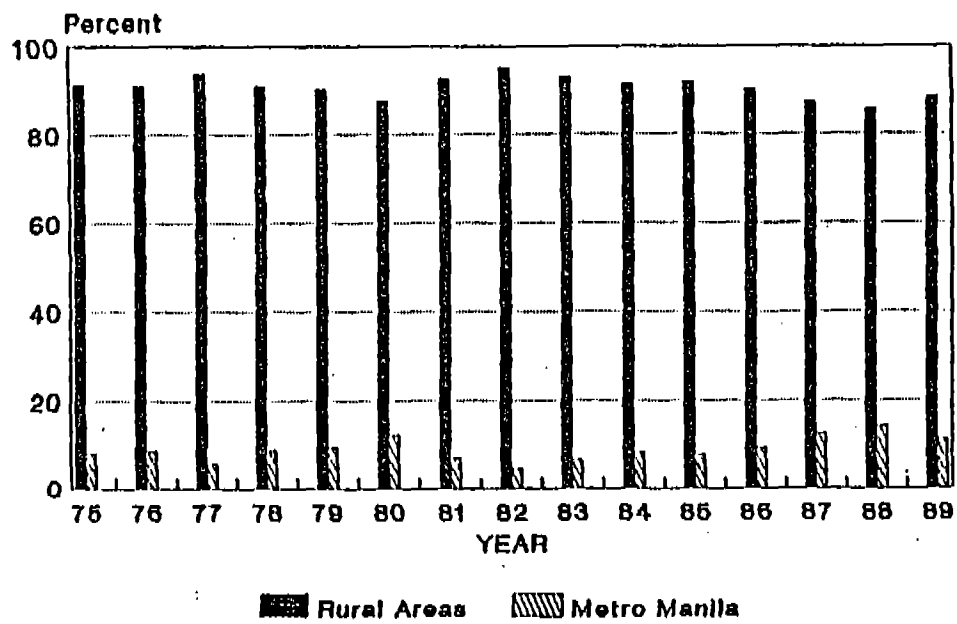
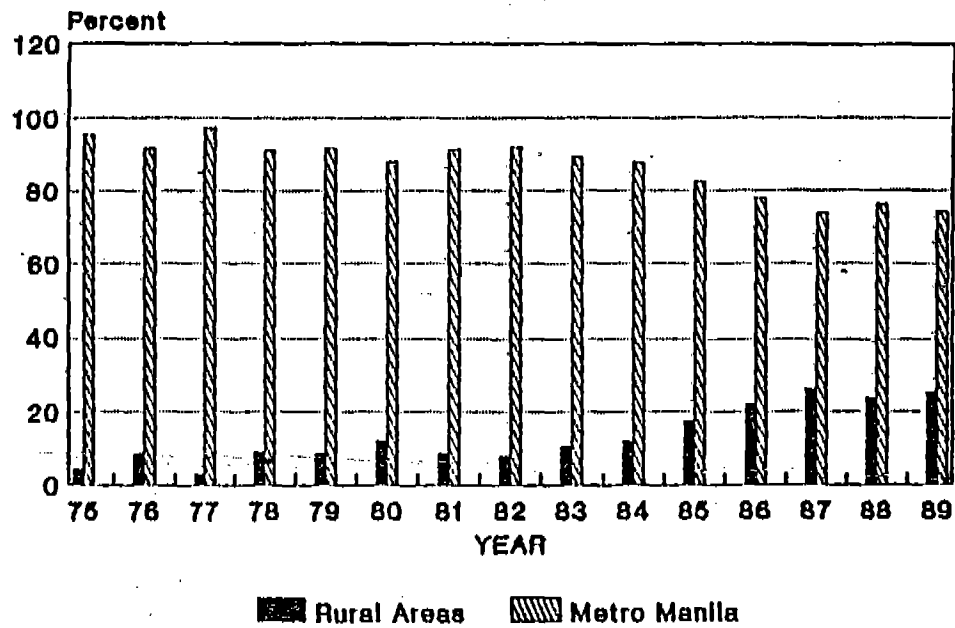


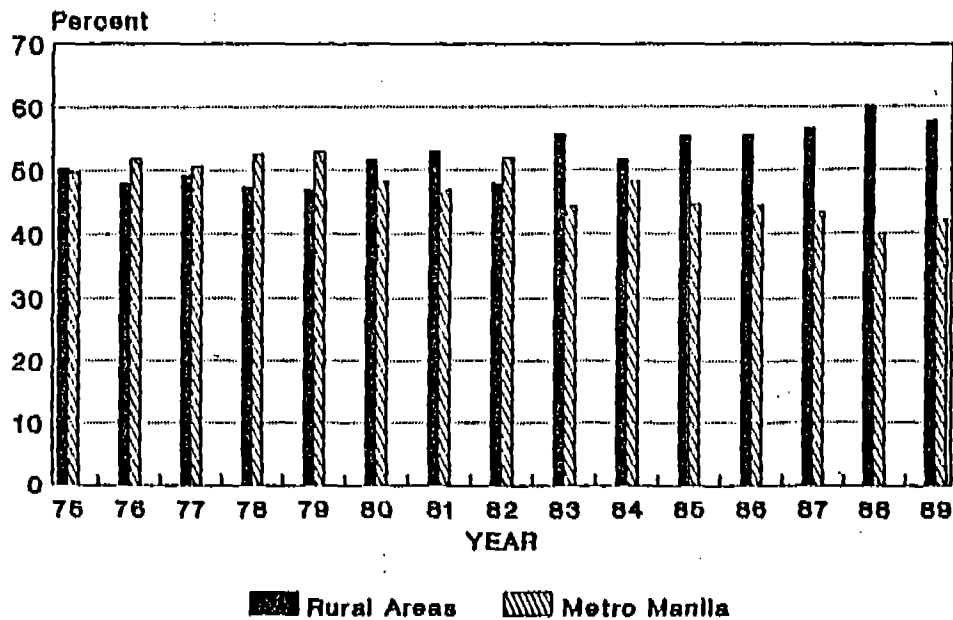
Fig. 5.54 Percentage Employment in  
Petroleum Industries in Rural Areas and  
Metro Manila, 1975-89



5.55  
Fig. 5.55. Percentage Employment in  
Electrical Industries in Rural Areas and  
Metro Manila, 1975-89



5.56  
Fig. 5.56. Percentage Employment in  
Other Industries in Rural Areas and  
Metro Manila, 1975-89



appeared to be decreasing from 97.15 percent in 1977 to 73.96 percent in 1987. No definite trends could be discerned from the percentage shares of the other three industries. The share in employment of the tobacco industry varied from 74.08 percent in 1985 to 93.45 percent in 1979; 63.15 percent in 1983 to 74.13 percent in 1978 for the paper industry; and 71.41 percent in 1983 to 84.98 percent in 1978 for the chemical industry.

For the rest of the manufacturing industries such as the textile, basic metal, and machinery industries, although in general, the percentage shares of employment in Metro Manila were higher than in the rural areas, there were one or two years in the 15-year period covered by the study wherein more people were employed in the latter. In the textile industry, 50.38 per cent in 1977 and 51.11 percent in 1978 had jobs in the rural areas. In the basic metal industry, 52.45 percent and 51.37 percent respectively in 1985 and 1986 got employed in the rural areas. The machinery industry generated only 49.72 percent of the total employment in Metro Manila in 1987.

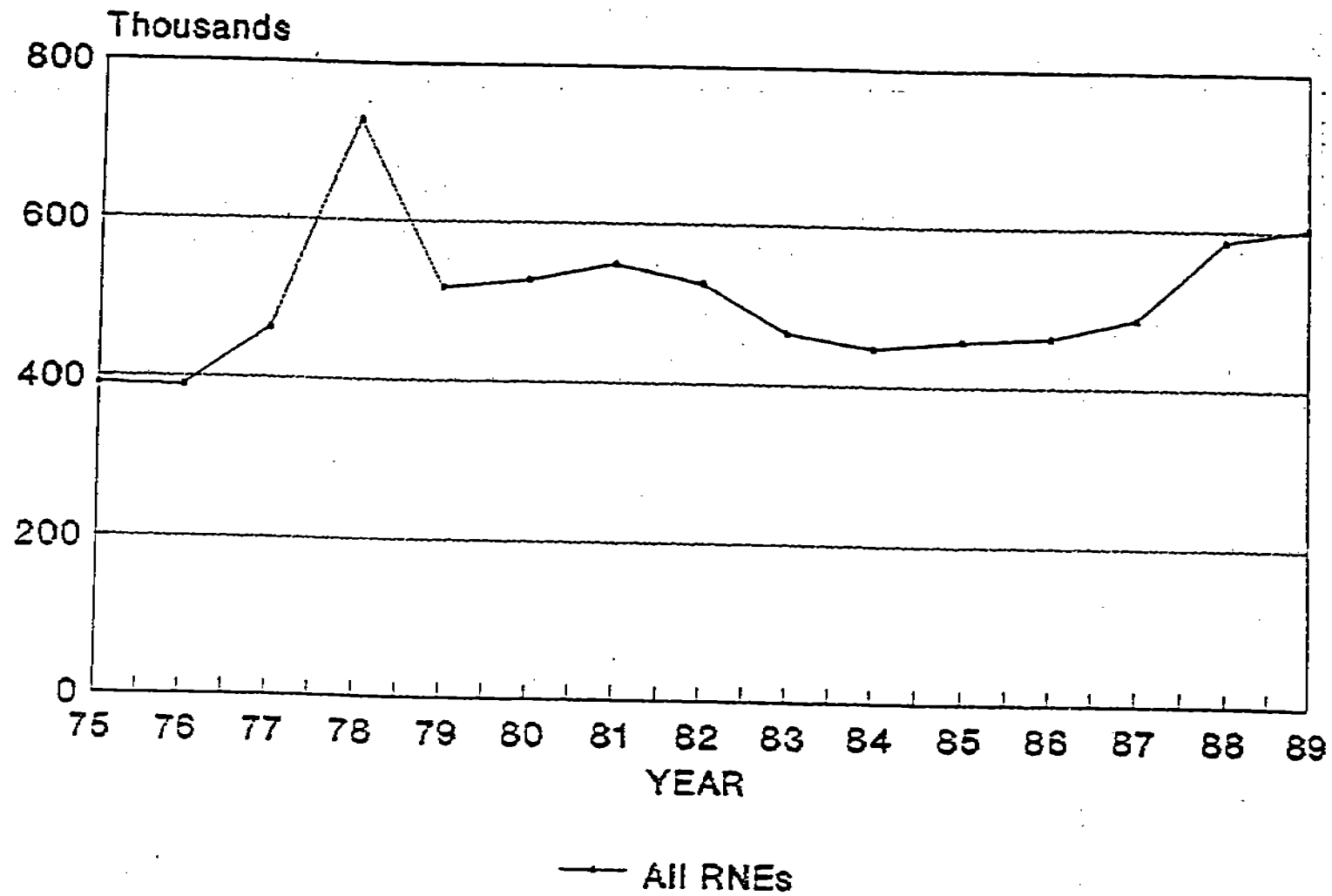
The highest percentage employment in Metro Manila for the textile, basic metal, and machinery industries were 66.06 percent in 1989, 81.74 in 1975, and 70.34 percent in 1977, respectively. The percentage employment in the basic metal industry in Metro Manila exhibited a declining trend.

The percentage employment in the other industries in Metro Manila fluctuated from 39.88 percent in 1988 to 52.95 percent in 1979. Only in five of the 15 year period did the labor force in Metro Manila become greater than that in the rural areas. These years were 1976 to 1979 and 1982.

Rural nonfarm enterprises employed 391.27 thousand people in 1975. Between that year and 1989 the general trend in labor absorption by RNEs is increasing at an annual rate of 2.92 percent (Fig. 5.57). (Note the sharp increase in employment from 1977 to 1978 which was followed by a sharp decline the following year. These changes are difficult to explain. The year 1978 is a census year while 1977 and 1979 are years when the regular annual surveys were conducted. It is possible that there was a change in measurement and the data for 1978 may not be comparable or consistent with the other data in the series. ) Nevertheless, employment was on the uptrend, a drop was observed from 1981 to 1984 after which the number of workers in RNEs increased steadily. For the period 1984 to 1989, total employment by RNEs grew at a rate of 5.13 percent per annum.



Fig. 5.57. Trend in Employment  
in All RNEs, 1975-1989



The distribution of employment among the different sectors is presented in Figure 5.58 (in 2 parts). Among the RNEs, the food industry employed the most number of persons. In 1989, the sector absorbed about 35.39 percent of all manufacturing workers in 1989. In terms of employment generation, the food industry was followed by the textile industry and then by the wood industry, which absorbed about 19.46 percent and 15.66 percent of the total labor force in the manufacturing sector. These industries, together with machinery, beverage, and other industries account for 83.11 percent of all employment in manufacturing in 1989.

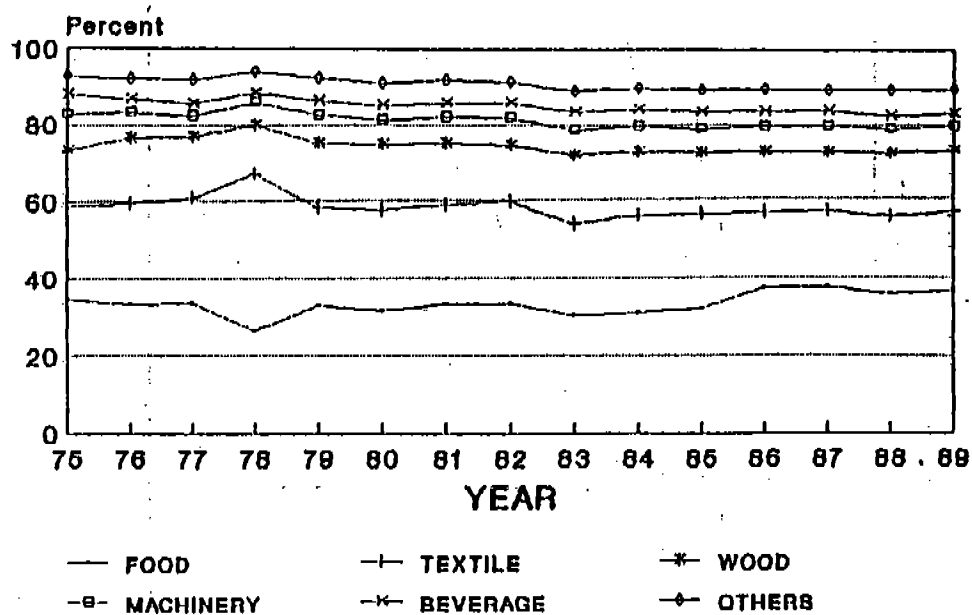
For the period 1975 to 1989, the food industry employed the greatest number of persons among all RNEs (except in 1978 which as indicated earlier was a census year and data may not be comparable with other years.) The labor force in the food industry generally increased from 129 thousand in 1976 to 221 thousand in 1989 (Fig. 5.59a - 5.59c). Second to the food industry in terms of creating jobs was the textile industry, followed by the wood industry.

The fourth, fifth and seventh manufacturing industries in terms of providing jobs in the rural areas were the machinery, other industries, and the chemical industry, respectively (Fig. 5.59b). The employment generated by the machinery industry fluctuated and ranged from 26 thousand in 1977 to 43 thousand in 1978. The chemical and the other manufacturing industries exhibited somewhat increasing trends from 10 thousand in 1975 to 22 thousand in 1988, and from 20 thousand in 1975 to 40,551 in 1988, respectively. The other industries, however, had its highest employment of 40,779 people in 1978.

The electrical industry's participation in the labor force increased from a very low 1,022 persons (the lowest among all the RNEs in 1975) to 15 thousand in 1989; that of the basic metal industry varied from two thousand in 1975 to 10 thousand in 1985. Of all the RNEs, the petroleum industry had the lowest generated employment with a very narrow range (from 1,127 in 1976 to 3,069 in 1982).

Fig. 5.59c shows the trend in employment in the beverage, paper and tobacco industries. The sixth industry with the largest labor force participation in the rural areas was the beverage industry. Employment in this industry went up from 13 thousand in 1976 to 22 thousand in 1989. Although the size of the labor force in the paper industry varied through the years, it grew from nine thousand people in 1975 to 14 thousand in 1989. Compared to the petroleum industry, the labor force in the tobacco industry was a little bit greater.

5.58  
Fig. --- Trend in the Distribution of Employment  
in RNEs in Different Industry Group, 1975-1989



5.58  
Fig. --- Trend in the Distribution of Employment  
in Different Industry Group, 1975-1989

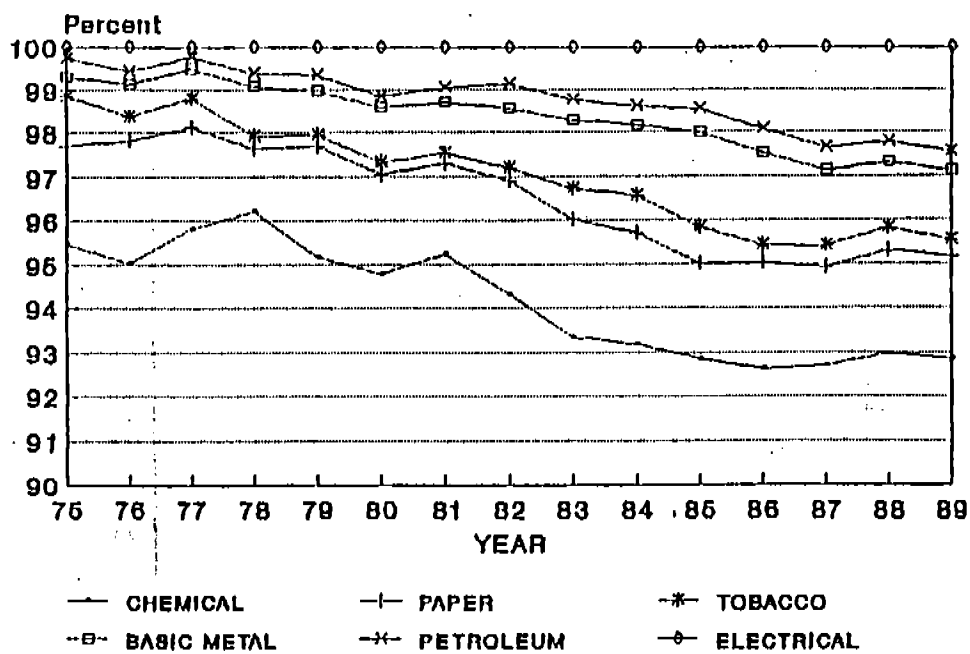


Fig. 5.59a Trend in Employment  
in RNEs by Industry, 1975-1989

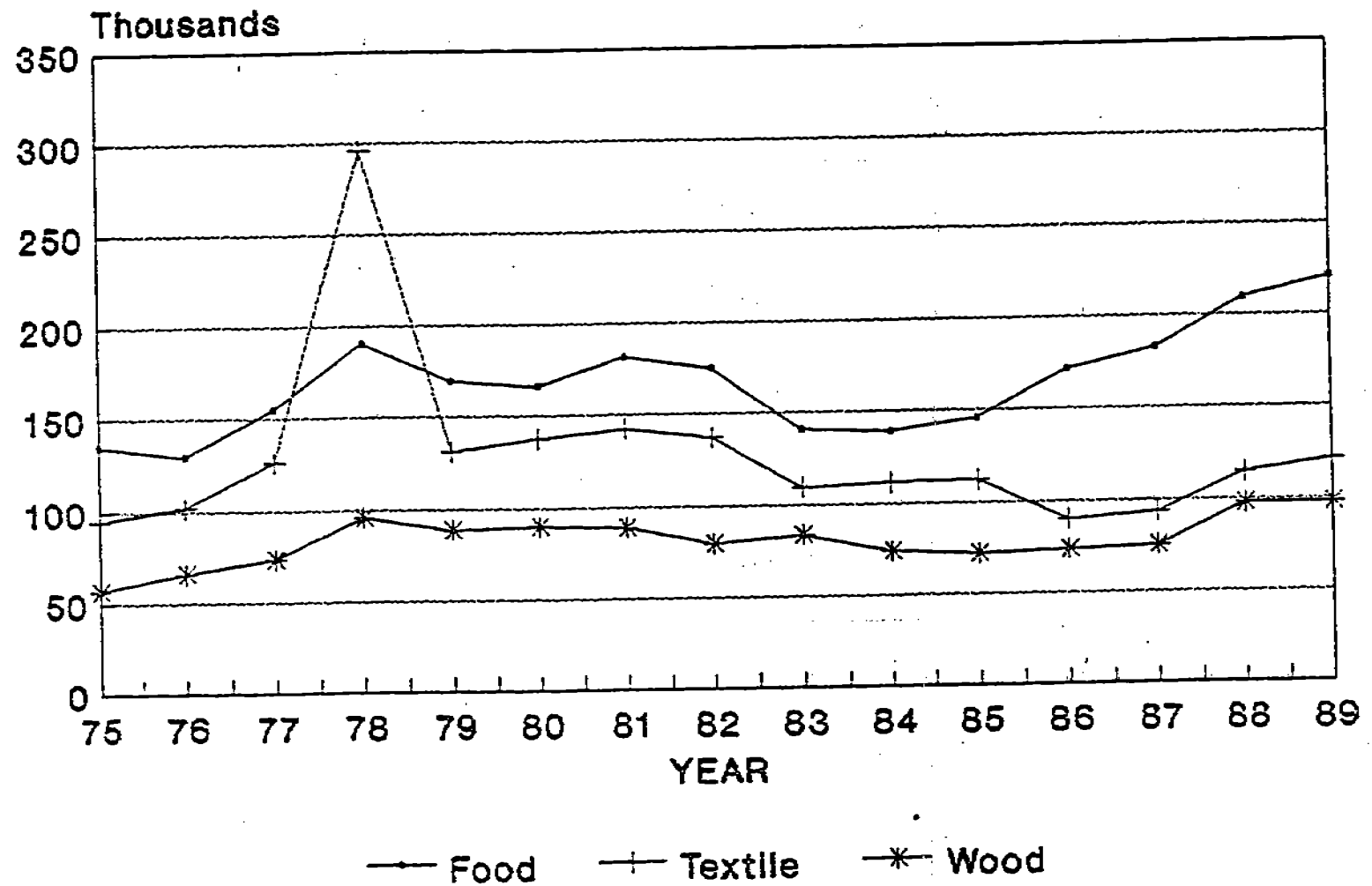


Fig. 5.59 b Trend in Employment  
in RNEs by Industry, 1975-1989

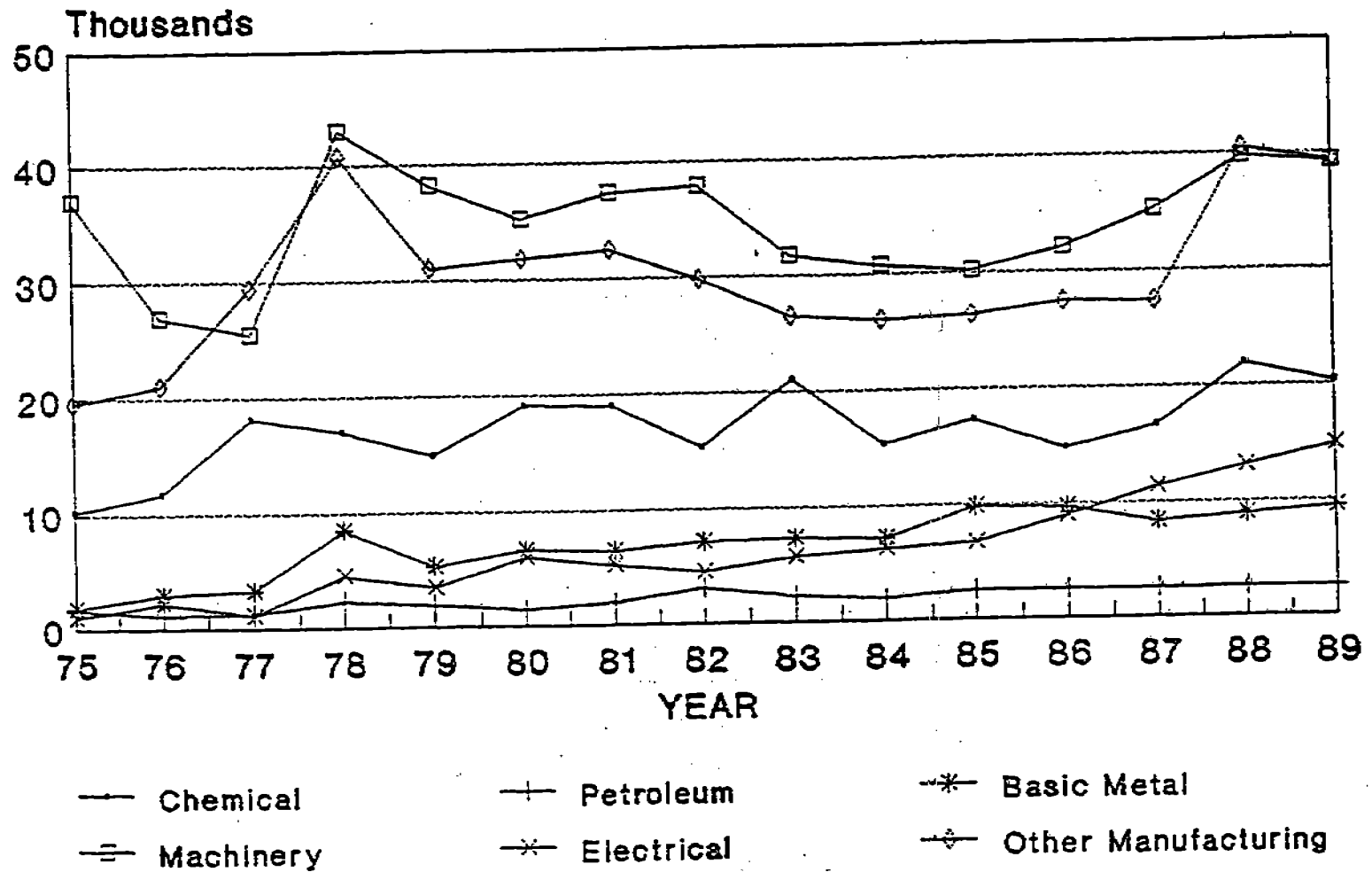
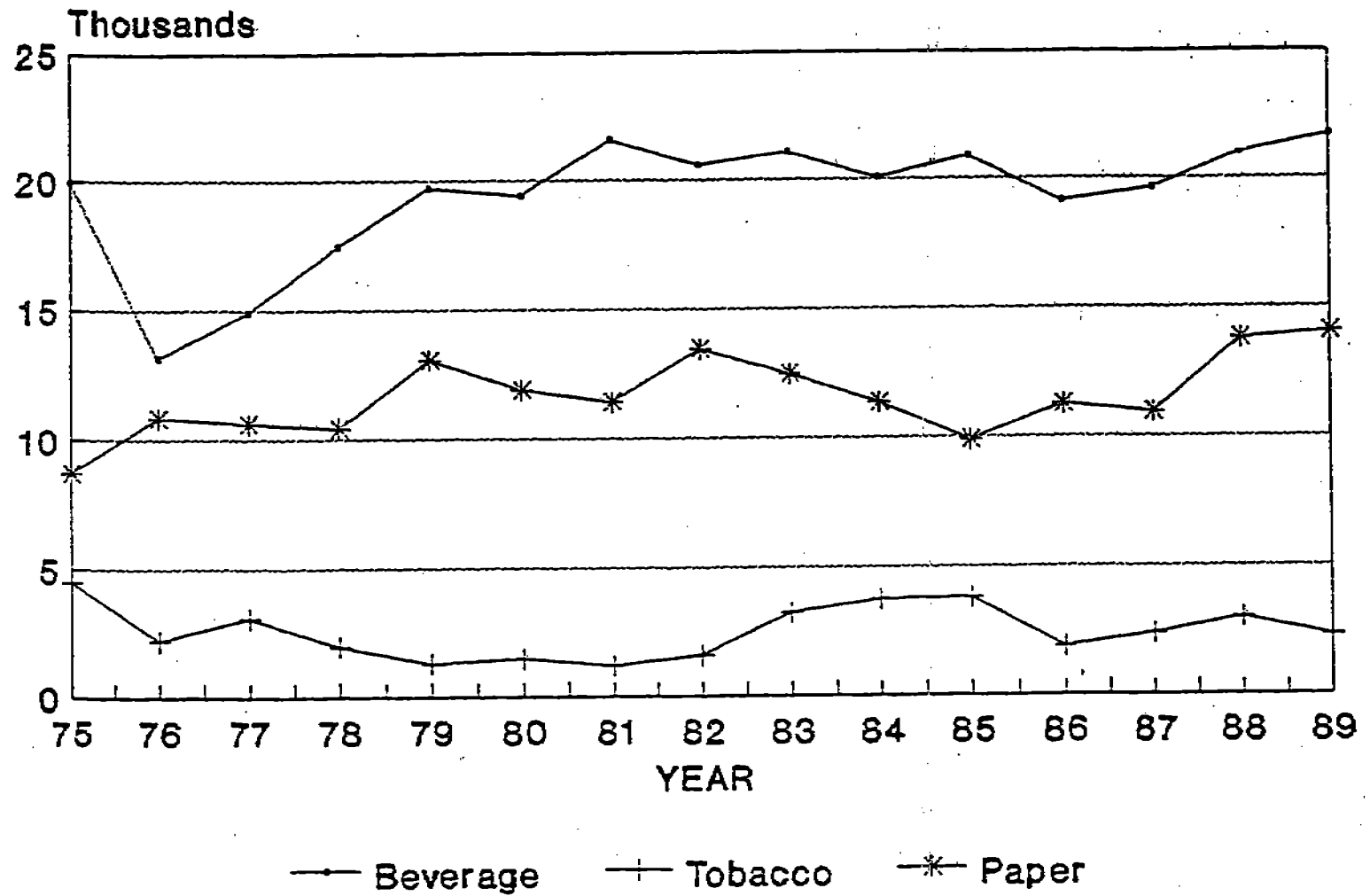


Fig. 559c. Trend in Employment  
in RNEs by Industry, 1975-1989



#### 5.4. Prices

Figures 5.60a and 5.60b show the behavior of prices from 1975 to 1989. Regardless of industry group, prices are on the uptrend. Prices went upward steadily for the whole period but the rate of increase seemed to have moved faster after the 1983 crisis.

#### 5.5. Some Concluding Remarks

Several tables and figures show surprisingly little change in total number of firms, share of output, or distribution between rural/urban and small/large firms over time. Data were obtained from the NSO and there is no way by which the accuracy of the data could be checked. The NSO publishes two surveys of manufactures, one is the annual survey and the other is the census of manufactures and there are some differences in the two sets of publications.

Some indicators could be obtained from the literature (Chapter 3 and 4). For example, in the Petron, Caltex and Shell. In the paper and paper products manufacture of paper and paper products in 1980. Based on data from PULPAPEL, there were 24 paper mills 14 of which were in Metro Manila, four in Central Luzon, two in Southern Tagalog, two in the Visayas and two in Mindanao. It would probably be difficult for these firms to move between Metro Manila and the provinces. It was further gathered that small pulp and paper mills proliferated in various parts of the country. These are located mainly outside Metro Manila and therefore would be classified under "rural."

Another issue that should be considered is the presence of the informal/underground economy which "could be" large. However, there are no existing time series data whether on the aggregate, subsector, urban/rural, and small/large firms. At the moment therefore, no analysis could be made. It is suggested that a survey of the informal/underground firms be made to be able to understand their operations and to analyze the possible impact of government policies.

fig.5.60a Implicit Price Index of RNE Products  
by Industry Group, 1975-1989

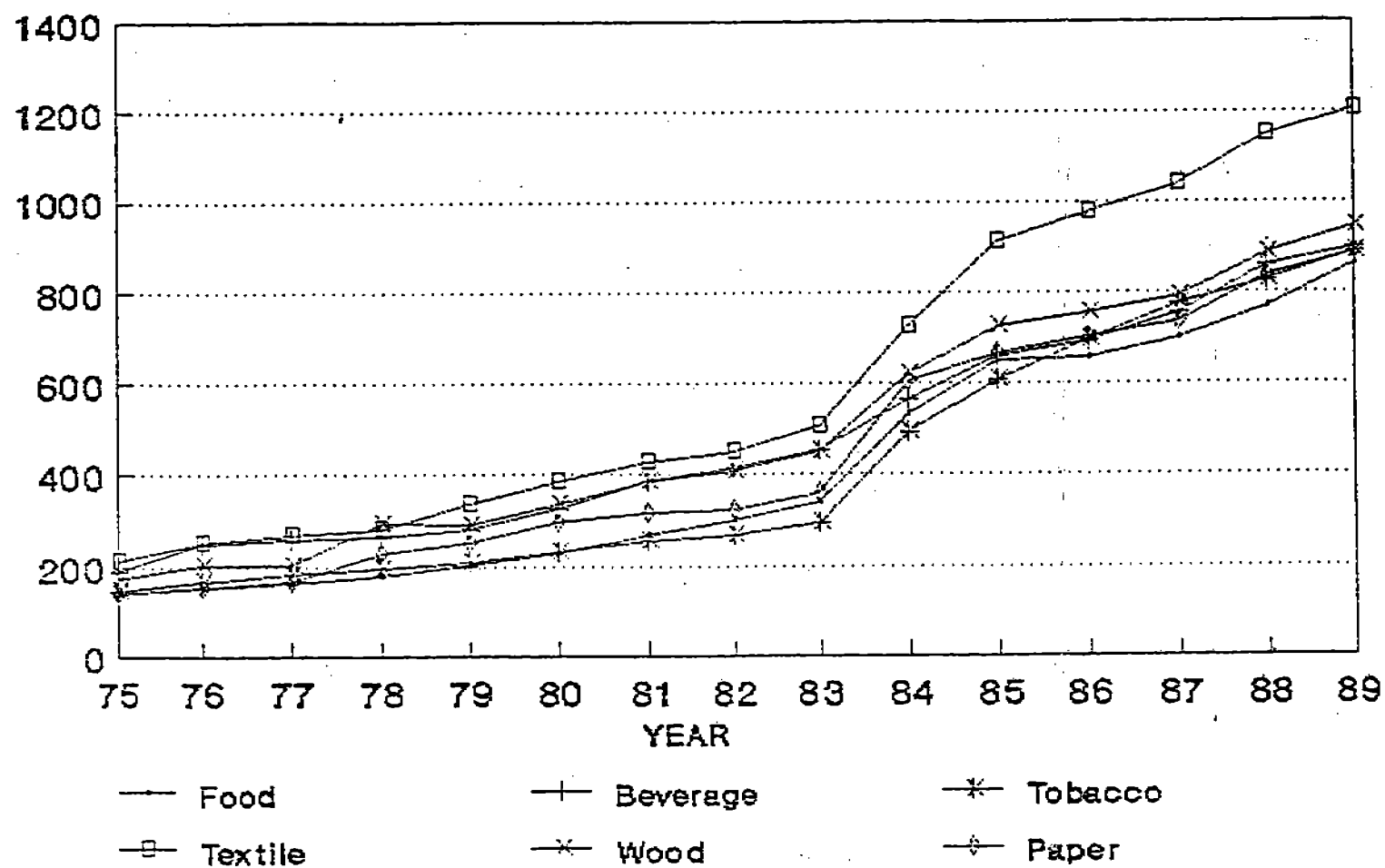
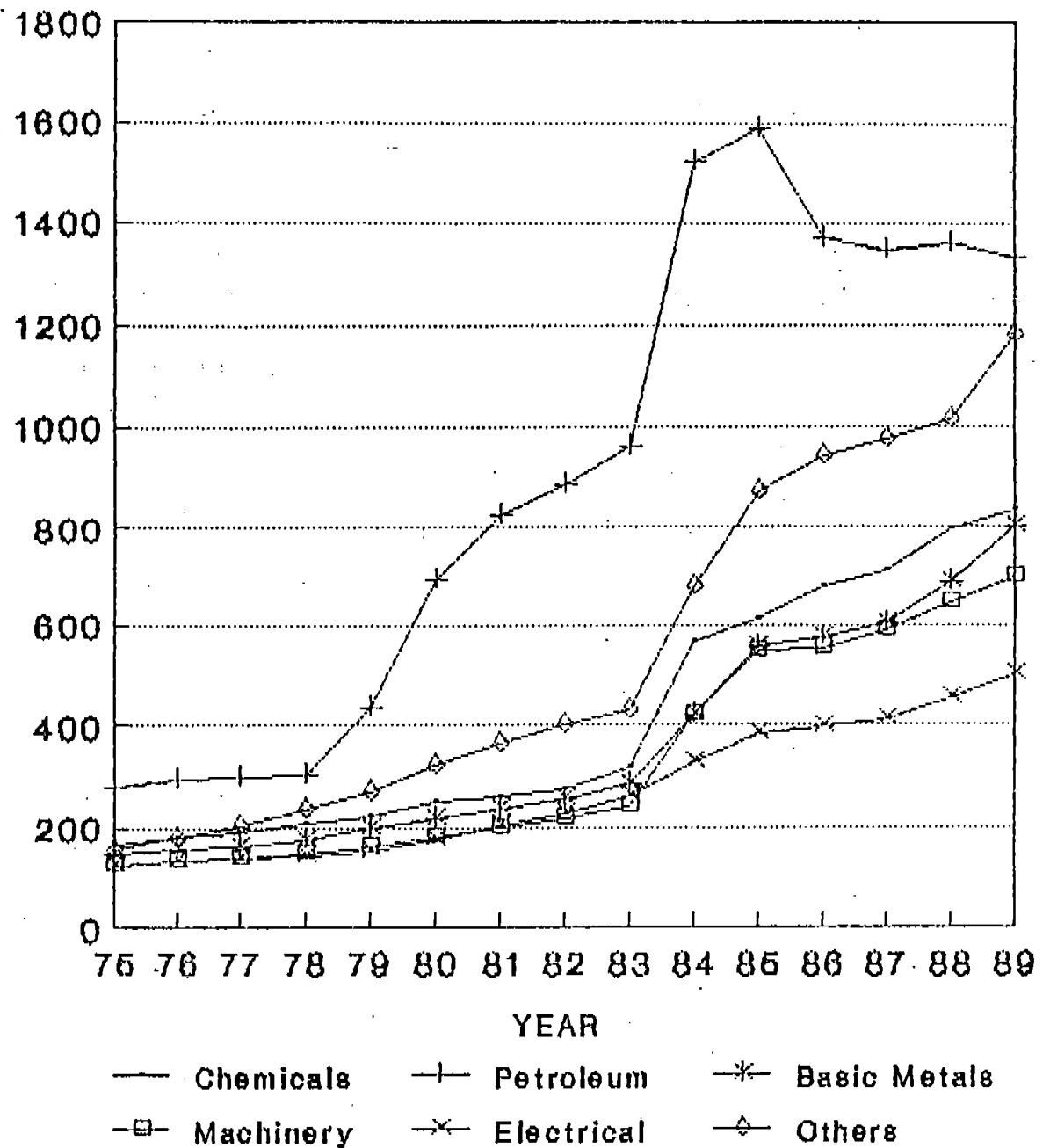




Fig.5.60b. Implicit Price Index of RNE Products  
by Industry Group, 1975-1989



## CHAPTER 6

### SUBMODEL ESTIMATES FOR THE RURAL NONFARM ENTERPRISES

For this study, rural nonfarm enterprises (RNEs) have been defined to include those enterprises engaged in the manufacture of various goods and located in regions outside Metro Manila. The RNEs were classified into twelve sectors namely:

- (1) Food manufacturing
- (2) Beverage manufacturing
- (3) Tobacco manufacturing
- (4) Textile, wearing apparel, and leather industries
- (5) Manufacture of wood and wood products
- (6) Manufacture of paper and paper products, printing and publishing
- (7) Manufacture of chemicals and chemical, rubber, and plastic products
- (8) Manufacture of petroleum and coal products
- (9) Basic metal industries
- (10) Manufacture of fabricated metal products, machineries (except electrical) and transport equipment
- (11) Manufacture of electrical machinery, apparatus, appliances, and supplies
- (12) Other manufacturing industries

The structure and behavior of these RNEs were analyzed by constructing a submodel which determines the levels of value added, employment and prices for each of the above 12 sectors. The submodel is later linked with the PIDS NEDA macroeconometric model (MEM) to determine the effects of various macroeconomic policies.

## 6.1 The submodel

Chapter 2 presented the theoretical and analytical framework in a submodel for the analysis of output or value added, employment and prices of rural nonfarm enterprises. The submodel consists of three major blocks, namely; demand, employment and prices.

The PIDS NEDA MEM developed by Constantino, Yap, Butiong and de la Paz (1990) divided the production sector into the fixprice, flexprice and flexprice/flexquality sectors. The fixprice sector is assumed to have an adjusting output level and fixed prices and is most applicable to the industrial sector. Characterized by an oligopolistic structure, production adjustments to increase in demand take place on the quantity side. Prices are like to be fixed in the short run by relatively stable mark-ups over variable cost. Following the assumptions of the PIDS NEDA MEM, the RNE demand is assumed to depend a sector prices and to indicators of aggregate domestic and international demand. Output adjusts to quantity demanded due to excess capacity.

Indicators of aggregate domestic demand include private consumption expenditures, government consumption expenditures (or the summation of private and government consumption expenditures) and population while international demand is represented by exports. The demand functions may be expressed mathematically as follows:

$$(1) Q_1 = f(P_1, CP \text{ or } CG \text{ or } CP+CG, POP, X_1, U_1)$$

where:

$Q_1$  = output is measured by the real gross value added for each RNE sector (million pesos)

$P_1$  = implicit price index for GVA in the sector (1972=100)

$CP$  = private consumption expenditures (million pesos)

$CG$  = government consumption expenditures (million pesos)

$POP$  = population (million)

$X_1$  = value of exports from the sector (million dollars)

$U_1$  = error term

Traditional neoclassical theory hypothesizes the demand for labor as positively related to output, negatively to wages, and positively to prices of substitute inputs. In equation form, employment functions may be expressed as follows:

$$(2) L_1 = f(Q_1, WAGE, INT, e_1)$$

where:

$L_1$  = quantity of labor employed in the 1th RNE sector

WAGE = daily wage rate

INT = interest rate

$e_1$  = error term

Output is captured in the model by way of sectoral value added while prices of substitute inputs are represented either by the nominal rates of 91-day treasury bills (TBILL) or its real value (TBILL minus the inflation rate), or by the amount of capital investment made in the 1th RNE sector. Since capital is relatively scarce, increases in the price of capital or in the interest rate would decrease desired capital and hence increase the demand for labor.

In the demand functions, the sectoral price level appears as an explanatory variable, while in the price equations, the sectoral price level is the dependent variable. In the latter, sectoral prices are regressed with the wholesale price index which is an exogenous variable in the RNE submodel but an endogenous variable in the macroeconometric model. In the latter, the wholesale price is a function of supply and demand factors. The wholesale price index is hypothesized to be determined by a pricing rule characterized by stable mark-ups over variable cost in the short run. Variable costs typically consist of labor and imported intermediaries, hence, WPI is a function of wages and the price of imports of goods and services (represented by the implicit price deflator of goods and services). The mark-up rate is influenced positively by the rate of capacity utilization of firms. An increase in capacity utilization would cause inventories to dwindle, inducing firms to increase their mark-up and profits. Such increases in the demand and capacity utilization are proxied by the ratio of total liquidity to potential gross national

product which is expected to affect prices positively. In the estimated equations in the macroeconometric model, wages have a relatively greater coefficient than the two other determinants reflecting the propensity of firms to pass on to consumers of their output any increases in wages.

The linkage of the sectoral prices of RNEs is therefore expressed by the price functions relating them with the wholesale price index. In addition, the lagged price is appended to indicate the effect of prices in previous periods. Thus, the RNE price functions may be stated as:

$$(3) P_1 = f(WPI, P_{1-1}, V_1)$$

where:  $P_1$  = implicit price index for the industry sector  
 $WPI$  = wholesale price index

$V_1$  = error term

Two identities were specified, one each for output and employment such that (1) the summation of real GVAs of the 12 RNE sectors equals the total GVA for all RNEs; and (2) the summation of all employment in the 12 RNE sectors equals the total employment for all RNEs. That is,

$$QRNES = \sum_{i=1}^{12} Q_i \quad \text{and} \quad LRNES = \sum_{i=1}^{12} L_i$$

where:

$QRNES$  = aggregate real GVA in all RNEs (million pesos)

$LRNES$  = aggregate employment in all RNEs (thousands)

While no separate analysis was made for nonfarm enterprises located in Metro Manila, when the submodel was linked to the macroeconometric model, two conditions were imposed. Firstly, output of nonfarm enterprises in Metro Manila and the rural areas must be equal to total manufacturing output. These same condition should hold for employment. That is,

$$QMFG = QRNES + QMM$$

$$LMFG = LRNES + LMM$$

where QMM and LMM are respectively real GVA and employment in nonfarm enterprises in Metro Manila and QMFG and LMFG are total GVA and employment respectively for all manufacturing industries.

The behavioral equations were estimated using ordinary least squares. Where necessary, autocorrelation was corrected by adding the lagged dependent variable or by using the Cochrane Orcutt procedure.

## 6.2 Demand Equations

Table 6.1 presents the estimated demand equations for each of the 12 RNEs. As hypothesized, price coefficients are negative while those of consumption expenditures are positive. The price coefficients were statistically significant in the following RNEs: textile, wood, paper, chemicals, petroleum, machineries, electricity and others.

The demand elasticity of food with respect to its own price is quite low, only -0.016, that is a ten percent increase in the price index for food would result in only 0.16 of one per cent increase in value added from rural food industries (Table 6.2). The coefficient from which this elasticity is derived is statistically significant. In a number of specifications of the food demand equation, the population coefficient was highly significant indicating that population is a more important factor to reckon with in changes in demand for food rather than prices. However, it should be noted that the prices are aggregate price index for food rather than rural price. But rural food nonfarm enterprises face both rural and urban markets as well as international markets. Although positive, food exports, however, did not have a significant coefficient in another specification of the demand function.

Consumption expenditures represented by the summation of private and government expenditures had a significant coefficient with a positive sign.

Like food, demand for beverages was not significantly influenced by prices although the price coefficient was negative. Beverages have an inelastic demand indicating that people would change the consumption of soft drinks, beer, ginebra and others only to a very little extent when prices increase. The coefficient of consumption

Table 6.1 Estimated Demand Equations for Rural Nonfarm Enterprises

INDUSTRY GROUP

EQUATION

FOOD:

$$\begin{aligned}
 Q_{\text{FOOD}} = & -2733.6918 - 0.93347 * (P_{\text{FOOD}}/CPI) * 100 \\
 & (-0.4140) \quad (-0.0159) \\
 & + 0.01943 * (CP+CG) + 683.51469 * DV8489 \\
 & (1.4821) \quad (0.7948) \\
 & - 143.40917 * TIME \\
 & (-0.6450) \\
 R = & 0.786 \quad SER = 440.939 \quad DW = 1.806 \quad F = 9.178 \\
 & 1975-89
 \end{aligned}$$

BEVERAGES:

$$\begin{aligned}
 Q_{\text{BEV}} = & -403.21505 - 1.15848 * (P_{\text{BEV}}/CPI) * 100 \\
 & (-1.1139) \quad (-0.7231) \\
 & + 0.00207 * (CP+CG) \\
 & (4.5230) \\
 R = & 0.852 \quad SER = 53.260 \quad DW = 2.215 \quad F = 31.626 \\
 & 1976-89
 \end{aligned}$$

TOBACCO:

$$\begin{aligned}
 Q_{\text{TOB}} = & -89.73009 - 0.12823 * (P_{\text{TOB}}/CPI) \\
 & (-1.1964) \quad (-0.4495) \\
 & + 0.00041 * CP - 5.14859 * TIME \\
 & (1.6472) \quad (-1.2626) \\
 & + 0.10007 * X_{\text{TOB}} \\
 & (0.5776) \\
 R = & 0.669 \quad SER = 7.9808 \quad DW = 2.763 \quad F = 4.546 \\
 & 1976-89
 \end{aligned}$$

Table 6.1 Estimated Demand Equations (continued)

INDUSTRY GROUP

EQUATION

TEXTILE:

$$\begin{aligned}
 Q_{\text{TEX}} = & -2174.5095 - 0.80588 * P_{\text{TEX}} + 0.00027 * CP \\
 & (-3.0729) \quad (-3.2493) \quad (0.1585) \\
 & + 64.79319 * POP \\
 & (2.2402) \\
 & \quad \quad \quad 2 \\
 R = & 0.872 \quad SER = 56.301 \quad DW = 2.172 \quad F = 25.056 \\
 & \quad \quad \quad 1975-89
 \end{aligned}$$

WOOD:

$$\begin{aligned}
 Q_{\text{WOOD}} = & -801.67882 - 0.99518 * P_{\text{WOOD}} + 0.00444 * CP \\
 & (-4.3812) \quad (-7.7616) \quad (7.5800) \\
 & + 104.58312 * DV8486 \\
 & (3.2272) \\
 & \quad \quad \quad 2 \\
 R = & 0.851 \quad SER = 40.592 \quad DW = 2.560 \quad F = 20.869 \\
 & \quad \quad \quad 1975-89
 \end{aligned}$$

PAPER:

$$\begin{aligned}
 Q_{\text{PAP}} = & -1.90664 - 2.1624 * (PPAP/CPI) * 100 \\
 & (-0.0106) \quad (-1.1633) \\
 & + 0.00101 * (CP + CG) + 0.14008 * (-1.90664 - 2.16236 * \\
 & (4.4939) \quad (0.4821) \\
 & (PPAP /CPI ) * 100 \\
 & \quad \quad \quad -1 \quad -1 \\
 & \quad \quad \quad 00101 * (CP + CG ) - Q_{\text{PAP}} ) \\
 & \quad \quad \quad -1 \quad -1 \quad -1 \\
 R = & 0.611 \quad SER = 44.549 \quad DW = 1.337 \quad F = 5.237 \\
 & \quad \quad \quad 1976-89
 \end{aligned}$$



Table 6.1 Estimated Demand Equations (continued)

INDUSTRY GROUP

EQUATION

CHEMICALS:

$$\begin{aligned}
 Q_{CHEM} = & 151.82102 - 0.24882 * P_{CHEM} + 0.00056 * C_P \\
 & (-0.2676) \quad (-0.7649) \quad (0.2915) \\
 & + 0.00101 * X_{CHEM} \\
 & (1.6864) \\
 & 2 \\
 R = & 0.385 \quad SER = 143.320 \quad DW = 1.137 \quad F = 2.299 \\
 & 1975-89
 \end{aligned}$$

PETROLEUM:

$$\begin{aligned}
 Q_{PET} = & -110.92069 - 0.50561 * (P_{PET}/C_{PI}) * 100 \\
 & (-0.2668) \quad (-1.3934) \\
 & + 0.00342 * (C_P + C_G) + 0.00032 * X_{PET} \\
 & (3.0428) \quad (0.9949) \\
 & - 42.14743 * TIME + 0.20169 * Q_{PET} \\
 & (-3.1088) \quad (0.8012) \quad -1 \\
 & 2 \\
 R = & 0.753 \quad SER = 50.751 \quad DW = 2.163 \quad F = 4.879 \\
 & 1976-89
 \end{aligned}$$

BASIC METALS:

$$\begin{aligned}
 Q_{BSM} = & -2427.5490 + 66.34531 * POP \\
 & (-6.9380) \quad (9.7136) \\
 & 2 \\
 R = & 0.879 \quad SER = 145.746 \quad DW = 1.469 \quad F = 94.354 \\
 & 1975-89
 \end{aligned}$$

Table 6.1 Estimated Demand Equations (continued)

INDUSTRY GROUP

EQUATION

MACHINERIES:

$$\begin{aligned}
 QMACH = & -633.63333 & -0.82530 * PMACH \\
 & (-3.1285) & (-3.1211) \\
 & +0.00280 * (CP+CG) & +0.00011 * XMACH \\
 & (4.0798) & (0.1480) \\
 & -0.22549 * QMACH \\
 & & -1 \\
 & (1.2209) \\
 & 2 \\
 R = 0.817 & SER = 50.209 & DW = 3.186 & F = 10.042 \\
 & 1976-89
 \end{aligned}$$

ELECTRICAL:

$$\begin{aligned}
 QELEC = & -4362.6594 & -2.45956 * PELEC \\
 & (-2.3448) & (-1.2456) \\
 & +110.10635 * POP & -0.21334 * XELEC \\
 & (2.2654) & (-2.4236) \\
 & 2 \\
 R = 0.921 & SER = 88.989 & DW = 1.598 & F = 38.664 \\
 & 1976-89
 \end{aligned}$$

OTHERS:

$$\begin{aligned}
 QOTH = & -11268.157 & -5.05068 * (POTH/CPI) * 100 \\
 & (-3.4884) & (-1.7384) \\
 & +0.00145 * (CP+CG) & +286.28191 * POP \\
 & (2.0898) & (3.7066) \\
 & -361.30877 * TIME \\
 & (-3.5913) \\
 & 2 \\
 R = 0.813 & SER = 38.809 & DW = 2.437 & F = 10.846 \\
 & 1975-89
 \end{aligned}$$

Note: figures in parentheses are t values

Table 6.2 Estimates of Price Elasticities of Demand by RNE Sector

INDUSTRY GROUP	PRICE ELASTICITY
Food	-0.0155
Beverage	-0.2974
Tobacco	-0.3429
Wood	-0.6862
Paper	-0.7698
Chemicals	-0.1849
Petroleum	-0.0753
Machineries	-0.9376
Electrical	-1.8754
Others	-1.0944

expenditures was highly significant and positive and at the mean values indicated a high income elasticity of 2.22. The two variables - price index and consumption expenditures - explained 85 percent of the variation in the demand for beverages.

Among the variables used in estimating the demand functions for tobacco, only private consumption expenditures and time showed statistically significant coefficients. The price coefficient in the demand equation presented in Table 6.1 is not significant albeit negative. In another formulation of the demand equation, however, the own price index had a significant coefficient. The demand for tobacco manufactures of RNEs is inelastic with price elasticity of -0.34 which implies that a in price of tobacco manufacture such as cigarettes, cigar, and the like would result in only a slight change in the quantity demanded.

Income as proxied by private consumption expenditures had a positive and significant effect on the demand for tobacco manufactures.

The time variable had a negative coefficient although significant only at a low level. As indicated in Chapter 3 there are fears expressed in the industry regarding the health hazards posed by smoking. Developed countries such as the United States, Canada, Japan and others have shown considerable concern in these health hazards in their policies. Thus, tobacco exports did not seem to have significantly affected demand for tobacco manufactures.

The demand for textile, garments, footwear and related products was significantly influenced by prices and population. Together with private consumption expenditures, they explained 87 percent of the variation in the demand for textile products. The demand for textile products is inelastic with a price elasticity of -0.686.

The coefficients of price and consumption expenditures for the demand for wood products were significant and had the hypothesized signs and together with a dummy variable explained 85 percent of the variations in demand for wood. The demand had almost a unitary elasticity at the means, 0.98.

The demand for paper, paper products, printing and publishing was inelastic with an elasticity with respect to its own price of -0.770. The coefficient of consumption expenditures is positive and highly significant but  $R^2$  is equal only to 0.61.

The demand for chemical products of RNEs was a difficult equation to estimate. Price and consumption expenditures when used together in another specification of the model (that is, other than the one shown in Table 6.1) produced the correct signs and significant coefficients but

<sup>2</sup>  
R was very low at 0.23. Adding exports yielded a slightly higher but still low R of only 0.385. One possible explanation is the variability in the uses of chemical products, e.g. fertilizer and pesticides/insecticides for agricultural production and drugs for human health and disease prevention. The demand elasticity with respect to price was therefore very low, -0.185 at the mean values.

As expected, petroleum products have a highly inelastic demand with a price elasticity at the mean values of -0.075. Total consumption expenditures (that is, private plus government) positively and significantly influenced demand for petroleum products. When the implicit price index was not deflated by the consumer price index (CPI) the price coefficient had a higher t value (-2.833), but together with consumption expenditures and exports of petroleum products (which had a significant and positive coefficient) yielded a

<sup>2</sup>  
R of only 0.557.

Like chemicals, the demand for products of basic metal industries was quite difficult to estimate. Price and population together explained 93 percent of the variation in demand however the price coefficient was positive. Population when used as the lone independent variable in the

<sup>2</sup>  
demand equation yielded a R of 0.879 which indicates the large extent to which population explained the variation in demand for basic metals. The coefficient of population is positive and highly significant.

The demand for machineries (except electrical) and transport equipment was hypothesized to depend on price, aggregate consumption expenditures on the domestic side, and exports on the international side. Together with the lagged dependent variable, they explain 82 percent of the variation in the value added. The price coefficient was negative and highly significant and showed that at the mean values, demand for machineries and transport equipment produced by RNEs almost had unitary elasticity, -0.94. Thus a ten percent increase in the implicit price index for these products would result in a 9.4 percent decline in output or value added. Consumption expenditures, likewise, had a highly significant coefficient but export was not a significant factor.

The demand for electrical apparatus, appliances, and supplies was hypothesized to be influenced by prices, population, consumption expenditures and exports.

Consumption expenditure yielded a nonsignificant coefficient and was deleted in the demand equation. The three remaining variables explained a large percentage, 92 percent, of the variation in demand although the price coefficient was significant only at a low level. Notwithstanding this low level of significance, it is worthwhile to note that electrical products from RNEs have an elastic demand. This is in contrast to all the other industries discussed above which had an inelastic demand curve. The own price elasticity coefficient of demand for electrical products at the mean values is estimated to be equal to -1.875. Thus, a one percent increase in the implicit price index would be expected to result in a greater than one percent increase in output or value added. Electrical products being a major export of the Philippines, it was surprising to find that the coefficient of the exports variable was negative.

For all other manufactured products of RNEs, aggregate demand was regressed with price which yielded a negative coefficient; total consumption expenditures with a positive coefficient; population which was positively related to demand; and time which yielded a negative coefficient. All coefficients were statistically significant and except for time had the expected signs. All the variables explained 81 percent of the variation in demand for other manufactures.

To summarize, prices yielded the hypothesized negative coefficient which were statistically significant for most industries. Likewise, coefficients of aggregate consumption expenditures were generally positive and significant. The results for exports were mixed in that some equations have positive coefficients as hypothesized but a few were nonsignificant. Population was a significant factor in the demand equations for textile, basic metals, electrical products, and other manufactures.

It would have been interesting to analyze the effect of the power shortage on output and employment of RNEs. However, there is no time series data for this variable and therefore it cannot be incorporated in the model.

In a report presented by the Secretary of Economic Planning Cielito P. Habito to the President, losses caused by the persistent brownouts have been estimated at ₱20 billion to ₱25 billion by the NEDA. This amount represents 1.3 to 1.6 percent of GNP. The manufacturing sectors most severely affected by the power shortage include the following: nonmetallic mineral products, rubber products, publishing and printing, footwear and wearing apparel, chemical and chemical products and miscellaneous manufactures.

On employment, NEDA reported that 66,444 firms or 58.8 percent of the total firms in Metro Manila were affected. In the regions, 112,634 firms in Regions 2, 4, 5, 10 and the Cordillera Autonomous Region were severely affected by the power brownout (Manila Bulletin, July 1, 1993). The impact of the brownout was felt more in the NCR where industries are more power dependent and among the small and medium scale industries which had the least capability to cope with the power shortfall.

NEDA also estimates that half of the employed workers in the NCR were affected by the power crisis in comparison to only six percent in the other regions. Nevertheless, lay-offs were minimized by either rotating or reducing the worktime of the employees.

### 6.3 Employment Equations

The estimated equations for employment in each of the twelve sectors of rural nonfarm enterprises are presented in Table 6.3. The coefficients of output (or value added) were positive and generally significant in food, wood, paper, chemical, petroleum, machinery, electrical and other manufacturing industries. The daily wage rate of unskilled labor was expressed either as an index with 1985 as the base or deflated by the implicit price index for Gross National Product (PGNP). The coefficients for this variable were negative thus conforming with theoretical expectation. For other inputs, capital investment was used in the employment equations for food, beverages, textile, wood, machineries and electrical industries. Rates for 91-day Treasury Bills which were expressed either in nominal or real terms were used as proxy for interest on capital in the employment equations for tobacco, paper, chemicals, petroleum and basic metals RNEs. Previous year's employment appeared as a significant variable for some industries.

The amount of labor employed in the food sector of RNEs significantly depends on the sectoral output as shown by the positive coefficient of QFOOD in the employment equation. A one percent increase in output would result in almost the same (0.95 percent) percentage change in employment in food manufacturing in RNEs. The wage coefficient, although negative, was not significant and deflating the wage rate by the implicit price index of GNP did not improve the equation. Additional investment within the industry seems to complement labor thus increasing the demand for labor and the three variables together explained 68 percent of the variation in employment in the food industries.

Table 6.3 Estimated Employment Equations for Rural Nonfarm Enterprises

INDUSTRY GROUP	EMPLOYMENT EQUATION
FOOD:	
LFOOD =	$-8.64060 + 0.03109 * QFOOD - 0.00351 * WAGE$ $(-0.1934) (2.7753) (-0.0124)$ $+ 0.01010 * KFOOD$ $(1.2413)$ $^2$ $R = 0.678 \quad SER = 17.357 \quad DW = 1.635 \quad F = 7.728$ $1975-89$
BEVERAGES:	
LBEV =	$29.23827 + 0.01526 * ((QBEV / (QBEV - 1)) * 100$ $(8.0781) (0.73596) -1$ $- 8.83205 * (WAGE / PGNP) * + 0.00136 * KBEV$ $(-3.3436) (0.6914) 1976-89$ $^2$ $R = 0.660 \quad SER = 1.682 \quad DW = 1.255 \quad F = 6.466$
TOBACCO:	
LTOB =	$-1.60803 + 0.00201 * QTOB + 1.91126 * (WAGE / PGNP)$ $(-0.7056) (0.0804) (1.1612)$ $+ 0.1156 * TBILL$ $(2.2046)$ $^2$ $R = 0.310 \quad SER = 0.943 \quad DW = 1.510 \quad F = 1.651$ $1975-89$
TEXTILE:	
LTEX =	$129.52479 + 0.04226 * QTEX - 0.48057 * WAGE$ $(1.3609) (0.3290) (-1.0264)$ $+ 0.00356 * KTEX$ $(0.1152)$ $^2$ $R = 0.099 \quad SER = 52.835 \quad DW = 2.060 \quad F = 0.403$ $1975-89$



Table 6.3 Estimated Employment Equations (continued)

INDUSTRY GROUP

EMPLOYMENT EQUATION

PAPER:

LPAP =

10.87672

+0.02037 \* QPAP

(2.9071)

(3.3082)

-2.76454 \* (WAGE/PGNP)

+0.00101 \* TBILL

(-1.3745)

(0.0154)

-2.57221 \* DV8489

(-2.4548)

2

R = 0.647

SER = 1.062

DW = 2.042

F = 4.584

1975-89

WOOD:

LWOOD =

33.85382

+0.59925 \* ((QWOOD/QWOOD )-1) \*

(0.8935)

(2.1363)

-1

-2.01705 \* (WAGE/PGNP)

+0.00533 \* KWOOD

(-0.0990)

(0.5026)

+6.85652 \* DV8489

+0.56174 \* LWOOD )

(0.8904)

(2.3555)

-1

2

R = 0.620

SER = 8.301

DW = 2.764

F = 2.615

1976-89

PETROLEUM:

LPET: =

2.28302

+0.00152 \* QPET

-1.81623 \* (WAGE/PGNP)

(1.2690)

(1.0599)

(4.0035)

+0.03480 \* (TBILL-INFL)

(2.4829)

2

R = 0.665

SER = 0.360

DW = 2.406

F = 7.294

1975-89

Table 6.3 Estimated Employment Equations (continued)

INDUSTRY GROUP

EMPLOYMENT EQUATION

CHEMICALS:

LCHEM =

14.88670

+0.01223 \* QCHEM

(2.8472)

(2.8726)

-4.07444 \* (TBILL-INFL)

(0.4077)

2

R = 0.578

SER = 2.400

DW = 1.382

F = 5.023

1975-89

BASIC METALS

LBSM =

15.53703

+0.00097 \* QBSM

-7.96737 \* (WAGE/PGNP)

(3.5140)

(0.6436)

(-3.0179)

+0.07338 \* (TBILL - INFL)

(1.4000)

2

R = 0.762

SER = 1.389

DW = 1.905

F = 11.721

1975-89

MACHINERIES

LMACH =

19.61147

+0.04263 \* QMACH

+0.01865 \* KMACH

(2.3054)

(2.5303)

(1.5267)

+8.18507 \* DV8489

-0.17411 \* LMACH

(2.4852)

(-0.6676)

2

R = 0.567

SER = 4.026

DW = 2.363

F = 2.945

1976-89

Table 6.3 Estimated Employment Equations (continued)

INDUSTRY GROUP	EMPLOYMENT EQUATION
ELECTRICAL	
LELEC =	$1.73017 + 0.00781 * ((QELEC/QELEC_{-1}) - 1) * 100$ $(0.4407) (1.5682)$ $-0.98540 * (WAGE/PGNP) + 0.00529 * KELEC$ $(-0.3439) (1.6703)$ $+ 0.84331 * LELEC_{-1}$ $(4.0752)$ $R^2 = 0.918 \quad SER = 1.388 \quad DW = 2.993 \quad F = 22.394$ <p style="text-align: center;">1977-89</p>
OTHERS	
LOTH =	$-10.93909 + 0.26763 * ((QOTH/QOTH_{-1}) - 1) * 100$ $(-0.7681) (2.3010)$ $+ 29.32760 * (WAGE/PGNP) + 6.23690 * DV8489$ $(2.8931) (1.8824)$ $+ 0.14787 * LOTH_{-1}$ $(0.6308)$ $R^2 = 0.624 \quad SER = 4.075 \quad DW = 2.699 \quad F = 3.321$ <p style="text-align: right;">1977-89</p>

Note: Figures in parentheses are t-values

The  $R^2$  for the beverage employment equation is almost the same as that for food, however, here QBEV entered as a percentage change and daily wage rate in real terms and only the real wage rate coefficient was significant. Other formulations of the employment equation showed a positive and significant coefficient of QBEV but  $R^2$  was lower.

The tobacco and textile employment equations were difficult to estimate with the output variable yielding a positive but nonsignificant coefficient. Moreover, for tobacco the real wage coefficient was positive and the  $R^2$  was quite low. However, the TBILL rate coefficient has the correct sign and was significant. The textile equation used capital investment as a variable which produced a positive but also not significant coefficient.

Employment in the wood industries was explained by a number of variables including a dummy variable and the lagged dependent variable all of which explained 62 percent of the variation in the employment. The number of workers in the industry in the previous year is expected to affect employment positively because of difficulties in terminating appointments of workers and possibly the desire to continue hiring previously trained workers. QWOOD entered as a percentage change which yielded a positive and significant coefficient.

The employment of the paper and paper products, printing and publishing industry in the regions is a function of output, real wage rate, interest rate as proxied by the Treasury Bill rate, and a dummy variable all of which explained 65 percent of the variations in LPAP. Output significantly influenced employment which had an elasticity of 0.461. This implies that a 10 percent increase in output would be expected to raise employment by 4.6 percent. The real wage rate had a negative effect on employment with a regression coefficient of -2.76, that is, an increase in real wage by 10 percentage points would reduce employment in the paper industry by approximately 28 thousand people.

The coefficient of the TBILL rate was positive indicating that an increase in interest rate would make capital more expensive and therefore firms would tend to substitute labor for capital. The coefficient of the dummy variable for 1984 to 1989 proved to be negative and statistically significant. It appeared that the crisis period which started in 1983 took effect immediately during the succeeding year with the effect being carried through until 1989.

Two major variables, output and real interest rate, determined the level of employment in the chemical industries in the rural areas. These two factors explained 58 percent of the variation in employment in the sector. The coefficients have the correct signs and were statistically significant. The elasticity coefficient of labor demand with respect to output or value added was equal to 0.41 while a one percentage point increase in real interest rate would tend to reduce employment in the rural chemical industries by about four thousand people.

The significant determinants of employment in rural based petroleum product industries were output, real wage rate, and real interest rate. The employment elasticity with respect to output was almost equal to unity (0.94) implying that a one percent change in output or value added of the industry would change number of workers by almost the same percentage. However, an increase in real wage rate would tend to reduce employment while a rise in interest rate would change employment in the same direction.

The wage rate and the interest rate both expressed in real terms significantly influenced employment in the basic metal industries in the rural areas. As hypothesized, they had opposite effects, negative for wage rate and positive for interest rate. Together with output which had a positive but non-significant coefficient, they explained 76 percent of the variation in the number of people employed by the basic metal industries. A low elasticity of employment with respect to output was estimated, 0.135. In contrast, employment in machineries (except electrical) and transport equipment had a relatively higher (although still inelastic) elasticity of 0.379. In addition to output capital investment in the industry and a dummy variable for 1984 to 1989 also significantly affected the demand for labor.

The demand for labor by electrical rural industries is determined by the percentage change in output, capital investment, and lagged employment. Being capital intensive, additional investments would increase the demand for labor, so with an improvement in the growth rate of output. The manufacture of electrical appliances, apparatus and supplies would require trained labor, and once trained, managers may be hesitant to terminate workers, thus the positive of relationship previous employment within the industry. A

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high  $R^2$  of 0.92 was obtained for the employment equation.

The determinants of employment in other manufacturing industries include the percentage change in the output which have a positive coefficient; the dummy variable for 1984 to

1989, and employment in the previous year. Contrary to expectations, the real wage rate yielded a positive coefficient although in other formulations of the employment function, the coefficient of the real wage rate was negative but nonsignificant.  $R^2$  was estimated at 0.62. In another formulation of the model, the real interest rate was positive but not significant and together with output and real wage yielded a very low  $R^2$ .

#### 6.4 Price Functions

The estimated price functions relating sectoral price indexes with the wholesale price index (WPI) are presented in Table 6.4. In all equations the WPI had highly significant coefficients. Likewise, where the lagged dependent variable was added as an explanatory variable, the coefficients were positive and highly significant. Except for the petroleum price equation, all functions had a  $R^2$  greater than 0.99. Nevertheless, WPI and the lagged dependent variable explained 88 percent of the variation in petroleum prices.

The percentage changes in the sectoral prices resulting from a one percent change in WPI or the elasticity coefficients are shown in Table 6.5. They are close to unity (0.90 or higher) for food, paper, and chemical industries; around 0.5 for tobacco, textile, wood and basic metals. The elasticity of petroleum price is quite low, 0.15, understandably so because petroleum prices are fixed by government.

Table 6.4. Estimated Price Equations

INDUSTRY GROUP	EQUATION			
FOOD				
PFOOD =	21.06161 + 0.61887 * WPI			
	(4.7190) (103.0000)			
	<sup>2</sup>			
R = 0.999	SER = 9.258	DW = 1.878	F = 10608.98	
	1975-1989			
BEVERAGE				
PBEV =	81.24329 + 0.31984 * WPI	+ 0.46804 * PBEV		
	(4.8817) (5.0469)	(3.8924)		
	<sup>2</sup>			
R = 0.995	SER = 18.375	DW = 1.730	F = 1024.523	
	1976-89			
TOBACCO				
PTOB =	4.50902 + 0.38742 * WPI	+ 0.45931 * PTOB		
	(0.4003) (7.5780)	(5.3712)		-1
	<sup>2</sup>			
R = 0.995	SER = 21.652	DW = 1.655	F = 996.577	
	1976-89			
TEXTILE				
PTEX =	54.31053 + 0.57152 * WPI	+ 0.36414 * PTEX		
	(5.2097) (10.4887)	(5.3395)		-1
	<sup>2</sup>			
R = 0.998	SER = 18.754	DW = 1.362	F = 2273.183	
	1976-89			
WOOD				
PWOOD =	84.88729 + 0.46230 * WPI	+ 0.28226 * PWOOD		
	(4.9900) (5.7932)	(2.0936)		-1
	<sup>2</sup>			
R = 0.992	SER = 24.309	DW = 1.936	F = 723.368	
	1976-89			

Table 6.4. Estimated Price Equations (continued)

INDUSTRY GROUP	EQUATION
PAPER	
PPAP =	44.42681 + 0.63731 * WPI (3.9879) (42.4933) 2 R = 0.993 SER = 23.109 DW = 1.376 F = 1805.68 1975-89
CHEMICALS	
PCHEM =	40.43341 + 0.60310 * WPI (3.5143) (38.9366) 2 R = 0.991 SER = 23.867 DW = 1.799 F = 1516.056 1975-89
PETROLEUM	
PPET =	158.00718 + 0.23231 * WPI + 0.72896 * PPET (1.5913) (0.7247) (2.76970) 2 R = 0.882 SER = 179.657 DW = 1.286 F = 41.265 1976-89
BASIC METALS	
PBSM =	14.18877 + 0.36213 * WPI + 0.38417 * PBSM (1.7235) (9.4995) (4.7553) 2 R = 0.996 SER = 14.895 DW = 1.317 F = 1425.457 1976-89
ELECTRICAL	
PELEC =	68.89168 + 0.31798 * WPI (11.5153) (39.4799) 2 R = 0.992 SER = 12.410 DW = 1.475 F = 1558.663 1975-89



Table 6.4. Estimated : Price Equations(continued)

INDUSTRY GROUP

EQUATION

MACHINERY

$$PMACH = 3.67253 + 0.411901 * WPI + 0.22378 * PMACH_{-1}$$

(0.4639) (11.3121) (2.8993)

$R^2 = 0.996$  SER = 15.215 DW = 1.317 F = 1425.457

1976-89

OTHERS

$$POTH = 11.69538 + 0.62770 * WPI + 0.30233 * POTH_{-1}$$

(0.8479) (8.8800) (3.3781)

$R^2 = 0.995$  SER = 26.530 DW = 1.740 F = 1145.678

1976-89

Note: Figures in parentheses are t-values.

Table 6.5. Percentage Change in Sectoral Price with Respect  
to a One Percent Change in Wholesale Price

INDUSTRY GROUP	PERCENTAGE CHANGE
FOOD	0.95
BEVERAGE	0.40
TOBACCO	0.56
TEXTILE	0.56
WOOD	0.56
PAPER	0.90
CHEMICALS	0.90
PETROLEUM	0.15
BASIC METALS	0.60
MACHINERIES	0.76
ELECTRICAL	0.74
OTHERS	0.68

## CHAPTER 7

### EFFECT OF MACROECONOMIC POLICIES ON OUTPUT, EMPLOYMENT AND PRICES

#### 7.1. Validation of the Model

A macroeconomic model is constructed with three basic objectives, namely (1) for structural analysis, (2) for forecasting, and (3) for evaluation of policy effects. This section attempts to determine the tracking ability of the model through a fully dynamic simulation for the period 1981 to 1989.

The submodel discussed in Chapter 6 analyzed the behavior and structure of output, employment and prices of rural nonfarm enterprises. To determine the effects of macroeconomic policies the RNE equations are linked with the PIDS-NEDA macroeconometric model. This model consists of four major blocks such as (1) the real sector which is composed of production, expenditure, and employment, wages and prices; (2) the fiscal sector; (3) the financial sector, and (4) the external sector.

The production sector and the expenditure sector are linked primarily through the demand functions whereby aggregate expenditures appear as determinants of the quantity demanded. In the Industrial sector, a price equation functions as a supply equation with output determined by the level of demand. In turn, output determines the level of prices and employment.

The linkages in the other sectors may be summarized as follows: "The financial sector affects output via the interest rate, the amount of net foreign assets and the liquidity variable which enters the different price equations. It also affects the external sectors (imports) through the level of foreign assets. The fiscal sector influences the monetary base and interest rate through the method of financing the budget deficit. It also affects the real sector through expenditures on capital and operating expenses which determine the level of output.. The external sector affects the other sector of the economy through the linkage of the various current account components with output and expenditures, as well as its contribution to net foreign assets" (Reyes and Yap, 1993).

The submodel focused on output and employment. Price equations were estimated by relating sectoral prices with the wholesale price index which in the PIDS NEDA MEM is a function of nominal wages, implicit price deflator for imports and services, and the ratio of total liquidity to potential GNP which in turn is a function of capital stock and labor force. Note that the consumer price index and the implicit price deflator for GNP were also used to deflate sectoral prices and wages, respectively.

The simulations were undertaken for the period 1981 to 1989.

A criterion used to evaluate a model is the fit of the individual variables in a simulation context (Pindyck and Rubinfeld, 1981). One would expect the results of a historical simulation, i.e. a simulation through the estimation period, to match closely the behavior of the real world. To test the performance of the model, a historical simulation is made. How closely each endogenous variable tracks its corresponding historical data series is examined. To measure this tracking ability of the model, the root mean square (RMS) simulation error can be used as indicator. The RMS simulation error for a variable X is defined as

$$\text{RMS error} = \frac{1}{T} \sum_{t=1}^T (X_{\text{SIM } t} - X_{\text{ACT } t})^2$$

where:

$X_{\text{SIM } t}$  = simulated value of the variable X

$X_{\text{ACT } t}$  = actual value of the variable X

T = number of years in the simulation

The RMS error is a measure of the deviation of the simulated variable from its actual time path and the magnitude of the error can be evaluated only by comparing it with the average size of the variable in question.

Another measure of simulation fit is the RMS percent error (RMSPE) which is defined as follows:

$$\text{RMSPE} = \frac{1}{T} \sum_{t=1}^T \left( \frac{X_{\text{SIM } t} - X_{\text{ACT } t}}{X_{\text{ACT } t}} \right)^2$$

The RMSPE is a measure of the deviation of the simulated variable from its actual time path expressed in percentage terms.

The root mean square percent error statistics for gross value added, employment and price based on the model estimates discussed in Chapter 6 are presented in Table 7.1. Except for QTOB, the RMSPE statistics is less than 25 percent. It is noteworthy that the gross value added for food, textile, petroleum and others have a RMSPE of less than 10 percent and the summation of gross value added of all rural nonfarm enterprises has a RMSPE of only 5.87.

For employment, only tobacco and petroleum industries have a relatively high RMSPE statistics but those for all other industries are less than 20 percent. The aggregate employment (LRNES) equation (identity) performed quite well with a RMSPE of less than 10 percent.

The performance of the price equations appears to be much better than the output and employment equations. Except for petroleum, all RMSPE statistics are less than 10 percent. Moreover, five out of the 12 sectors have RMSPE statistics less than 5 percent. These indicate a good tracking ability of the model with respect to PFOOD, PBEV, PWOOD and PELEC. Two other price equations -PPAP and POTH- have a RMSPE of just slightly greater than 5 percent. For petroleum, it should be pointed out that prices are determined more by government policy rather than the free market forces. The average price index for all RNEs has a RMSPE of 5.96 percent.

## 7.2 Effect of Selected Policies on Output, Employment and Prices of Rural Nonfarm Enterprises

Three major policies were considered in the simulation of the effects on output, employment and prices, namely, wage rate, exchange rate, and export policies as reflected in the change in volume of merchandise exports. These are three major policies followed by the Philippine government. Moreover, wage rate, exchange rate, and volume of exports were three variables that significantly affected RNEs as shown by the significance of their coefficients. These are also policies which can easily be quantified. Likewise, it could be expected that they would have effects on the general industry group as classified, i.e. food, chemical, etc. A specific policy, such as the coconut levy would have more direct and significant effects on the coconut industry compared with the whole food industry or with other industry groups. In comparison, change in wages or exchange rate would affect a number (if not all) of the industry groups.

When the simulations were made, a constraint was imposed such that the change in the variables in the RNE model would not have an effect on the macro model. Where applicable, the same data set used in the macro model was used in the RNE model, e.g. wage, exchange rate, consumption expenditures, etc.

Specific policies were analyzed in this section. These are; (1) a ten percent increase in wage rate; (2) a ten percent increase in the exchange rate; and (3) an increase in merchandise exports equivalent to one percent of GDP in the baseline. Simulation exercises were performed for the period 1981 to 1989. The policy change was sustained for the entire simulation period.

#### 7.2.1 Effect of a Ten Percent Increase in Wage Rate

As noted in the employment equation in Chapter 6, wages were negatively related to employment. An increase in wage rate therefore would reduce the employment and consequently bring down the level of output. The effect on employment of a ten percent increase in wage rate is a decline of slightly less than one percent in employment in the food RNEs in the initial year which increases to 1.8 percent in the second year (Table 7.2). The percentage decline later goes up although at a decreasing rate. The change in food output follows the same trend but the percentage change is higher than that for employment. The resulting percentage change in food prices is higher at 3.39 percent in the initial year increasing steadily until 1989 when it reaches a rise of 7.90 percent.

The level of employment in the beverage sector is lower than that for food and because of this lower base, the percentage decline in employment is higher, 10 percent in the first year and increasing to 15 in the second year but getting a little bit lower until 1984 after which the percentage drop increases to 15 percent again in 1987. The effect on output is also downward but to a much lesser extent ranging from one to three percent per year. Raising wage rate by ten percent increased prices of beverage products by up to 6.6 percent.

The effect on employment in tobacco industries is surprisingly positive but output declined and prices went up.

The textile industry which employs more than a hundred thousand workers in the rural areas was affected by a wage rate increase by a four percent drop in employment in 1981 and up to 32 percent in 1989. The value added, however, declined only by about one percent initially and up to 8.9 percent in 1989..

The effect of the wage rate increase on employment in the wood industry is slight - from 2 to 7 percent. The change in the value added is almost a constant 14 percent in the downward direction. Prices of wood products steadily rose but only at a slow rate.

The increase in price of paper products due to the increase in wage rate would reduce the demand for paper products, printing and publishing and consequently a drop in supply by about 2 to 4 percent which in turn leads to a decline in employment by about 8 to 10 percent.

The chemical industry in the rural areas employ less than 20,000 people and an increase in wage rate would reduce employment by only about 1.4 thousand or 8.05 percent of the baseline. As a result, value added would go down by about 2.1 percent.

The manufacture of petroleum and coal products in the rural areas employs the least number of workers among the RNE sectors and the reduction in the employment due to a ten percent increase in wage rate is estimated to be less than 600 people. The effect on output would only be about 2 percent.

The impact on employment in machinery industries ranges from 2 to 6 percent on the negative side. Prices would increase by about 6.5 percent leading to a drop in value added by approximately 14.7 percent.

The electrical industry in the rural areas employs about 15 thousand people and if wage rate increase, employment could go down by an average of about 11 percent while prices would rise by about 5.4 percent.

For all rural nonfarm enterprises, a ten percent increase in wage rate is estimated to result in a drop in employment by about 1.8 percent initially. Continuing wage increase would reduce employment by up to 7 percent. Aggregate value added from all RNEs would then decline by 1.1 to 4.2 percent.

### 7.2.2 Effect of a Ten Percent Peso Devaluation

The immediate effect of an increase in the exchange rate of the peso is to increase domestic prices of imported goods as well as locally produced goods. Thus inflationary trends would ensue. The increase in prices would tend to lower the demand for goods and services which would then reduce employment. The empirical results of the simulation exercise determining the effects of a ten percent devaluation on rural nonfarm enterprises generally conform with these expectations (Table 7.3). The only deviation observed is employment in the beverage and basic metals sectors which increased by a very small percentage of 0.46 percent and 0.56 percent respectively for the period 1984 to 1989.

Food prices increased by 7.73 percent which changes food output in the opposite direction by about two percent. Employment would also decline by about the same percentage.

The immediate effect of the devaluation on the tobacco industry in the rural areas is an increase in employment and prices of manufactured tobacco. The latter probably outweighs the employment effect on output which decreased by about 2 percent. As devaluation continues, however, the number of workers employed is reduced due to wage increases and therefore output continued to fall.

Continuing devaluation has almost similar effects on value added, employment and prices in the textile and wood industries in terms of direction of change and the rate at which the percentage difference between the baseline solution and the shock run quantities change.

For the paper and paper products RNE, the stability of the model is reflected by an almost equal magnitude of change in output particularly between 1985 and 1989. Likewise, employment practically changed by the same volume annually.

The largest impact of the devaluation on value added is observed in the machinery and electrical RNE sectors where the percentage difference between the baseline solution and that of the short-run averaged 20.44 percent and 12.91 percent respectively, for the period 1985-89. For employment the largest effect occurred in the textile industry, with 7.0 percent, and machinery, with 6.05 percent.

On the aggregate, the ten percent increase in the exchange rate reduced employment by an average of 3.64 percent over the period 1985 to 1989 and by 2.83 percent in value added over the same period.



### 7.2.3. Effect of an Increase in Merchandise Exports Equivalent to One Percent of GDP on the Baseline

Analyzing the impact of trade, trade policy and external shock on the Philippine economy, Constantino and Yap (1988) state that given the structure of the PIDS NEDA macroeconometric model, the impact of higher manufactured exports on GDP will consist of the direct effect through higher exports and output in manufacturing, and of the indirect effects working through the resulting changes in the money supply, prices, real interest rate (which will change due to the effect on inflation), and balance of payments and availability of foreign exchange to finance imports and investment.

An increase in exports would result in a more favorable balance of payments position, which subsequently would increase the amount of foreign exchange available to finance imports which are an important input in the production of rural nonfarm enterprises. Greater capacity to import would enhance investments and improve GDP growth. These changes would be expected to positively affect employment and output in rural nonfarm enterprises. Such change are validated in Table 7.4 which presents the results of the simulation exercise which increases merchandise exports by an amount equivalent to one percent of GDP on the baseline. Thus, one observes increases in volume added and in output. The magnitude of the difference between the baseline and the shock run appears relatively smaller than the previous two policies considered above. It would be recalled that some of the employment equations in the RNE submodel included exports as an exogenous variable. Constantino and Yap (1988) however, indicates that the macro model does not distinguish between manufactured and unmanufactured exports.

The increase in merchandise exports resulted in an increase in value added in the food RNEs by 1.00 percent and in the textile industries by 0.92 percent for the entire simulation period. The largest effects were observed in tobacco - 4.06 percent - and in machineries - 4.13 percent.

As a whole, the initial effect of the increase in merchandise exports on value added is only 0.14 percent which increased to almost 2 percent in 1989. The change in employment is smaller and ranged from 0.11 percent in the first year of the simulation period to 1.26 percent in 1989.

Table 7.1. Root Mean Square Percent Error (RMSPE) for Gross Value Added, Employment, and Prices of Rural Nonfarm Enterprises, 1981-1989.

Variable	RMSPE	Variable	RMSPE	Variable	RMSPE
Gross Value Added		Employment		Price	
QFOOD	8.81	LFOOD	14.67	PFOOD	4.43
QBEV	18.01	LBEV	7.15	PBEV	4.32
QTOB	32.98	LTOB	41.90	PTOB	9.18
QTEX	4.27	LTEX	13.34	PTEX	3.52
QWOOD	20.67	LWOOD	10.26	PWOOD	4.03
QPAP	15.68	LPAP	8.29	PPAP	5.95
QCHEM	19.63	LCHEM	11.97	PCHEM	9.18
QPET	5.67	LPET	30.39	PPET	16.87
QBSM	17.79	LBSM	9.68	PBSM	7.38
QMACH	12.20	LMACH	16.86	PMACH	5.27
QELEC	21.95	LELEC	19.90	PELEC	4.80
QOTH	5.37	LOTH	15.45	POTH	5.66
QRNES	5.87	LRNES	8.52	PRNES	5.96

Table 7.2. Effect of a Ten Percent Increase in Wage Rate on Value Added, Employment, and Prices of Rural Nonfarm Enterprises.

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QFOOD	1981	5143.00	5093.00	-49.88	-0.97
	1982	5322.00	5219.00	-102.98	-1.94
	1983	5246.00	5112.00	-133.32	-2.54
	1984	5615.00	5471.00	-143.99	-2.56
	1985	5463.00	5317.00	-145.39	-2.66
	1986	5680.00	5524.00	-155.13	-2.73
	1987	5993.00	5829.00	-163.80	-2.73
	1988	6362.00	6188.00	-174.07	-2.74
	1989	6785.00	6597.00	-188.02	-2.77
QBEV	1981	426.41	421.89	-4.53	-1.06
	1982	460.35	449.85	-10.50	-2.28
	1983	476.19	462.14	-14.05	-2.95
	1984	469.73	454.28	-15.44	-3.29
	1985	466.59	450.67	-15.92	-3.41
	1986	500.76	483.66	-17.10	-3.41
	1987	549.79	531.53	-18.26	-3.32
	1988	605.61	586.16	-19.45	-3.21
	1989	667.03	646.05	-20.97	-3.14
QTOB	1981	44.30	43.47	-0.83	-1.87
	1982	44.18	42.41	-1.77	-4.01
	1983	37.81	35.54	-2.27	-6.00
	1984	29.00	26.60	-2.40	-8.27
	1985	22.70	20.32	-2.39	-10.53
	1986	23.78	21.28	-2.50	-10.52
	1987	27.03	24.43	-2.60	-9.62
	1988	30.99	28.34	-2.65	-8.56
	1989	35.62	32.85	-2.77	-7.77
QTEX	1981	800.87	793.46	-7.41	-0.93
	1982	855.84	841.38	-14.46	-1.69
	1983	876.33	853.76	-22.57	-2.58
	1984	818.00	782.14	-35.85	-4.38
	1985	751.43	703.75	-47.69	-6.35
	1986	760.64	704.08	-56.56	-7.44
	1987	795.00	731.42	-63.58	-8.00
	1988	822.59	752.42	-70.17	-8.53
	1989	858.34	781.89	-76.44	-8.91

Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QPAP	1981	269.77	264.83	-4.94	-1.83
	1982	280.45	271.75	-8.71	-3.11
	1983	283.00	272.29	-10.71	-3.78
	1984	269.29	257.91	-11.39	-4.23
	1985	258.81	247.54	-11.26	-4.35
	1986	280.95	268.99	-11.95	-4.25
	1987	309.16	296.57	-12.60	-4.07
	1988	336.18	323.15	-13.03	-3.88
	1989	367.74	354.05	-13.69	-3.72
QWOOD	1981	651.54	636.02	-15.52	-2.38
	1982	691.63	660.98	-30.65	-4.43
	1983	665.36	622.81	-42.55	-6.40
	1984	624.45	568.33	-56.12	-8.99
	1985	496.20	429.92	-66.27	-13.36
	1986	508.30	433.56	-74.74	-14.70
	1987	557.62	476.23	-81.39	-14.60
	1988	596.59	509.00	-87.59	-14.68
	1989	651.73	557.50	-94.23	-14.46
QPET	1981	1366.00	1359.00	-7.02	-0.51
	1982	1373.00	1356.00	-17.35	-1.26
	1983	1405.00	1380.00	-24.75	-1.76
	1984	1320.00	1292.00	-28.42	-2.15
	1985	1242.00	1212.00	-29.78	-2.40
	1986	1253.00	1221.00	-31.86	-2.54
	1987	1301.00	1267.00	-34.02	-2.62
	1988	1373.00	1337.00	-36.45	-2.65
	1989	1464.00	1424.00	-39.50	-2.70
QCHEM	1981	574.86	571.52	-3.33	-0.58
	1982	549.24	543.45	-5.79	-1.05
	1983	793.75	785.58	-8.17	-1.03
	1984	559.12	547.42	-11.70	-2.09
	1985	491.18	477.23	-13.95	-2.84
	1986	593.38	577.84	-15.54	-2.62
	1987	584.12	567.26	-16.87	-2.89
	1988	610.91	592.66	-18.24	-2.99
	1989	603.23	583.59	-19.64	-3.26

Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QMACH	1981	444.82	432.62	-12.19	-2.74
	1982	424.86	403.69	-21.17	-4.98
	1983	386.28	357.76	-28.52	-7.38
	1984	268.60	231.30	-37.30	-13.89
	1985	194.44	151.63	-42.82	-22.02
	1986	222.86	174.89	-47.97	-21.53
	1987	253.60	201.62	-51.99	-20.50
	1988	276.19	219.72	-56.48	-20.45
	1989	316.76	255.55	-61.21	-19.32
QELC	1981	184.05	172.36	-11.69	-6.35
	1982	228.35	209.90	-18.45	-8.08
	1983	339.04	311.32	-27.72	-8.18
	1984	345.95	300.64	-45.31	-13.10
	1985	458.12	400.84	-57.28	-12.50
	1986	583.44	518.53	-64.91	-11.13
	1987	658.09	586.80	-71.30	-10.83
	1988	707.02	628.88	-78.14	-11.05
	1989	770.64	686.05	-84.60	-10.98
QOTH	1981	506.69	499.22	-7.47	-1.47
	1982	516.88	500.33	-16.55	-3.20
	1983	526.51	505.25	-21.26	-4.04
	1984	519.00	496.42	-22.58	-4.35
	1985	486.16	462.89	-23.28	-4.79
	1986	512.10	487.37	-24.73	-4.83
	1987	576.55	550.22	-26.33	-4.57
	1988	645.90	618.82	-27.08	-4.19
	1989	724.99	697.05	-27.94	-3.85
LFOOD	1981	170.94	169.35	-1.59	-0.93
	1982	178.27	175.00	-3.27	-1.83
	1983	185.39	181.17	-4.23	-2.28
	1984	174.96	170.39	-4.57	-2.61
	1985	167.09	162.45	-4.65	-2.78
	1986	175.93	170.95	-4.98	-2.83
	1987	184.62	179.35	-5.26	-2.85
	1988	203.12	197.53	-5.60	-2.76
	1989	213.45	207.41	-6.05	-2.83

Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LBEV	1981	18.73	16.79	-1.94	-10.36
	1982	18.84	15.95	-2.89	-15.36
	1983	20.31	17.48	-2.83	-13.93
	1984	22.25	19.85	-2.40	-10.77
	1985	20.49	17.90	-2.59	-12.64
	1986	19.44	16.56	-2.88	-14.81
	1987	19.70	16.73	-2.98	-15.11
	1988	20.09	17.11	-2.98	-14.84
	1989	20.11	17.12	-3.00	-14.90
LTOB	1981	2.48	3.01	0.53	21.26
	1982	2.32	2.99	0.67	29.02
	1983	2.66	3.33	0.66	24.82
	1984	3.01	3.59	0.57	19.05
	1985	2.57	3.14	0.57	22.17
	1986	2.03	2.67	0.63	31.12
	1987	2.23	2.87	0.64	28.58
	1988	2.20	2.83	0.64	28.94
	1989	1.95	2.60	0.64	32.84
LTEX	1981	137.24	131.41	-5.84	-4.25
	1982	136.25	126.59	-9.66	-7.09
	1983	134.32	122.33	-12.00	-8.93
	1984	125.37	110.52	-14.85	-11.85
	1985	110.57	91.18	-19.39	-17.53
	1986	102.58	79.29	-23.29	-22.71
	1987	102.21	76.22	-25.99	-25.43
	1988	99.85	71.52	-28.34	-28.38
	1989	95.24	64.53	-30.72	-32.25
LPAP	1981	12.99	12.29	-0.70	-5.41
	1982	13.07	11.99	-1.08	-8.24
	1983	13.55	12.45	-1.10	-8.12
	1984	11.17	10.19	-0.98	-8.77
	1985	10.68	9.64	-1.04	-9.73
	1986	10.88	9.73	-1.14	-10.52
	1987	11.50	10.31	-1.19	-10.33
	1988	12.09	10.89	-1.20	-9.92
	1989	12.72	11.51	-1.22	-9.57

Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LWOOD	1981	93.01	91.05	-1.96	-2.11
	1982	88.89	85.80	-3.09	-3.48
	1983	80.93	77.36	-3.57	-4.41
	1984	82.83	78.72	-4.11	-4.96
	1985	73.66	68.48	-5.18	-7.04
	1986	82.54	78.02	-4.52	-5.48
	1987	91.84	88.70	-3.14	-3.42
	1988	95.45	92.95	-2.51	-2.63
	1989	98.93	97.00	-1.92	-1.94
LPET	1981	2.63	2.26	-0.37	-14.17
	1982	2.47	1.87	-0.60	-24.36
	1983	2.99	2.39	-0.60	-20.06
	1984	3.38	2.86	-0.52	-15.29
	1985	2.89	2.32	-0.57	-19.81
	1986	2.53	1.90	-0.64	-25.10
	1987	2.71	2.04	-0.66	-24.55
	1988	2.84	2.17	-0.67	-23.62
	1989	2.89	2.21	-0.68	-23.42
LCHEM	1981	16.90	15.93	-0.97	-5.74
	1982	16.53	15.12	-1.41	-8.54
	1983	19.90	18.48	-1.42	-7.12
	1984	17.36	16.09	-1.27	-7.30
	1985	16.59	15.22	-1.37	-8.27
	1986	17.66	16.13	-1.53	-8.64
	1987	17.66	16.07	-1.59	-8.98
	1988	18.02	16.41	-1.61	-8.91
	1989	17.87	16.25	-1.63	-9.11
LBSM	1981	6.55	4.72	-1.82	-27.84
	1982	6.56	3.93	-2.63	-40.03
	1983	7.33	4.75	-2.58	-35.19
	1984	8.00	5.79	-2.20	-27.55
	1985	8.28	5.93	-2.35	-28.38
	1986	8.05	5.43	-2.61	-32.50
	1987	8.36	5.66	-2.70	-32.29
	1988	8.51	5.81	-2.70	-31.77
	1989	8.49	5.78	-2.72	-31.99

Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LMACH	1981	27.37	26.85	-0.52	-1.90
	1982	29.73	28.92	-0.81	-2.72
	1983	25.61	24.54	-1.07	-4.19
	1984	32.91	31.51	-1.40	-4.25
	1985	28.71	27.13	-1.58	-5.49
	1986	30.29	28.52	-1.77	-5.83
	1987	29.19	27.29	-1.90	-6.52
	1988	33.05	30.98	-2.07	-6.26
	1989	32.05	29.81	-2.24	-7.00
LELEC	1981	6.41	6.12	-0.29	-4.48
	1982	6.51	5.93	-0.58	-8.92
	1983	6.95	6.15	-0.81	-11.58
	1984	7.02	6.04	-0.99	-14.07
	1985	7.55	6.43	-1.12	-14.78
	1986	9.39	8.14	-1.25	-13.28
	1987	11.49	10.11	-1.38	-12.01
	1988	13.78	12.28	-1.50	-10.88
	1989	14.07	12.47	-1.60	-11.36
LOTH	1981	30.80	36.79	5.99	19.43
	1982	31.67	41.62	9.95	31.41
	1983	27.21	37.81	10.60	38.94
	1984	27.00	36.42	9.42	34.89
	1985	28.54	38.41	9.87	34.60
	1986	34.50	45.51	11.01	31.90
	1987	36.79	48.39	11.60	31.53
	1988	36.60	48.33	11.74	32.07
	1989	36.71	48.51	11.79	32.12
PFOOD	1981	273.02	282.27	9.25	3.39
	1982	297.41	312.01	14.60	4.91
	1983	368.45	390.39	21.94	5.95
	1984	527.52	563.38	35.85	6.80
	1985	663.18	708.50	45.33	6.83
	1986	698.83	750.20	51.37	7.35
	1987	738.15	794.57	56.42	7.64
	1988	798.85	860.68	61.83	7.74
	1989	847.12	914.06	66.94	7.90



Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
PBEV	1981	364.13	368.91	4.78	1.31
	1982	394.49	404.27	9.78	2.48
	1983	445.42	461.33	15.92	3.57
	1984	551.46	577.44	25.98	4.71
	1985	671.20	706.79	35.58	5.30
	1986	745.67	788.88	43.20	5.79
	1987	800.85	850.23	49.38	6.17
	1988	858.05	913.11	55.06	6.42
	1989	909.76	970.13	60.37	6.64
PTOB	1981	269.16	274.95	5.79	2.15
	1982	301.13	312.93	11.80	3.92
	1983	360.29	379.45	19.15	5.32
	1984	487.05	518.29	31.24	6.41
	1985	630.19	672.91	42.72	6.78
	1986	718.25	770.03	51.78	7.21
	1987	783.32	842.42	59.10	7.54
	1988	851.20	917.05	65.85	7.74
	1989	912.59	984.75	72.15	7.91
PTEX	1981	427.12	435.66	8.54	2.00
	1982	465.04	481.64	16.59	3.57
	1983	544.46	570.77	26.30	4.83
	1984	720.28	762.97	42.69	5.93
	1985	909.58	966.98	57.40	6.31
	1986	1011.00	1080.00	68.34	6.76
	1987	1085.00	1162.00	76.99	7.10
	1988	1168.00	1253.00	85.13	7.29
	1989	1242.00	1335.00	92.82	7.47
PPAP	1981	303.89	313.41	9.53	3.13
	1982	329.01	344.04	15.04	4.57
	1983	402.17	424.76	22.59	5.62
	1984	565.98	602.90	36.92	6.52
	1985	705.67	752.35	46.68	6.61
	1986	742.39	795.29	52.90	7.13
	1987	782.89	840.98	58.10	7.42
	1988	845.39	909.07	63.67	7.53
	1989	895.09	964.03	68.94	7.70

Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
PWOOD	1981	367.98	374.89	6.91	1.88
	1982	395.18	408.04	12.86	3.25
	1983	455.94	475.95	20.02	4.39
	1984	591.91	624.34	32.43	5.48
	1985	731.62	774.64	43.01	5.88
	1986	797.70	848.21	50.51	6.33
	1987	845.72	902.12	56.40	6.67
	1988	904.62	966.72	62.11	6.87
	1989	957.29	1025.00	67.54	7.05
PPET	1981	758.85	762.32	3.47	0.46
	1982	814.91	822.92	8.01	0.98
	1983	882.45	896.52	14.08	1.60
	1984	991.39	1015.00	23.72	2.39
	1985	1122.00	1156.00	34.30	3.06
	1986	1230.00	1274.00	44.29	3.60
	1987	1324.00	1377.00	53.46	4.04
	1988	1415.00	1477.00	62.18	4.39
	1989	1500.00	1570.00	70.46	4.70
PCHEM	1981	285.97	294.98	9.01	3.15
	1982	309.74	323.97	14.23	4.59
	1983	378.97	400.35	21.38	5.64
	1984	533.99	568.93	34.94	6.54
	1985	666.19	710.36	44.17	6.63
	1986	700.94	750.99	50.06	7.14
	1987	739.25	794.23	54.98	7.44
	1988	798.41	858.66	60.25	7.55
	1989	845.44	910.67	65.24	7.72
PBSM	1981	245.92	251.33	5.41	2.20
	1982	270.37	280.99	10.62	3.93
	1983	321.33	338.25	16.92	5.27
	1984	433.99	461.47	27.48	6.33
	1985	556.65	593.72	37.08	6.66
	1986	624.63	668.93	44.30	7.09
	1987	673.76	723.79	50.03	7.43
	1988	728.15	783.55	55.40	7.61
	1989	777.29	837.74	60.45	7.78

Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
PMACH	1981	184.08	190.35	6.26	3.40
	1982	231.92	243.21	11.29	4.87
	1983	290.73	308.11	17.38	5.98
	1984	411.59	439.75	28.16	6.84
	1985	530.48	567.47	36.99	6.97
	1986	581.23	624.28	43.06	7.41
	1987	619.20	667.04	47.83	7.72
	1988	668.80	721.37	52.57	7.86
	1989	712.57	769.66	57.09	8.01
PELEC	1981	198.35	203.10	4.75	2.40
	1982	210.88	218.38	7.50	3.56
	1983	247.38	258.66	11.27	4.56
	1984	329.12	347.54	18.42	5.60
	1985	398.81	422.10	23.29	5.84
	1986	417.14	443.53	26.39	6.33
	1987	437.34	466.33	28.99	6.63
	1988	468.53	500.30	31.77	6.78
	1989	493.32	527.72	34.40	6.97
POTH	1981	364.03	373.42	9.38	2.58
	1982	402.03	419.68	17.65	4.39
	1983	485.58	513.16	27.59	5.68
	1984	672.18	716.88	44.71	6.65
	1985	866.18	925.67	59.49	6.87
	1986	961.00	1031.00	70.08	7.29
	1987	1030.00	1108.00	78.41	7.62
	1988	1112.00	1198.00	86.42	7.77
	1989	1186.00	1280.00	94.02	7.93
QRNES	1981	11271.00	11146.00	-124.82	-1.11
	1982	11688.00	11440.00	-248.37	-2.13
	1983	12061.00	11725.00	-335.90	-2.79
	1984	11950.00	11540.00	-410.50	-3.44
	1985	11529.00	11073.00	-456.02	-3.96
	1986	12206.00	11703.00	-503.00	-4.12
	1987	12983.00	12440.00	-542.73	-4.18
	1988	13835.00	13252.00	-583.36	-4.22
	1989	14804.00	14175.00	-629.01	-4.25

Table 7.2. Effect of a Ten Percent Increase in Wage Rate  
(Continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LRNES	1981	526.05	516.56	-9.49	-1.80
	1982	531.10	515.70	-15.40	-2.90
	1983	527.16	508.23	-18.93	-3.59
	1984	515.26	491.97	-23.29	-4.52
	1985	477.62	448.23	-29.39	-6.15
	1986	495.82	462.85	-32.97	-6.65
	1987	518.29	483.74	-34.55	-6.67
	1988	545.60	508.80	-36.80	-6.74
	1989	554.50	515.17	-39.33	-7.09

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate on Employment, Value Added and Prices of RNES

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QFOOD	1981	5143	5084	-59.73	-1.16
	1982	5322	5204	-118.19	-2.22
	1983	5246	5110	-136.05	-2.59
	1984	5615	5486	-128.81	-2.29
	1985	5463	5344	-118.81	-2.17
	1986	5680	5561	-118.74	-2.09
	1987	5993	5876	-116.59	-1.94
	1988	6362	6246	-116.46	-1.83
	1989	6785	6666	-118.92	-1.75
QBEV	1981	426	422	-4.05	-0.95
	1982	460	449	-10.37	-2.25
	1983	476	463	-12.71	-2.67
	1984	469	457	-12.58	-2.68
	1985	466	454	-11.82	-2.53
	1986	500	488	-12.01	-2.40
	1987	549	537	-12.13	-2.21
	1988	605	593	-12.17	-2.01
	1989	667	654	-12.50	-1.87
QTOB	1981	44.29	43.45	-0.84	-1.90
	1982	44.18	42.35	-1.82	-4.13
	1983	37.81	35.77	-2.04	-5.39
	1984	28.99	27.18	-1.81	-6.26
	1985	22.70	21.16	-1.54	-6.80
	1986	23.78	22.33	-1.45	-6.09
	1987	27.03	25.70	-1.33	-4.93
	1988	30.99	29.83	-1.16	-3.74
	1989	35.62	34.58	-1.04	-2.92
QTEX	1981	800	789	-10.88	-1.35
	1982	855	836	-19.04	-2.22
	1983	876	848	-28.08	-3.20
	1984	817	755	-42.97	-5.25
	1985	851	693	-57.76	-7.69
	1986	760	694	-66.45	-8.74
	1987	794	722	-72.04	-9.06
	1988	922	745	-77.26	-9.39
	1989	858	776	-81.55	-9.50

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
	1984	624	566	-57.70	-9.24
	1985	496	428	-68.07	-13.72
	1986	508	434	-73.96	-14.55
	1987	557	480	-76.89	-13.79
	1988	596	516	-79.62	-13.35
	1989	651	569	-82.07	-12.59
QPAP	1981	269	265	-4.67	-1.73
	1982	280	272	-7.54	-2.69
	1983	282	274	-8.62	-3.05
	1984	269	260	-8.53	-3.17
	1985	258	250	-7.84	-3.03
	1986	280	273	-7.85	-2.70
	1987	309	301	-7.98	-2.58
	1988	336	328	-7.71	-2.29
	1989	367	360	-7.73	-2.10
QCHEM	1981	574	570	-4.59	-0.80
	1982	549	542	-7.07	-1.28
	1983	793	784	-9.30	-1.17
	1984	559	546	-12.80	-2.29
	1985	491	475	-15.50	-3.16
	1986	593	576	-16.42	-2.77
	1987	584	567	-17.04	-2.92
	1988	610	593	-17.88	-2.93
	1989	603	584	-18.51	-3.07
QPET	1981	1366	1359	-6.95	-0.51
	1982	1373	1355	-17.99	-1.31
	1983	1405	1381	-23.59	-1.68
	1984	1320	1296	-24.29	-1.84
	1985	1242	1219	-23.10	-1.86
	1986	1253	1230	-23.08	-1.84
	1987	1301	1278	-23.09	-1.78
	1988	1373	1350	-23.30	-1.70
	1989	1464	1440	-23.98	-1.64

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QMACH	1981	444	428	-16.20	-3.64
	1982	424	399	-25.57	-6.02
	1983	386	354	-31.68	-8.20
	1984	268	229	-39.38	-14.66
	1985	194	148	-45.62	-23.46
	1986	222	174	-48.79	-21.89
	1987	253	202	-50.65	-19.97
	1988	276	222	-53.33	-19.31
	1989	316	261	-55.60	-17.55
QELEC	1981	184	166	-17.46	-9.49
	1982	228	204	-23.95	-10.49
	1983	339	304	-34.43	-10.16
	1984	345	291	-54.48	-15.75
	1985	458	387	-70.60	-15.41
	1986	583	507	-76.23	-13.07
	1987	658	577	-80.46	-12.22
	1988	707	621	-86.00	-12.16
	1989	770	680	-90.11	-11.69
QOTH	1981	506	502	-4.62	-0.91
	1982	516	504	-12.54	-2.43
	1983	526	510	-15.70	-2.99
	1984	519	502	-16.11	-3.10
	1985	486	470	-15.47	-3.18
	1986	512	496	-15.95	-3.11
	1987	576	559	-16.87	-2.93
	1988	645	629	-16.13	-2.50
	1989	724	709	-15.95	-2.20
LFOOD	1981	170	169	-1.86	-1.09
	1982	178	174	-3.69	-2.07
	1983	185	181	-4.24	-2.29
	1984	174	170	-4.02	-2.30
	1985	167	163	-3.72	-2.22
	1986	175	172	-3.72	-2.11
	1987	184	180	-3.66	-1.98
	1988	203	199	-3.65	-1.80
	1989	213	209	-3.73	-1.75

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
BEV	1981	18.73	19.13	0.39	2.09
	1982	18.84	19.05	0.21	1.12
	1983	20.31	20.50	0.18	0.90
	1984	22.25	22.39	0.14	0.64
	1985	20.49	20.61	0.12	0.59
	1986	19.44	19.54	0.10	0.52
	1987	19.70	19.77	0.06	0.33
	1988	20.08	20.17	0.07	0.38
	1989	20.11	20.17	0.06	0.32
TOB	1981	2.48	2.60	0.12	4.85
	1982	2.32	2.32	0.00	0.15
	1983	2.66	2.66	-0.00	-0.23
	1984	3.01	3.01	-0.00	-0.19
	1985	2.57	2.53	-0.04	-1.69
	1986	2.03	1.98	-0.06	-2.71
	1987	2.23	2.15	-0.08	-3.52
	1988	2.20	2.12	-0.07	-3.36
	1989	1.95	1.89	-0.07	-3.41
TEX	1981	137	136	-0.46	-0.33
	1982	136	134	-1.75	-1.28
	1983	134	131	-2.56	-1.91
	1984	125	121	-3.79	-3.02
	1985	110	105	-5.48	-4.96
	1986	102	95	-6.64	-6.48
	1987	102	94	-7.26	-7.10
	1988	99	92	-7.73	-7.74
	1989	95	86	-8.31	-8.73
WOOD	1981	93.01	91.14	-1.87	-2.01
	1982	88.89	86.43	-2.46	-2.76
	1983	80.93	78.57	-2.36	-2.92
	1984	82.83	80.17	-2.66	-3.21
	1985	73.66	69.85	-3.81	-5.18
	1986	82.54	79.83	-2.71	-3.29
	1987	91.84	90.92	-0.92	-1.01
	1988	95.45	95.28	-0.17	-0.18
	1989	98.93	99.41	0.49	0.49



Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LPAP	1981	12.99	13.03	0.03	0.26
	1982	13.07	12.98	-0.08	-0.61
	1983	13.55	13.44	-0.11	-0.86
	1984	11.16	11.04	-0.13	-1.15
	1985	10.68	10.56	-0.12	-1.15
	1986	10.88	10.75	-0.13	-1.19
	1987	11.50	11.36	-0.14	-1.25
	1988	12.09	11.96	-0.13	-1.11
	1989	12.72	12.58	-0.13	-1.09
LCHEM	1981	16.90	16.94	0.04	0.25
	1982	16.53	16.52	-0.01	-0.05
	1983	19.90	19.84	-0.05	-0.26
	1984	17.36	17.24	-0.11	-0.66
	1985	16.59	16.43	-0.16	-0.94
	1986	17.66	17.49	-0.17	-0.97
	1987	17.66	17.46	-0.19	-1.09
	1988	18.02	17.82	-0.20	-1.13
	1989	17.87	17.66	-0.21	-1.19
LPET	1981	2.63	2.77	0.14	5.17
	1982	2.45	2.50	0.04	1.53
	1983	2.99	3.01	0.01	0.49
	1984	3.36	3.38	0.00	0.04
	1985	2.89	2.88	-0.02	-0.52
	1986	2.53	2.51	-0.02	-0.96
	1987	2.71	2.67	-0.04	-1.51
	1988	2.84	2.80	-0.04	-1.30
	1989	2.89	2.86	-0.04	-1.36
LBSM	1981	6.55	6.72	0.18	2.71
	1982	6.56	6.70	0.15	2.23
	1983	7.33	7.44	0.11	1.57
	1984	7.99	8.07	0.08	0.98
	1985	8.28	8.34	0.06	0.75
	1986	8.05	8.10	0.05	0.68
	1987	8.36	8.38	0.03	0.33
	1988	8.51	8.54	0.03	0.32
	1989	8.49	8.52	0.03	0.30

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LMACH	1981	27.37	26.68	-0.69	-2.52
	1982	29.73	28.77	-0.97	-3.25
	1983	25.61	24.43	-1.18	-4.60
	1984	32.91	31.44	-1.47	-4.46
	1985	28.71	27.03	-1.68	-5.87
	1986	30.29	28.51	-1.78	-5.88
	1987	29.19	27.35	-1.84	-6.32
	1988	33.05	31.11	-1.95	-5.89
	1989	32.05	30.02	-2.03	-6.32
LELEC	1981	6.41	6.34	-0.06	-0.98
	1982	6.51	6.47	-0.04	-0.58
	1983	6.95	6.95	-0.01	-0.09
	1984	7.02	6.99	-0.04	-0.55
	1985	7.55	7.53	-0.02	-0.20
	1986	9.39	9.41	-0.03	0.27
	1987	11.49	11.53	0.04	0.32
	1988	13.78	13.82	0.04	0.29
	1989	14.07	14.11	0.05	0.32
LOTH	1981	30.80	29.20	-1.60	-5.19
	1982	31.67	30.25	-1.43	-4.50
	1983	27.21	26.21	-0.99	-3.66
	1984	26.99	26.34	-0.66	-2.43
	1985	28.54	28.02	-0.51	-1.80
	1986	34.50	34.12	-0.38	-1.10
	1987	36.79	36.58	-0.21	-0.56
	1988	36.60	36.45	-0.14	-0.40
	1989	36.71	36.58	-0.13	-0.36

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
PFOOD	1981	273	286	13.82	5.07
	1982	297	316	18.95	6.37
	1983	368	395	27.25	7.39
	1984	527	570	43.11	8.17
	1985	663	719	55.87	8.42
	1986	698	759	60.32	8.63
	1987	738	801	63.69	8.63
	1988	798	866	68.05	8.52
	1989	847	918	71.30	8.42
PBEV	1981	364	371	7.14	1.96
	1982	394	407	13.14	3.33
	1983	445	465	20.23	4.54
	1984	551	583	31.75	5.76
	1985	671	714	43.74	6.52
	1986	745	797	51.65	6.93
	1987	800	857	57.08	7.13
	1988	858	919	61.88	7.21
	1989	909	975	65.82	7.23
PTOB	1981	269	277	8.65	3.21
	1982	301	316	15.83	5.26
	1983	360	384	24.33	6.75
	1984	487	525	38.16	7.84
	1985	630	682	52.50	8.33
	1986	718	780	61.88	8.62
	1987	783	851	68.28	8.72
	1988	851	925	73.96	8.69
	1989	912	991	78.61	8.61
PTEX	1981	427	439	12.76	2.99
	1982	465	487	22.14	4.76
	1983	544	577	33.23	6.10
	1984	720	772	51.91	7.21
	1985	909	980	70.50	7.75
	1986	101	109	81.38	8.05
	1987	116	117	88.43	8.15
	1988	117	126	95.04	8.14
	1989	124	134	100	8.07

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
PWOOD	1981	367	378	10.32	2.81
	1982	395	412	17.07	4.32
	1983	455	481	25.17	5.52
	1984	591	631	39.31	6.64
	1985	731	784	52.83	7.22
	1986	797	857	59.97	7.52
	1987	845	910	64.49	7.63
	1988	904	973	69.04	7.63
	1989	957	103	72.75	7.60
PPAP	1981	303	318	14.23	4.68
	1982	329	348	19.52	5.93
	1983	402	430	28.06	6.98
	1984	565	610	44.39	7.84
	1985	705	763	57.53	8.15
	1986	742	804	62.12	8.38
	1987	782	848	65.57	8.38
	1988	845	915	70.08	8.29
	1989	895	968	73.43	8.20
PCHEM	1981	285	299	13.47	4.71
	1982	309	328	18.47	5.96
	1983	378	405	26.55	7.01
	1984	533	576	42.01	7.87
	1985	666	720	54.44	8.17
	1986	700	759	58.79	8.39
	1987	739	801	62.04	8.39
	1988	798	864	66.32	8.31
	1989	845	914	69.49	8.22
PPET	1981	758	764	5.19	0.68
	1982	814	825	10.90	1.34
	1983	882	900	18.17	2.06
	1984	991	102	29.43	2.97
	1985	112	116	42.42	3.78
	1986	123	128	53.57	4.35
	1987	132	139	62.95	4.75
	1988	141	149	71.43	5.05
	1989	150	158	78.84	5.25

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
PBSM	1981	245	254	8.09	3.29
	1982	270	284	14.20	5.25
	1983	321	342	21.40	6.66
	1984	433	467	33.45	7.71
	1985	556	602	45.54	8.18
	1986	624	677	52.79	8.45
	1987	673	731	57.54	8.54
	1988	728	790	61.92	8.50
	1989	777	842	65.51	8.43
PMACH	1981	184	193	9.36	5.08
	1982	231	246	14.92	6.43
	1983	290	312	21.79	7.49
	1984	411	445	34.07	8.28
	1985	530	575	45.44	8.57
	1986	581	632	51.01	8.78
	1987	619	673	54.52	8.81
	1988	668	727	58.28	8.71
	1989	712	773	61.32	8.61
PELEC	1981	198	205	7.10	3.58
	1982	210	220	9.74	4.62
	1983	247	261	13.99	5.66
	1984	329	351	22.15	6.73
	1985	398	427	28.71	7.20
	1986	417	448	30.99	7.43
	1987	437	470	32.71	7.48
	1988	468	503	34.97	7.46
	1989	493	529	36.64	7.43
POTH	1981	364	378	14.02	3.85
	1982	402	425	23.46	5.84
	1983	485	520	34.73	7.15
	1984	672	726	54.23	8.07
	1985	866	939	73.06	8.43
	1986	961	104	83.27	8.67
	1987	103	111	89.75	8.72
	1988	111	121	96.16	8.65
	1989	119	129	101.40	8.55

Table 7.3 Effect of a Ten Percent Increase in Exchange Rate (continued)

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QRNES	1981	112	111	-149.99	-1.33
	1982	117	114	-280.70	-2.40
	1983	121	117	-348.62	-2.89
	1984	120	115	-399.46	-3.34
	1985	115	110	-436.13	-3.78
	1986	122	117	-460.95	-3.78
	1987	130	125	-475.08	-3.66
	1988	138	133	-491.02	-3.55
	1989	148	143	-507.96	-3.43
LRNES	1981	526	520	-5.64	-1.07
	1982	531	521	-10.01	-1.88
	1983	527	515	-11.20	-2.13
	1984	515	502	-12.66	-2.46
	1985	477	462	-15.38	-3.22
	1986	495	480	-15.44	-3.11
	1987	518	504	-14.21	-2.74
	1988	545	531	-13.95	-2.56
	1989	554	540	-14.04	-2.53

Table 7.4 Effect of an Increase in Merchandise Exports on Employment, Output and Prices of Rural Nonfarm Enterprises.

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QFOOD	1981	5143	5150	6.77	0.13
	1982	5322	5339	17.48	0.33
	1983	5246	5277	31.11	0.59
	1984	5615	5658	43.70	0.78
	1985	5463	5519	56.71	1.04
	1986	5680	5750	70.77	1.25
	1987	5993	6080	87.45	1.46
	1988	6362	6467	105.11	1.66
	1989	6785	6905	120.33	1.77
QBEV	1981	426	427	0.90	0.21
	1982	460	462	2.17	0.47
	1983	476	479	3.64	0.76
	1984	469	474	4.94	1.05
	1985	466	472	6.37	1.37
	1986	500	508	7.92	1.58
	1987	549	559	9.67	1.76
	1988	605	617	11.57	1.91
	1989	667	680	13.23	1.98
QTOB	1981	44.30	44.45	0.15	0.33
	1982	44.18	44.55	0.37	0.83
	1983	37.81	38.45	0.64	1.69
	1984	28.99	29.89	0.89	3.06
	1985	22.70	23.85	1.15	5.05
	1986	23.78	25.21	1.42	5.99
	1987	27.03	28.77	1.74	6.42
	1988	30.99	33.05	2.05	6.62
	1989	35.62	37.93	2.31	6.50
QTEX	1981	800	801	0.43	0.05
	1982	855	856	1.13	0.13
	1983	876	878	2.20	0.25
	1984	817	821	3.75	0.46
	1985	751	757	6.15	0.82
	1986	760	769	8.39	1.10
	1987	794	806	11.60	1.46
	1988	822	837	15.25	1.85
	1989	858	876	18.19	2.12

Table 7.4 Effect of an Increase in Merchandise Exports on Employment, Output and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QWOOD	1981	651	653	1.72	0.26
	1982	691	696	4.44	0.64
	1983	665	673	8.12	1.22
	1984	624	636	12.11	1.94
	1985	496	513	16.90	3.41
	1986	508	529	21.63	4.25
	1987	557	585	27.73	4.97
	1988	596	630	34.21	5.73
	1989	651	691	39.37	6.04
QPAP	1981	269	270	0.83	0.31
	1982	280	282	1.74	0.62
	1983	282	285	2.61	0.02
	1984	269	272	3.24	1.20
	1985	258	262	4.14	1.60
	1986	280	285	4.97	1.77
	1987	309	315	5.97	1.93
	1988	336	343	7.00	2.08
	1989	367	375	7.76	2.11
QCHEM	1981	574	575	0.29	0.05
	1982	549	549	0.70	0.13
	1983	793	795	1.29	0.16
	1984	559	561	1.97	0.35
	1985	491	494	2.87	0.59
	1986	593	597	3.65	0.62
	1987	584	588	4.80	0.82
	1988	610	616	5.99	0.98
	1989	603	610	6.83	1.13
QPET	1981	1366	1368	1.29	0.09
	1982	1373	1376	3.47	0.25
	1983	1405	1411	6.24	0.44
	1984	1320	1329	8.95	0.68
	1985	1242	1253	11.76	0.95
	1986	1253	1267	14.78	1.18
	1987	1301	1319	18.23	1.40
	1988	1373	1395	21.98	1.60
	1989	1464	1489	25.42	1.74



Table 7.4 Effect of an Increase in Merchandise Exports on Employment, Output and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QMACH	1981	444	446	1.21	0.27
	1982	424	427	2.84	0.67
	1983	386	391	5.03	1.30
	1984	268	275	7.29	2.71
	1985	194	204	10.14	5.22
	1986	222	235	12.80	5.74
	1987	253	270	16.57	6.53
	1988	276	296	20.47	7.41
	1989	316	340	23.42	7.39
QLEEC	1981	184	184	0.59	0.32
	1982	228	229	1.33	0.58
	1983	339	341	2.51	0.74
	1984	345	350	4.32	1.25
	1985	458	465	7.25	1.58
	1986	583	592	9.38	1.61
	1987	658	671	13.20	2.01
	1988	707	724	17.20	2.43
	1989	770	790	19.77	2.57
QOTH	1981	506	508	1.70	0.33
	1982	516	520	3.56	0.69
	1983	526	531	5.10	0.97
	1984	519	525	6.05	1.16
	1985	486	493	7.64	1.57
	1986	512	521	9.19	1.79
	1987	576	587	10.72	1.86
	1988	645	658	12.48	1.93
	1989	724	738	13.86	1.91
LFOOD	1981	170	171	0.21	0.12
	1982	178	178	0.54	0.30
	1983	185	186	0.97	0.52
	1984	174	176	1.36	0.78
	1985	167	168	1.76	1.05
	1986	175	178	2.20	1.25
	1987	184	187	2.72	1.47
	1988	203	206	3.27	1.61
	1989	213	217	3.74	1.75

Table 7.4 Effect of an Increase in Merchandise Exports on Employment, Output and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LBEV	1981	18.73	18.75	0.01	0.07
	1982	18.84	18.85	0.01	0.05
	1983	20.31	20.31	-0.00	-0.01
	1984	22.25	22.24	-0.01	-0.03
	1985	10.48	20.48	-0.01	-0.04
	1986	19.44	19.43	-0.01	-0.07
	1987	19.70	19.68	-0.02	-0.14
	1988	20.09	20.06	-0.03	-0.13
	1989	20.11	20.02	-0.02	-0.11
LTOB	1981	2.48	2.48	-0.00	-0.05
	1982	2.32	2.31	-0.01	-0.37
	1983	2.66	2.65	-0.02	-0.66
	1984	3.01	2.99	-0.02	-0.81
	1985	2.57	2.54	-0.03	-1.17
	1986	2.03	2.01	-0.02	-1.24
	1987	2.23	2.20	-0.03	-1.50
	1988	2.20	2.17	-0.03	-1.44
	1989	1.95	1.93	-0.02	-1.18
LTEX	1981	137	137	0.02	0.01
	1982	136	136	0.02	0.01
	1983	134	134	0.06	0.04
	1984	125	125	0.15	0.12
	1985	110	110	0.31	0.28
	1986	102	103	0.49	0.47
	1987	102	102	0.71	0.69
	1988	99	100	1.03	1.04
	1989	95	96	1.34	1.41
LWOOD	1981	93.01	93.18	0.17	0.18
	1982	88.89	89.23	0.34	0.38
	1983	80.93	81.45	0.52	0.64
	1984	82.83	83.52	0.69	0.83
	1985	73.66	74.73	1.07	1.45
	1986	82.54	83.65	1.10	1.33
	1987	91.84	92.90	1.06	1.16
	1988	95.45	96.51	1.06	1.11
	1989	98.93	99.70	0.78	0.79

Table 7.4 Effect of an Increase in Merchandise Exports on Employment, Output and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LPAP	1981	12.99	13.01	0.02	0.15
	1982	13.06	13.10	0.04	0.28
	1983	13.55	13.60	0.05	0.37
	1984	11.17	11.23	0.06	0.56
	1985	10.68	10.76	0.08	0.75
	1986	10.88	10.97	0.10	0.88
	1987	11.50	11.62	0.11	0.97
	1988	12.09	12.22	0.13	0.10
	1989	12.72	12.87	0.15	1.18
LCHEM	1981	16.90	16.90	0.00	0.03
	1982	16.53	16.54	0.01	0.05
	1983	18.90	19.91	0.01	0.05
	1984	17.36	17.38	0.01	0.10
	1985	16.59	16.61	0.02	0.14
	1986	17.66	17.69	0.03	0.18
	1987	17.66	17.70	0.04	0.24
	1988	18.02	18.07	0.06	0.31
	1989	17.87	17.94	0.07	0.39
LPET	1981	2.63	2.63	0.00	0.16
	1982	2.47	2.47	0.00	0.15
	1983	2.99	2.99	0.00	0.06
	1984	3.38	3.38	0.00	0.08
	1985	2.89	2.90	0.00	0.15
	1986	2.53	2.54	0.01	0.38
	1987	2.71	2.72	0.01	0.31
	1988	2.84	2.85	0.01	0.52
	1989	2.89	2.91	0.02	0.84
LBSM	1981	6.55	6.55	0.00	0.03
	1982	6.56	6.55	-0.00	-0.04
	1983	7.33	7.31	-0.01	-0.15
	1984	7.99	7.98	-0.01	-0.18
	1985	8.28	8.25	-0.02	-0.28
	1986	8.05	8.02	-0.02	-0.30
	1987	8.36	8.32	-0.03	-0.41
	1988	8.51	8.48	-0.03	-0.41
	1989	8.49	8.46	-0.03	-0.35

Table 7.4 Effect of an Increase in Merchandise Exports on Employment, Output and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
LMACH	1981	27.37	27.42	0.05	0.19
	1982	29.73	29.85	0.11	0.38
	1983	25.61	25.81	0.19	0.76
	1984	32.91	33.19	0.28	0.84
	1985	28.71	29.09	0.38	1.33
	1986	30.29	30.77	0.48	1.58
	1987	29.19	29.81	0.62	2.13
	1988	33.05	33.82	0.76	2.31
	1989	32.04	32.91	0.86	2.69
LELEC	1981	6.41	6.41	0.00	0.06
	1982	6.51	6.51	0.01	0.11
	1983	6.95	6.96	0.01	0.10
	1984	7.02	7.03	0.01	0.12
	1985	7.55	7.56	0.01	0.12
	1986	9.39	9.39	0.01	0.07
	1987	11.49	11.50	0.01	0.05
	1988	13.78	13.79	0.00	0.03
	1989	14.07	14.07	0.00	0.01
LOTH	1981	30.80	30.86	0.06	0.19
	1982	31.67	31.76	0.09	0.26
	1983	27.21	27.32	0.11	0.41
	1984	26.99	27.10	0.11	0.39
	1985	28.53	28.70	0.16	0.57
	1986	34.50	34.64	0.14	0.40
	1987	36.79	36.93	0.14	0.38
	1988	36.60	36.73	0.14	0.38
	1989	36.71	36.80	0.09	0.24
LRNES	1981	526	526	0.56	0.11
	1982	531	532	1.16	0.22
	1983	527	529	1.90	0.36
	1984	515	517	2.63	0.51
	1985	477	481	3.74	0.78
	1986	495	500	4.49	0.91
	1987	518	523	5.32	1.03
	1988	545	551	6.38	1.17
	1989	554	561	6.99	1.26

Table 7.4. Effect of an Increase in Merchandise Exports on Employment, GVA and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QRNES	1981	11271.00	11287.00	15.88	0.14
	1982	11688.00	11727.00	39.24	0.34
	1983	12061.00	12129.00	68.50	0.57
	1984	11950.00	12047.00	97.23	0.81
	1985	11529.00	11661.00	131.07	1.14
	1986	12206.00	12371.00	164.90	1.35
	1987	12983.00	13190.00	207.70	1.60
	1988	13835.00	14089.00	253.32	1.83
	1989	14804.00	15095.00	290.50	1.96
PFOOD	1981	273.02	272.55	-0.47	-0.17
	1982	297.41	296.35	-1.05	-0.35
	1983	368.45	366.46	-1.99	-0.54
	1984	527.52	524.11	-3.42	-0.65
	1985	663.18	657.44	-5.73	-0.86
	1986	698.83	691.41	-7.42	-1.06
	1987	738.15	727.71	-10.45	-1.42
	1988	798.85	785.25	-13.61	-1.70
	1989	847.12	831.47	-15.64	-1.85
PBEV	1981	364.13	363.89	-0.24	-0.07
	1982	394.49	393.83	-0.66	-0.17
	1983	445.42	444.08	-1.34	-0.30
	1984	551.46	549.07	-2.39	-0.43
	1985	671.20	667.12	-4.08	-0.61
	1986	745.67	739.93	-5.75	-0.77
	1987	800.85	792.76	-8.09	-1.01
	1988	858.05	847.23	-10.82	-1.26
	1989	909.76	896.61	-13.15	-1.45

Table 7.4. Effect of an Increase in Merchandise Exports on Employment, GVA and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
QRNES	1981	11271.00	11287.00	15.88	0.14
	1982	11688.00	11727.00	39.24	0.34
	1983	12061.00	12129.00	68.50	0.57
	1984	11950.00	12047.00	97.23	0.81
	1985	11529.00	11661.00	131.07	1.14
	1986	12206.00	12371.00	164.90	1.35
	1987	12983.00	13190.00	207.70	1.60
	1988	13835.00	14089.00	253.32	1.83
	1989	14804.00	15095.00	290.50	1.96
PFOOD	1981	273.02	272.55	-0.47	-0.17
	1982	297.41	296.35	-1.05	-0.35
	1983	368.45	366.46	-1.99	-0.54
	1984	527.52	524.11	-3.42	-0.65
	1985	663.18	657.44	-5.73	-0.86
	1986	698.83	691.41	-7.42	-1.06
	1987	738.15	727.71	-10.45	-1.42
	1988	798.85	785.25	-13.61	-1.70
	1989	847.12	831.47	-15.64	-1.85
PBEV	1981	364.13	363.89	-0.24	-0.07
	1982	394.49	393.83	-0.66	-0.17
	1983	445.42	444.08	-1.34	-0.30
	1984	551.46	549.07	-2.39	-0.43
	1985	671.20	667.12	-4.08	-0.61
	1986	745.67	739.93	-5.75	-0.77
	1987	800.85	792.76	-8.09	-1.01
	1988	858.05	847.23	-10.82	-1.26
	1989	909.76	896.61	-13.15	-1.45
PTOB	1981	269.16	268.87	-0.29	-0.11
	1982	301.13	300.34	-0.79	-0.26
	1983	360.29	358.68	-1.61	-0.45
	1984	487.05	484.17	-2.88	-0.59
	1985	630.19	625.28	-4.91	-0.78
	1986	718.25	711.35	-6.90	-0.96
	1987	783.32	773.61	-9.71	-1.24
	1988	851.20	838.22	-12.98	-1.52
	1989	912.59	896.84	-15.75	-1.73

Table 7.4. Effect of an Increase in Merchandise Exports on Employment, GVA and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
PTEX	1981	427.12	426.69	-0.43	-0.10
	1982	465.04	463.91	-1.13	-0.24
	1983	544.46	542.21	-2.25	-0.41
	1984	720.28	716.31	-3.97	-0.55
	1985	909.58	902.84	-6.74	-0.74
	1986	1011.00	1002.00	-9.31	-0.92
	1987	1085.00	1072.00	-13.04	-1.20
	1988	1168.00	1150.00	-17.31	-1.48
	1989	1242.00	1222.00	-20.75	-1.67
PWOOD	1981	367.98	367.63	-0.35	-0.10
	1982	395.18	394.30	-0.89	-0.22
	1983	455.94	454.20	-1.74	-0.38
	1984	591.91	588.87	-3.04	-0.51
	1985	731.62	726.48	-5.14	-0.70
	1986	797.70	790.70	-7.00	-0.88
	1987	845.72	835.94	-9.78	-1.16
	1988	904.62	891.69	-12.93	-1.43
	1989	957.29	941.96	-15.33	-1.60
PPAP	1981	303.89	303.41	-0.48	-0.16
	1982	329.01	327.92	-1.08	-0.33
	1983	402.17	400.12	-2.05	-0.51
	1984	565.98	562.46	-3.52	-0.62
	1985	705.67	699.77	-5.90	-0.84
	1986	742.39	734.75	-7.64	-1.03
	1987	782.89	772.13	-10.76	-1.37
	1988	845.39	831.38	-14.01	-1.66
	1989	895.09	878.98	-16.11	-1.80
PCHEM	1981	285.97	285.51	-0.46	-0.16
	1982	309.74	308.71	-1.03	-0.33
	1983	378.97	377.03	-1.94	-0.51
	1984	533.99	530.66	-3.33	-0.62
	1985	666.19	660.60	-5.59	-0.84
	1986	700.94	693.70	-7.23	-1.03
	1987	739.25	729.07	-10.18	-1.38
	1988	798.41	785.14	-13.26	-1.66
	1989	845.44	830.19	-15.24	-1.80

Table 7.4. Effect of an Increase in Merchandise Exports on Employment, GVA and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
PPET	1981	758.85	758.67	-0.18	-0.02
	1982	814.91	814.39	-0.52	-0.06
	1983	882.45	881.32	-1.13	-0.13
	1984	991.39	989.29	-2.10	-0.21
	1985	1122.00	1118.00	-3.69	-0.33
	1986	1230.00	1225.00	-5.47	-0.45
	1987	1324.00	1316.00	-7.91	-0.60
	1988	1415.00	1404.00	-10.38	-0.77
	1989	1500.00	1486.00	-13.80	-0.92
PBSM	1981	245.92	245.64	-0.27	-0.11
	1982	270.37	269.64	-0.72	-0.27
	1983	321.33	319.89	-1.44	-0.45
	1984	433.99	431.44	-2.55	-0.59
	1985	556.65	552.31	-4.34	-0.78
	1986	624.63	618.62	-6.01	-0.96
	1987	673.76	665.34	-8.42	-1.25
	1988	728.15	716.95	-11.20	-1.54
	1989	777.29	763.83	-13.46	-1.73
PMACH	1981	184.08	183.77	-0.32	-0.17
	1982	231.92	231.14	-0.78	-0.34
	1983	290.73	289.21	-1.52	-0.52
	1984	411.59	408.93	-2.65	-0.64
	1985	530.48	526.00	-4.48	-0.84
	1986	581.23	575.20	-6.03	-1.04
	1987	619.20	610.78	-8.42	-1.36
	1988	668.80	657.70	-11.10	-1.66
	1989	712.57	699.50	-13.08	-1.83
PELEC	1981	198.35	198.11	-0.24	-0.12
	1982	210.88	210.34	-0.54	-0.26
	1983	247.38	246.36	-1.02	-0.41
	1984	329.12	327.36	-1.75	-0.53
	1985	398.81	395.87	-2.95	-0.74
	1986	417.14	413.32	-3.81	-0.91
	1987	437.34	431.97	-5.37	-1.23
	1988	468.53	461.54	-6.99	-1.49
	1989	493.32	485.29	-8.04	-1.63



Table 7.4. Effect of an Increase in Merchandise Exports on Employment, GVA and Prices of Rural Nonfarm Enterprises (continued).

Variable	Year	Base Run	Shock Run	Difference	Percentage Difference
POTH	1981	364.03	363.56	-0.48	-0.13
	1982	402.03	400.82	-1.21	-0.30
	1983	485.58	483.19	-2.38	-0.49
	1984	672.18	667.99	-4.18	-0.62
	1985	866.18	859.10	-7.08	-0.82
	1986	961.00	951.33	-9.67	-1.01
	1987	1030.00	1016.00	-13.52	-1.31
	1988	1112.00	1094.00	-17.89	-1.61
	1989	1186.00	1164.00	-21.28	-1.79

## CHAPTER 8

### SUMMARY.

Part of a project on Dynamics of Rural Development which is being implemented by the Philippine Institute for Development Studies, this study is generally aimed at analyzing the effects of macroeconomic policies on rural nonfarm enterprises (RNEs) by constructing a RNE submodel and linking it with the PIDS NEDA macroeconometric model for the Philippine Economy. The submodel consists of a series of seemingly unrelated equations describing the relationships of demand, employment, and prices with various explanatory variables. Equations were specified for each of the 12 sectors comprising RNEs which were defined as manufacturing enterprises located outside Metro Manila. The 12 sectors are: (1) food manufacturing; (2) beverage manufacturing; (3) tobacco manufacturing; (4) textile, wearing apparel and leather industries; (5) manufacture of wood and wood products including furniture and fixtures; (6) manufacture of paper and paper products, printing and publishing; (7) manufacture of chemicals and chemical, rubber and plastic products; (8) manufacture of petroleum and coal products; (9) basic metal industries; (10) manufacture of fabricated metal products, machineries (except electrical) and transport equipment; (11) manufacture of electrical machinery, apparatus, appliances and supplies; and (12) other manufacturing industries.

Demand for output of each RNE is characterized as a function of its price and indicators of aggregate domestic and international demand. Thus, the demand for the products of each RNE sector is assumed to be a function of its price, consumption expenditures, population and exports. It is hypothesized that the demand is negatively related with price and positively related with the latter three variables.

Assuming a specific production technology, traditional neoclassical theory of demand for labor hypothesizes it as positively related to the demand for output or production, negatively to its own price, i.e. to wage rate, and positively to prices of substitute inputs. In the formulation of the model the number of workers in each sector was specified as a function of output, wage, and interest rate. The interest rate was proxied by the interest rate of Treasury Bills or by the capital investment expenditures of RNEs.

Sector prices are modelled directly as a function of wholesale price index. These equations provide the linkage to the prices in the other sectors of the economy. Using a pricing rule characterized by stable markups over variable costs, the PIDS NEDA model assumed the wholesale price index to be determined by the price of labor and imported inputs and the capacity utilization rates of firms. Increases in demand are proxied by the ratio of total liquidity to potential GNP which in turn is a function of capital stock and labor force. The presence of a capital stock index provides the link from increased investment expenditures to increased production.

Data on output, employment, and capital investment expenditures of RNEs were obtained from the NSO Census or Annual Survey of Manufacturing Establishments. Based on available literature the structure of a few selected nonfarm industries was discussed to provide some background on the industry. Policies related to nonfarm enterprises were also presented. These include fiscal, financial, trade, labor, investment incentives, regional dispersal, and other policies.

The trend analysis for RNEs focused on the number of establishments, output, employment, and prices for the period 1975 to 1989. The total number of all manufacturing establishments in the country grew from 77,291 in 1975 to 85,310 in 1980 but went down to 77,805 in 1989. Most of these establishments have less than ten workers. These small industries comprised 92 percent of all establishments in 1975 and 87 percent in 1989. Geographically, about one-fifth of the establishments are located in Metro Manila and four-fifths in the regions outside the Metropolis. Over the period under study, the distribution of establishments between Metro Manila and rural areas did not vary very much and changed only from 79.4 percent in the rural areas in 1976 to 81.8 percent in 1978 and 1979. In 1988 and 1989, 80 percent of the establishments were located in the rural areas.

A large proportion of the establishments in the food, beverages, textile, wood, machinery and other industries is located in the rural areas. About 89 to 92 percent of the food manufacturing establishments are in the rural areas. The corresponding proportions for other industries are: 96 to 98 percent for beverages; 71 to 79 percent for textile; 73 to 94 percent for wood; 68 to 76 percent for machineries; and 83 to 86 percent for others.

Focusing on the RNEs, 47 percent of the establishments were engaged in food manufacturing in 1989. The second largest concentration was in the textile industry which

accounted for 20.8 percent of all RNEs. This was followed by machineries with 10.73 percent and wood with 10.02 percent. The rest are in others, paper, beverages, chemicals, basic metals, electrical, tobacco, and petroleum industries in that order.

By size, the following are dominated by small firms (i.e. those with less than 10 workers): food, beverages, textile, wood, paper, chemicals, machineries, and others. In contrast, tobacco, petroleum and electrical firms are composed mainly of large industries.

Considering the period from 1975 to 1989, about 45 to 58 percent of the total manufacturing output came from rural enterprises and 42 to 55 percent from Metro Manila. The tobacco, textile, paper, chemicals, machinery, and other electrical industries produced higher quantities of output in Metro Manila. The rural areas contributed more to total output in the food, wood, petroleum and other manufacturing industries. The beverages and the basic metal industries exhibited an increasing concentration of output in the rural areas. Total GVA from RNEs increased from P8.5 billion in 1975 to P14.4 billion in 1989 representing an annual growth rate of 3.55 percent.

The manufacturing industries employed more than 1.2 million people in 1989 about 50 percent of whom were in rural enterprises and the other half in Metro Manila. The trend in the percentage distribution of employment followed almost a similar pattern as that of total output. While the total number of workers was almost equally divided between the rural areas and Metro Manila especially from 1977 to 1981, RNEs seemed to absorb more employment in the 1980s.

By industry, the food, beverages, wood, and petroleum industries in the rural areas employed more workers than those located in Metro Manila. On the other hand, more people were employed in the tobacco, paper, chemical and electrical industries in Metro Manila than in the same types of enterprises in the rural areas.

RNEs employed 391.27 thousand people in 1975. Between that year and 1989, the general trend in labor absorption by RNEs is increasing at an annual rate of 2.92 percent. For the more recent period 1984 to 1989, total employment by RNEs grew at a higher rate of 5.13 percent per annum. The food industry employed the greatest number of persons among all RNEs. This was followed by the textile, wood, machinery, and other industries.

Regardless of industry group, prices are on the uptrend. Prices steadily increased during the period but the rate of increase seemed to have accelerated after the 1983 crisis.

In general, the results of the estimated demand equations for the 12 RNE sectors conform with a priori expectations. As hypothesized, price coefficients are negative while those of consumption expenditures are positive. The price coefficients were statistically significant in the following RNEs: textile, wood, paper, chemicals, petroleum, machineries, electrical, and others. The demand elasticity of food with respect to its own price is quite low, only -0.016, that is, a ten percent increase in the food price index would result in only 0.16 of one percent drop in value added from rural food industries. Like food, demand for beverages was not significantly influenced by price although the price coefficient was negative. For food, beverages and tobacco consumption expenditures yielded a positive and statistically significant coefficient.

The demand for textile, wood, paper, and machineries was significantly influenced by prices and population. The demand for textile products is inelastic with a price elasticity of -0.686 while that for wood and machineries had almost a unitary elasticity.

Coefficients of aggregate consumption expenditures were generally positive and significant. The results for exports were mixed in that some equations have positive coefficients as hypothesized but a few were nonsignificant. Population was a significant factor in the demand equations for textile, basic metals, electrical products, and other manufactures.

The estimates of the employment equations show that the coefficients of output were positive and generally significant in food, wood, paper, chemical, petroleum, machinery, electrical and other manufacturing industries. The daily wage rate was expressed either as an index with 1985 as the base or deflated by the implicit price index for GNP. The coefficients of this variable were negative thus conforming with theoretical expectation. For other inputs, capital investment was used in the employment equations for food, beverages, textile, wood, machineries and electrical industries. Rates for 91-day Treasury Bills which were expressed either in nominal or real terms were used as proxy for interest on capital in the employment equations for tobacco, paper, chemicals, petroleum, and basic metals RNEs. Precious year's employment appeared as a significant variable for some industries.

In all price equations, the wholesale price index had highly significant coefficients. Likewise, where the lagged dependent variable was added as an explanatory variable, the coefficients were positive and highly significant. Except for the petroleum price equation, all functions had a  $R^2$  greater than 0.99. Nevertheless, the lagged dependent variable explained 88 percent of the variation in petroleum prices.

The percentage changes in the sectoral prices resulting from a one percent change in WPI are close to unity (0.90 or higher) for food, paper, and chemical industries; around 0.5 for tobacco, textile, wood and basic metals. The elasticity of petroleum price is quite low, 0.15 understandably so because petroleum prices are controlled by the government.

To determine the tracking ability of the model a fully dynamic simulation was undertaken for the period 1981 to 1989. To validate the model, the root mean square percentage errors (RMSPE) were computed for each endogenous variable. The RMSPE measures the deviation of the simulated variable from its actual time path expressed in percentage terms. Except for the gross value added from tobacco manufacture, the RMSPE statistic is less than 25 percent. It is noteworthy that the GVA for food, textile, petroleum and others has a RMSPE of less than ten percent and the aggregate GVA for all RNEs has a RMSPE of only 5.87.

For employment, only tobacco and petroleum industries have a relatively high RMSPE statistics but those for all other industries are less than 20 percent. The aggregate employment equation (identity) performed quite well with a RMSPE of less than 10 percent.

The performance of the price equations appears to be much better than the output and employment equations. Except for petroleum, all RMSPE statistics are less than 10 percent. Moreover, five out of the 12 sectors have RMSPE of less than 5 percent. The overall price index has a RMSPE of 5.96 percent.

By linking the RNE submodel with the PIDS NEDA macroeconometric model, baseline solutions for the endogenous variables were computed. Shock run values were then computed and compared with the baseline solutions for three major policies (1) a ten percent increase in the wage rate; (2) a ten percent increase in the exchange rate; and (3) an increase in merchandise exports equivalent to one percent of Gross Domestic Product at the baseline.

In general, an increase in the wage rate results in a decline in employment, an increase in prices and consequently a drop in output. For all RNEs, a ten percent increase in wage rate is estimated to result in a drop in employment by about 1.8 percent initially. Continuing wage increase would reduce employment by up to 7 percent. Aggregate value added from RNEs would then decline by 1.1 to 4.2 percent.

The immediate effect of an increase in the exchange rate of the peso is to increase domestic prices of imported goods as well as locally produced goods. Thus inflationary trends would ensue. The increase in prices would tend to lower the demand for goods which would then reduce employment. The empirical results of the simulation exercise determining the effects of a ten percent devaluation on RNEs generally conform with these expectations. The only deviation observed is employment in the beverage and basic metals sectors which increased by a very small percentage of 0.46 percent and 0.56 percent respectively for the period 1984 to 1989. Food prices increased by 7.75 percent which changes food output in the opposite direction by about two percent. Employment would also decline by about the same percentage.

Continuing devaluation has almost similar effects on value added, employment and prices in the textile and wood industries in terms of direction of change and the rate at which the percentage difference between the baseline and the shock run quantities change. For the rural paper industry, the stability of the model is reflected by an almost equal magnitude of change in output particularly between 1985 and 1989. Likewise, employment changed by practically the same value annually.

The largest impact of the devaluation on value added is observed in the rural machinery and electrical sectors where the percentage difference between the baseline solution and that of the shock run averaged 20.44 percent and 12.91 percent respectively, for the period 1985 to 1989. For employment, the largest effect occurred in the textile industry, with 7.0 percent, and machinery with 6.05 percent.

On the aggregate, the ten percent increase in the exchange rate reduced employment by an average of 3.64 percent over the period 1985 to 1989 and by 2.83 percent in value added over the same period.

An increase in exports would result in a more favorable balance of payments position, which subsequently would increase the amount of foreign exchange available to finance imports which are an important input in the production of RNEs. Greater capacity to import would enhance investments and improve GDP growth. These changes would be expected to positively affect employment and output in the RNEs. Empirical results of the simulation show that indeed such changes would occur due to an increase in merchandise exports. However, the magnitude of the difference between the baseline and the shock run appears relatively smaller than the previous two policies considered above. Constantino and Yap indicate that the macro model does not distinguish between manufactured and unmanufactured exports.

As a whole, the initial effect of the increase in merchandise exports on value added is only 0.14 percent which increased to almost 2.0 percent in 1989. The change in employment is smaller and ranged from 0.11 percent in the first year of the simulation period to 1.26 percent in 1989.



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APPENDIX  
Data Series Used in the RNE Submodel.

obs	QFOOD	QBEV	QTOB	QTEX	QWOOD	QPAP
1975	4014.070	346.4900	61.33000	405.7400	401.6800	103.8000
1976	4437.440	236.9900	38.96000	488.2200	436.0200	256.8400
1977	3922.960	239.6400	38.86000	697.2700	518.1600	205.8900
1978	4660.090	331.4500	34.25000	642.2700	567.7700	199.5900
1979	5093.370	351.1100	26.03000	782.8500	571.9100	216.1000
1980	5016.880	456.4000	51.33000	779.0200	610.0200	195.0700
1981	5635.680	296.4500	39.38000	755.5500	625.6200	212.0800
1982	4858.870	362.1500	51.58000	840.4400	649.2900	214.0700
1983	4616.530	505.9500	31.83000	862.9800	684.3400	287.2200
1984	4815.900	412.1700	7.98000	581.1600	592.0300	279.5800
1985	5343.280	401.3700	27.17000	777.3700	515.7500	248.1500
1986	5678.830	442.2800	17.47000	800.2800	402.4400	336.9600
1987	5653.590	518.2500	18.99000	842.8600	416.3300	277.9200
1988	6644.680	600.0800	21.29000	808.0700	465.1400	362.4200
1989	6564.840	663.3000	33.53000	879.0300	489.9400	386.5300

obs	QCHEM	QPET	QBSM	QMACH	QELEC	QOTH
1975	159.7600	1328.590	466.6300	525.5600	209.4900	487.9400
1976	350.0000	1294.600	713.3500	220.8200	153.8600	531.1000
1977	625.2900	1283.060	405.6300	231.2300	20.63000	447.8400
1978	726.8000	1322.290	520.8800	354.2600	73.77000	444.3000
1979	668.0000	1396.460	811.9100	411.7600	103.8200	401.9300
1980	760.3600	1370.120	833.7400	328.9700	126.3700	487.7100
1981	681.1800	1283.780	634.8900	501.5300	312.5600	508.6200
1982	386.1700	1310.370	685.1600	390.7800	219.6300	524.6000
1983	643.0200	1347.490	971.3100	434.3100	239.0100	567.8000
1984	465.4100	1346.270	1089.620	210.1600	293.6200	483.4400
1985	557.1900	1149.540	1276.650	196.0900	439.2000	493.2800
1986	636.9700	1151.380	1279.880	212.6300	614.0700	509.0300
1987	616.2400	1223.730	1312.120	258.1500	838.4000	529.0700
1988	651.6900	1354.080	1596.340	258.5500	752.6600	597.0300
1989	523.4500	1401.250	1673.820	280.4900	739.4600	727.2200



# APPENDIX

## Data Series Used in the RNE Submodel (cont'd)

LF00D	LDEV	LTOB	LTEX	LPAP	LWOOD
135.2390	19.97800	4.501000	94.77000	8.730000	56.73100
129.4920	13.14500	2.223000	102.1160	10.84600	65.84200
154.9100	14.89400	3.091000	126.4360	10.61500	73.86500
190.8540	17.45000	1.972000	295.9630	10.42100	95.75600
169.6390	19.73100	1.317000	130.8650	13.06000	88.40100
166.2870	19.43000	1.489000	137.4830	11.90000	90.25800
181.7160	21.59900	1.213000	142.3360	11.41300	88.81500
175.1900	20.58200	1.609000	137.4330	13.46200	79.60100
140.9720	21.10200	3.254000	109.3330	12.46800	83.52100
139.1390	20.06600	3.767000	111.5240	11.35800	74.09000
145.6990	20.90700	3.827000	112.2150	9.904000	72.23700
171.5380	19.12200	1.887000	90.07900	11.24700	73.69300
182.8890	19.52600	2.893000	73.77300	15.56100	75.23800
209.3340	20.99700	3.010000	114.7480	13.80500	96.02900
220.9440	21.72100	2.306000	121.4880	14.04400	97.77500

LPET	LCHEM	LMACH	LBSM	LELEC	LOTH
1.669000	10.22700	37.03700	1.822000	1.022000	19.54500
1.127000	11.71900	26.97800	2.938000	2.221000	21.03200
1.257000	18.16600	25.52600	3.255000	1.111000	29.48500
2.237000	17.00400	43.01100	8.474000	4.482000	40.77900
1.909000	14.88600	38.23200	5.267000	3.427000	31.01900
1.431000	19.14900	35.21800	6.634000	6.011000	31.82900
1.939000	19.02000	37.43700	6.445000	5.157000	32.51200
3.069000	15.31800	37.92200	7.125000	4.470000	29.03800
2.280000	21.04500	31.74600	7.293000	5.683000	26.54700
1.971000	15.30500	30.73600	7.164000	6.239000	26.11600
2.497000	17.32600	30.17800	9.803001	6.700000	26.42500
2.495000	14.77900	32.10500	9.640000	8.926000	27.48300
2.501000	16.64000	35.30800	8.346000	11.36900	27.43000
2.569000	21.89500	39.30800	8.890000	13.07200	40.55100
2.560000	20.30900	39.25600	9.479000	14.82700	39.37500

# APPENDIX

## Data Series Used in the RNE Submodel (cont'd)

PFOOD	PBEV	PTOD	PTEX	PWOOD	PPAP
141.6000	189.2000	146.0000	211.0430	172.5495	140.8925
153.8000	246.9000	165.0000	253.3188	204.1814	154.3619
164.2000	256.9000	184.1000	268.0114	202.7460	166.2896
178.5000	265.0000	197.2000	282.2903	294.5863	228.5588
200.9000	280.9000	207.6000	334.6371	291.7368	231.3169
230.4000	326.2000	232.8000	384.8339	336.1442	295.5726
269.2000	386.0000	255.1000	425.9056	384.9591	316.4901
298.8000	412.7000	266.9000	449.8767	408.2967	323.7869
339.5000	454.9000	293.4000	507.0122	450.5849	358.5556
532.4000	582.5000	493.7000	727.2398	619.4647	602.6167
648.4000	680.5000	611.2000	708.7000	725.7000	666.7104
656.1000	691.7000	696.1000	976.3873	754.1409	702.0794
698.3000	752.6000	771.9000	1038.031	788.7830	733.0131
766.0000	859.0000	827.1000	1149.705	882.6770	834.8139
860.9000	896.6000	888.2000	1204.604	941.9278	887.9520

PCHEM	PPET	PBSM	PMACH	PELEC	POTH
167.5475	280.4000	144.5838	126.0674	124.4000	158.6988
177.8172	291.8000	155.5527	132.2329	131.7000	180.0988
191.0114	299.8000	162.8898	138.4984	138.4000	203.5137
210.2786	301.1000	176.6199	149.4957	142.6000	238.1574
222.1499	432.8000	197.6081	160.4231	152.1000	270.6987
251.2738	694.5000	219.4288	180.4709	174.0000	320.1791
261.8922	827.6000	235.4287	201.1325	203.0000	363.1488
274.7132	884.8000	256.6596	219.4803	229.4000	399.6723
317.4607	962.3000	282.8840	241.0647	260.4000	430.7078
567.8275	1523.700	421.0844	420.1580	326.1000	682.0559
613.0165	1587.500	555.9891	546.7684	381.1000	874.6931
679.1206	1371.700	573.9985	550.6474	395.6000	945.6815
713.6497	1350.000	605.9866	589.2701	409.1000	975.2229
798.6435	1361.400	686.6748	645.8000	454.9000	1016.013
834.7657	1334.000	799.5986	698.1987	502.5000	1179.795

# APPENDIX

## Data Series Used in the RNE Submodel (cont'd)

obs	KFOOD	KBEV	KTOB	KTEX	KFAP	KWOOD
1975	2662.000	99.00000	8.740000	1431.980	401.9700	700.7600
1976	1287.000	92.00000	13.29000	868.0500	570.2800	460.0900
1977	1815.000	243.0000	13.49000	554.6100	222.3800	364.7400
1978	2283.000	169.0000	7.700000	830.9100	323.9800	518.8200
1979	2512.000	428.0000	16.03000	2023.940	340.1800	592.6000
1980	1725.000	202.0000	12.53000	709.7200	308.0300	613.4000
1981	1968.000	320.0000	7.870000	419.5000	162.5600	1285.740
1982	2147.000	573.0000	5.660000	525.4900	124.2300	315.6000
1983	3088.000	699.0000	9.680000	351.5400	202.9200	316.2200
1984	924.0000	1090.000	7.020000	145.5200	277.1600	426.0800
1985	621.0000	477.0000	8.350000	186.8800	35.93000	161.4900
1986	531.0000	145.0000	4.300000	167.3000	18.08000	244.1500
1987	733.0000	192.0000	3.350000	707.0200	67.37000	22.3860
1988	1432.000	386.0000	1.420000	981.1900	83.15000	227.5800
1989	1157.000	422.0000	9.330000	691.8000	88.83000	245.3700

obs	KPET	KCHEM	KMACH	KBSM	KELEC	KOTH
1975	463.1300	243.1000	442.3100	38.70000	18.97000	623.4300
1976	262.5400	783.8300	231.6200	39.33000	43.83000	1507.020
1977	366.2900	585.0700	165.3700	97.05000	12.79000	432.7400
1978	644.3400	311.6600	389.0300	219.6000	36.90000	440.8700
1979	535.5200	522.4300	522.8100	37.73000	59.77000	346.7000
1980	356.5000	1317.580	417.3600	1035.470	66.11000	1451.970
1981	306.1500	1352.370	269.8000	2146.220	86.74000	1007.880
1982	456.1100	561.0800	170.5800	2105.670	84.75000	798.3900
1983	209.0500	408.2700	281.5600	103.0700	87.84000	944.5100
1984	248.9000	309.7800	99.28000	253.6700	67.49000	625.3000
1985	441.8300	253.9100	87.15000	1083.980	128.6700	300.1600
1986	742.3400	1794.350	106.5600	1536.770	416.4700	195.1900
1987	760.2300	530.3800	220.9000	631.1300	540.2300	175.7900
1988	598.4200	372.4100	75.43000	2695.160	642.2800	284.8000
1989	594.0100	217.8700	185.8000	962.5300	329.5700	404.7500

## APPENDIX

## Data Series Used in the RNE Submodel (cont'd)

obs	XFOOD	XBEV	XTOB	XTEX	XPAP	XWOOD
1975	4750.000	5.260000	136.5000	334856.0	10.54000	1198.000
1976	4481.000	6.460000	121.0600	644805.0	11.94000	1813.000
1977	5444.000	4.000000	114.4500	735288.0	17.94000	1696.000
1978	4442.000	7.770000	111.6000	980371.0	18.69000	2022.000
1979	4211.000	5.900000	103.4000	1124257.	28.80000	2774.000
1980	4215.000	4.260000	81.22000	1258303.	25.86000	2250.000
1981	3584.000	9.720000	122.3900	1297300.	29.58000	1789.000
1982	2681.000	8.670000	114.3400	917783.0	34.70000	1418.000
1983	2187.000	5.480000	69.34000	893460.0	25.23000	1390.000
1984	1516.000	3.620000	40.52000	493956.0	17.44000	757.0000
1985	774.0000	2.220000	28.45000	383844.0	14.12000	483.0000
1986	77.00000	3.220000	2.160000	11287.0	13.37000	510.0000
1987	726.0000	4.930000	21.60000	504338.0	13.46000	631.0000
1988	684.0000	4.770000	22.97000	578990.0	19.65000	670.0000
1989	542.0000	4.620000	21.38000	683074.0	24.23000	853.0000

obs	XPET	XCHEM	XMACH	XBSM	XELEC	XOTH
1975	96071.00	86650.00	37568.00	1489870.	186.2400	836035.0
1976	96071.00	123437.0	74908.00	1620949.	363.3200	1456148.
1977	75705.00	211141.0	110737.0	2085873.	497.4400	1523215.
1978	35947.00	231287.0	146455.0	2104197.	939.7100	2082121.
1979	34115.00	351511.0	153786.0	2701108.	1277.060	2453709.
1980	134654.0	250991.0	142858.0	3360442.	1807.080	3101072.
1981	102685.0	264713.0	126512.0	2254266.	1961.970	3550889.
1982	78004.00	236537.0	118920.0	1485983.	2258.580	3562146.
1983	229356.0	493966.0	78069.00	1136571.	1975.440	2905487.
1984	112392.0	299193.0	55782.00	586408.0	1669.620	2375346.
1985	41765.00	262782.0	37144.00	534157.0	1020.020	1564674.
1986	65880.00	363812.0	53982.00	1047842.	910.8700	1487030.
1987	90950.00	351838.0	80864.00	420915.0	1025.750	1801696.
1988	132275.0	381033.0	49855.00	665990.0	1140.930	2380343.
1989	187493.0	371494.0	52710.00	1053758.	1269.040	23803340

# APPENDIX

## Data Series Used in the RNE Submodel (cont'd)

obs	DV8486	DV8489	WPI	CPI
1975	0.000000	0.000000	197.9800	166.9000
1976	0.000000	0.000000	218.6600	182.3000
1977	0.000000	0.000000	234.9100	200.4000
1978	0.000000	0.000000	246.2400	215.0000
1979	0.000000	0.000000	293.0200	250.5000
1980	0.000000	0.000000	346.7000	294.6000
1981	0.000000	0.000000	396.6900	331.1000
1982	0.000000	0.000000	440.7700	364.9000
1983	0.000000	0.000000	512.1700	402.0000
1984	1.000000	1.000000	853.2100	804.4000
1985	1.000000	1.000000	1007.850	744.0200
1986	1.000000	1.000000	992.0900	749.6100
1987	0.000000	1.000000	1082.210	778.0500
1988	0.000000	1.000000	1227.490	846.2100
1989	0.000000	1.000000	1359.250	935.8900

obs	DV8889	TIME	INFL	ER	XGARMR	LTOT
1975	0.000000	1.000000	6.758700	7.247900	1473.000	391.2710
1976	0.000000	2.000000	9.228700	7.440300	2451.000	389.6790
1977	0.000000	3.000000	9.918400	7.402800	2584.000	462.6110
1978	0.000000	4.000000	7.315300	7.365800	4226.000	728.4030
1979	0.000000	5.000000	16.50520	7.377600	5926.000	517.7530
1980	0.000000	6.000000	17.61210	7.511400	8330.000	527.1190
1981	0.000000	7.000000	12.37370	7.899700	9894.000	549.6020
1982	0.000000	8.000000	10.20220	8.540000	8836.000	525.6990
1983	0.000000	9.000000	10.17540	11.11270	8662.000	465.2440
1984	0.000000	10.00000	50.34240	16.69870	12236.00	447.4750
1985	0.000000	11.00000	23.10720	18.60730	12051.00	457.7180
1986	0.000000	12.00000	0.750000	20.38570	14394.00	462.9910
1987	0.000000	13.00000	3.791600	20.56770	19183.00	486.4480
1988	1.000000	14.00000	8.759700	21.09700	22358.00	586.2080
1989	1.000000	15.00000	10.60410	21.72000	26398.00	604.0840