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Philippine Institute for Development Studies

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in the Philippine  
Manufacturing Sector, 1980-1995

*Josef T. Yap*

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# **TRADE, COMPETITIVENESS AND FINANCE IN THE PHILIPPINE MANUFACTURING SECTOR, 1980-1995**

*Josef T. Yap*<sup>1</sup>

## **The Philippine Development Experience**

### Introduction

The East Asian miracle of the 1960s up to the mid-1990s and the East Asian debacle in 1997 put in perspective two crucial factors that affect sustainable economic growth and development. The first is outward orientation which is a necessary ingredient for increasing the competitiveness of an economy, and the second is a sound financial structure that is required for efficient resource allocation and macroeconomic stability. The primary objective of this paper, is to analyze how these two factors interact with each other, i.e. how the level of financial development affected the evolution of the Philippine current account. Of particular concern is the trade sector, with emphasis on the dynamics of competitiveness and the pattern of exports in the Philippine manufacturing sector.

The Philippines was pointedly left out of the list of High Powered Asian Economies (HPAEs) identified by the World Bank (1993) in its study of the East Asian miracle. This is due primarily to her erratic economic performance which has been characterized by boom-bust cycles. During the period 1970-1997, for which data is presented in Table 1, the Philippines experienced three BOP crises. The first and most acute was in 1983-85 following the onset of the international debt crisis, the second was in 1990-92 in the aftermath of Gulf War; and the last was in the second half of 1997 as the Philippines was drawn into the financial crisis. Even when the economy's performance was being considered as exceptional by the international community, the peak GDP growth rate was only 5.7 percent, which was recorded in 1996. Not surprisingly, this growth was the second lowest in Southeast Asia in that year.

### The Orthodox View

The performance of the Philippine economy during the post-war period has been directly linked to the fortunes of its industrial sector. The various studies on this sector came up with the following major conclusions (Medalla et al. 1995):

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1. That the more than three decades of protection had been very costly in terms of its inherent penalty on exports, its serious adverse impact on resource allocation, and dynamic efficiency losses arising from lack of competition;
2. That a reform toward a more liberal and neutral trade policy is necessary to propel the economy to a higher level of industrialization.

This is the basic neoclassical view which revolves around the issue of comparative advantage. Economic protection in the past meant that resources of the country flowed into sectors where the Philippines did not possess a comparative advantage. Hence, production, particularly in the industry sector, became highly inefficient. Moreover, such policies prevented export-led industrialization to take root in the Philippine economy. Filipino entrepreneurs simply made profit behind the protective cover of tariff walls and nontariff barriers to trade and did not aggressively seek to manufacture products where the Philippines had a distinct comparative advantage in the world market.

That the Philippine economy is largely inefficient is without question. This trend can be gleaned by comparing labor productivity across time and across countries in East Asia. Table 2 shows that labor productivity in the Philippines largely stagnated between the period 1975 and 1996. The overall labor productivity of Malaysia, Indonesia, Singapore and Thailand more than doubled in this period while the index for the Philippines even declined by one point. The agriculture and manufacturing sectors exhibited the same pattern.

Apart from reference to the neoclassical argument, the poor performance in terms of labor productivity can also be attributed to the low saving and investment rates in the Philippines (Table 3). A low rate of capital accumulation leads to a low marginal product of labor and low average labor productivity. The variance in the investment rate between the Philippines and the more developed Southeast Asian economies can be explained partly by the ability to attract foreign direct investment. In turn both FDI and domestic investment are largely affected by the degree of macroeconomic stability in an economy.

### The Financial Sector and Macroeconomic Stability

The dismal record of the Philippines in terms of macroeconomic stability is reflected in her higher inflation rate (Table 3). Econometric studies cite import costs and money supply as the explanatory variables with the highest impact on Philippine inflation. Rapid monetary growth is usually related to a large public deficit but a closer analysis of the Philippine financial system will reveal that the instability of the banking sector during the postwar period contributed largely to macroeconomic imbalances.

The development of the financial system of the Philippines does not provide an exemplary case of smoothly-operating financial markets fuelling investment and growth. On the contrary,

structural features of the process of financial intermediation have been at the root of the recurring liquidity and solvency crises in various parts of the Philippine banking system and capital markets. Rather than providing channels to alleviate financial constraints, the malfunctioning of the financial system has been a source of macroeconomic problems. The structural problems relate to the segmented nature of the Philippine financial markets, the lack of competition among financial institutions, wide-ranging interlocking directorates and ownership patterns across the banking industry and other economic sectors, the shallowness of financial markets and the unresolved external debt overhang (Vos and Yap, 1996).

The structure of the financial sector, specifically the banking industry, reflects the patrimonial nature of the Philippine state and the dominance of a predatory oligarchy which leads

to an ineffective and inefficient bureaucracy.<sup>2</sup> Banks in the Philippines are largely familial in nature wherein family conglomerates milked the loan portfolios of their own banks causing liquidity problems. The situation was exacerbated by the inability of the Philippine Central Bank to regulate and supervise banks effectively creating instability in the banking system. The existence of a patrimonial oligarchic state (as opposed to a patrimonial administrative state as in Thailand and Indonesia) could also explain why the protectionist policies in the Philippines deteriorated into rent-seeking activity while similar measures were a means to capital accumulation in other countries.

As a result, the Philippine financial system has had a strong dualistic nature, in which an important informal financial market segment coexists with the formal banking system. Informal money-lenders fund, at relatively high cost, small businesses and household firms which have little or no access to the formal banking system. Large private corporations are the preferred borrowers of the highly-concentrated formally banking system. The interlocking interests of banks and corporate enterprises strongly direct the allocation of funds, often overriding normal financial risk assessment. Over-leveraged firms and bad loans have been systemic problems which have required Central Bank (now known as the *Bangko Sentral ng Pilipinas* or BSP) and government intervention to bail out ailing financial institutions, often at substantial macroeconomic costs. At the same time, financial markets have remained rather thin. While financial deepening has proceeded at an accelerated pace in neighboring Asian countries, the mobilization of savings through the financial system has stagnated in the Philippines. This is reflected in a lower M2/GNP ratio up to the 1980s (Table 3 and Table 1 for M3/GNP).

Various attempts at financial reform and liberalization during the 1970s and 1980s succeeded in reducing some of the structural problems of the Philippine financial system (cf. Intal and Llanto, 1998). Adjustment policies in early 1990s, particularly the liberalization of the capital account, sought to resolve the economy's fiscal and foreign exchange constraints. This would include the rehabilitation of the BSP wherein the national government took over its bad loans. The M2/GNP ratio of the Philippines increased sharply after 1992 although this is largely a result of the liberalization of the capital account. Some reforms, however, exacerbated the weaknesses, such as the increased concentration of the banking sector after the financial liberalization measures of 1981.

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<sup>2</sup>The book of Paul D. Hutchcroft (1998) provides an excellent description and analysis of the political economy of the Philippine banking system and the overall Philippine development experience.

Moreover, emphasis has been placed on increasing competition in the financial sector--mainly by allowing the entry of more foreign banks-- rather than strengthening the supervisory and regulatory role of the BSP.

### Framework and Objectives

An objective of this paper is to examine the linkage between trade patterns and competitiveness--or the lack thereof-- in the Philippine manufacturing sector using data between 1980 and 1995. The most popular and influential standard for competitiveness is related to unit labor costs whereby a country attempts to keep wage increases in line with productivity changes. By keeping wage costs under control, a country can make its exports competitive--a higher market share for exports invariably reflects greater competitiveness. Recent evidence, however, has shown that unit labor cost is a weak indicator of a country's competitiveness (Fagerberg, 1988). A more reliable measure would be productivity performance associated with technological development. Hence competitiveness will be directly associated with measures of productivity.

Even with improvements in the technological capability of an economy, however, its trade performance may not show a commensurate response; or else the trade specialization of an economy diverges from the pattern dictated by its technological capability. If there is a weak relationship between these two variables, the next step is to determine to what extent this can be explained by an unstable macroeconomic environment, particularly in terms of exchange rate volatility and inflation.

These variables usually work their way through the investment rate. Related to this is an inappropriate level of the real effective exchange rate which reflects an overvalued currency.

Meanwhile, a poorly functioning financial system can contribute to macroeconomic instability or hampers the flow of resources to sectors with high productivity growth thus failing to take advantage of export opportunities. Another major objective of this paper is to determine how the level of financial development has affected the trade pattern.

## **Productivity, Competitiveness and Trade Patterns**

### Theoretical Developments

International competitiveness in a macroeconomic sense is defined as the "ability of a country to produce goods and services that meet the test of international markets and simultaneously to maintain and expand the real income of its citizens" (ul Haque, 1995). The concern with international competitiveness stems primarily from the view that growth of the HPAEs was export-oriented. While it is still debated whether exports were the engine or merely a handmaiden of growth, increasing the competitiveness of the economy is definitely associated with greater efficiency and hence greater opportunities for economic growth.

Two advances in economic theory have brought nonprice competitiveness--referring mainly to technological capability--to the forefront. The development of the New Trade Theory represents

attempts to relax the restrictive assumptions of the neoclassical framework which assumes the existence of competitive markets, factor substitutability and mobility, and profit maximization. The new theory seeks to extend and develop the traditional framework by incorporating in its analysis such issues as the treatment of economies of scale, externalities, technical progress, product differentiation, and monopolistic and oligopolistic situations (ul Haque, 1995). In this framework, a link between international technological competition and international trade is established, showing that strategic R&D rivalry between countries can be crucial for explaining the evolution of trade flows (Magnier and Toujas-Bernate, 1994).

A parallel development occurred in the theory of economic growth that likewise stressed the importance of human resource development and technological accumulation: the development of endogenous growth models which make the hypothesis that investment (either in physical capital, human capital, or R&D activities) generates externalities that offset the decreasing returns to inputs. The offshoot of the new trade theory and endogenous growth theory was to shift the focus on technology capability as the primary determinant of an economy's competitiveness.

#### Analytical Framework: Determinants of Export Share

We use the framework of Fagerberg (1988) to show the interrelation among the variables under consideration. Both technological competitiveness and price competitiveness should play a key role in determining the export market share of an economy. However, even if a country is very competitive in terms of technology and prices, it is not always able to meet the demand for its products because of a capacity constraint.

The market share of exports  $S(X)$  is expressed in multiplicative form as:

$$S(X) = AC^v(T/Tw)^e(P/Pw)^{-a}$$

where  $A$ ,  $v$ ,  $e$  and  $a$  are positive constants.  $T/Tw$  represents the technological competitiveness of a country,  $P/Pw$  is its price competitiveness, and  $C$  is its capacity to deliver. In this framework, export performance is affected by competitiveness and is not an indicator per se of competitiveness. Competitiveness is associated more with the concept of efficiency.

Fagerberg assumes that  $C$  depends on three factors: a) the growth in technological capability and know-how that is made possible by diffusion of technology from the countries on the world innovation frontier to the rest of the world ( $Q$ ); b) the growth in physical production equipment, buildings, equipment and infrastructure ( $K$ ); and c) the rate of growth of world demand ( $W$ ). The latter could actually influence  $S(X)$  in both directions. Without a capacity constraint growth in  $W$  would lead to an increase in  $S(X)$ . If demand outstrips the given level of capacity, exports will remain constant, but the market share of exports will decrease, because other countries will increase their exports.

## Investment, Macroeconomic Stability and Finance

A major concern of the present study is how macroeconomic stability and the structure of the financial sector affect the capacity constraint, specifically investment. Factors that affect the level of capital accumulation will also influence the capacity constraint and ultimately impact on export shares.

Conventional investment theories focus on the cost of capital and the replacement cost, as compared to market value of new capital goods. They fail to consider, first, that most investment decisions face inherent uncertainty about future benefits and costs; second, that investors can control the timing of investment, waiting for relevant information that may reduce investment uncertainty and third, that most investment decisions are partly or completely irreversible; once the capital stock is installed, it cannot be put to new uses without incurring a substantial economic cost.<sup>3</sup>

These crucial features have led to a new option approach that sees an investment opportunity as an option to buy an asset at different points in time, balancing the value of waiting with the opportunity of cost of postponing investment decisions. The option approach shows that the standard net-present-value rule of investment (investment when  $NPV > 0$ ) must be modified. The correct rule is that the anticipated return on the new investment project must exceed the purchase and installation cost by an amount equal to the value of keeping the investment option alive ( $NPV > \text{value of option to wait}$ ).

The options approach to investment enhances the role of uncertainty in investment decisions. Any hint of instability in key macroeconomic parameters will lead to postponement of investment projects. An important policy implication is that uncertainty tends to make investment less responsive to incentives such as subsidies and tax concessions and that huge incentives would therefore be necessary to counteract the impact of high uncertainty on private investment.

Meanwhile, a growing body of theory and evidence suggests a positive, first-order relationship between financial development and economic growth (Levine, 1997). A well functioning system serves to reduce uncertainty surrounding investment decisions. As theory suggests, financial instruments, markets and institutions arise to mitigate the effects of information and transaction costs.

One framework showing the role of financial systems in economic growth is the functional approach, which focuses on the ties between growth and the quality of functions provided by the financial system. These functions include facilitating the trading of risk, allocating capital, monitoring managers, mobilizing savings, and easing the trading of goods, services and financial contracts (Figure 1). The role of institutions is also considered.

The key point is that given information and transaction frictions, a financial system is required to expend resources evaluating the creditworthiness of projects, scrutinize the management structure of firms and design arrangements to ease risk management and facilitate transactions. These functions

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<sup>3</sup>Dixit and Pindyck (1994) as cited by Schmidt-Hebbel, et al. (1996).



affect investment decisions and influence the pace of technological innovation thereby affecting the capability of an economy to deliver.

The importance of macroeconomic stability and a well-developed financial system are discussed by Fanelli and Frenkel (1995) in a very convenient framework that is developed qualitatively. Increased uncertainty induced by volatility of macroeconomic aggregates encourages "flexibility" in the behavior of economic agents. "Flexibility", which is roughly equivalent to a wait-and-see attitude, translates into mutations in the productive structure of the economy through various channels. One is the preference for short-run investment projects which leads to a drop in the investment rate or the concentration of capital in low-risk projects that are capital intensive and use established technologies.

The impact of "flexibility" on investment also manifests itself in the development of technological capability of the economy. Since much of the technological learning in developing countries is related to purchases of new capital equipment, the fall in investment weakens the process of technical change. Macroeconomic instability will also encourage defensive strategies on the part of investors, reducing their willingness to incorporate innovation into the productive process.

These mutations also impact on the structure of financial intermediation. As Fanelli and Frenkel argue, there is a generalized movement of the demand for financial assets towards short-term ones as well as toward assets denominated in foreign currencies. This implies that liquid or very short-term papers become more expensive than those of longer maturity periods. Liquidity becomes a very relevant attribute, together with profitability, at the moment of decision. This in turn has an effect on the generation of credit whereby the conditions to gain access to long-term funds are increasingly difficult. If credit is available, it is denominated in foreign currency. Firms which earn revenues largely from domestic operations are obliged to take higher exchange risks.<sup>4</sup>

The institutional framework is also important in determining the nature of the micro-macro interactions since the amount and quality of self-regulating mechanisms determines the rate at which the effects of an economic disturbance is distributed over time. In the context of financial development, the efficacy and efficiency of financial intermediation also depends on the quality of bank supervision and the degree of sophistication of screening mechanisms employed by commercial banks. In other words, initial microeconomic conditions also matter.

### Evolution of the Philippine Manufacturing Sector

The anti-protectionist-neoclassical view became dominant among government technocrats starting in the late 1970s and as a result a major trade reform program was implemented in 1980. The objective was to make the Philippines more outward oriented by opening up its economy. After the trade reform process was disrupted because of the external debt crisis in 1984-85, major import

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<sup>4</sup>Fanelli and Frenkel (1995), p. 12.

liberalization programs were implemented from 1986-88. During this period, imports for more than 1,400 items were liberalized bringing down the percentage of import-restricted items to less than 10 percent.

This was followed by the second phase of the Tariff Reform Program which narrowed down the tariff range to mostly within 30 percent. This was implemented by the Aquino administration under Executive Order (EO) 470 which covered the period 1991 to 1995. Tariff reform was accelerated during the third phase of the program this time under the Ramos administration. EO 264 calls for a tariff range from 3 to 10 percent by the year 2000 and a uniform 5 percent tariff by the year 2004.

Partly because of the reforms in the trade sector, the overall efficiency of the manufacturing sector as measured by the effective protection rate (EPR) and the domestic resource cost (DRC) increased (Medalla, 1998). In addition, total exports and the share of manufactured exports increased sharply. From only \$4.8 billion in 1986, total exports surged to \$20.5 billion in 1996. This represents an increase in the share of the Philippine exports in the world market from 0.24 percent in 1986 to 0.40 percent although it is lower than the share of the developing HPAs. The share of manufactured exports increased from 55 percent to 83 percent (Table 1). Exports, however, are still concentrated in electronics and garments (at least up to 1993 for the latter) revealing a slow pace of change in the structure of the trade sector.

A more detailed exposition of the trade sector will show the evolution of the current account and the nature of structural problems of the Philippine economy. Table 4 presents data on revealed comparative advantage (RCA)<sup>5</sup> for exports in the manufacturing sector. During the period 1980-1995 the economy lost comparative advantage in tobacco manufactures, wood and cork products, and basic metal industries. The Philippines gained comparative advantage in electrical machinery during this same period mainly through the semiconductor industry. It maintained a comparative advantage in food manufactures, footwear and wearing apparel, and furniture and fixtures. The RCA index for these industries, however, declined between 1980 and 1995.

The index of a sector's contribution to the trade balance (ICTB) is generally consistent with the trend in RCA (Table 5). The value of the ICTB for tobacco and basic metals fell during the period 1980-1995. In the case of the food sector, there was a sharp drop in its ICTB while the values of footwear, wearing apparel, and furniture remained fairly constant. The ICTB of electrical machinery turned from negative to positive in this period.

The distribution of exports across the different categories using data from the International Trade Statistics also reveals a disturbing trend (Table 6). Electrical machinery and miscellaneous manufactures have been the sectors with the fastest growing shares. Despite this development, gross

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<sup>5</sup>The RCA index is the ratio of the share of single countries in world exports of a given product group to the share of the same country in total world exports. An RCA greater than one indicates revealed comparative advantage for that particular product group.

value added of electrical machinery was only 2 percent of GDP in 1997. Meanwhile special transactions, consisting mainly of re-exports, is the main component of miscellaneous manufactures.

The deceptive export configuration explains why despite the increasing share of manufactured exports, the share of value added of the manufacturing sector in total output has remained stagnant for the past twenty years and is even lower than the value in 1980 (Table 1). Estimates of total factor productivity for the Philippine manufacturing sector show a steady decline in the period 1956-1975 which became sharper from 1975 to 1980 (Hooley, 1985). The trend continued into the 1980s up to 1992 (Cororaton et al. 1995). The year-on-year growth of value added in the manufacturing sector in real terms has actually declined for thirteen consecutive quarters--from 1995Q4 to 1998Q4.

Medalla attributes the conflicting trends--a rise in efficiency measures in the manufacturing sector and continuing structural problems--to three factors: 1) adjustment, oftentimes a painful one, to a more open trade regime; 2) a persistently overvalued currency; and 3) the switch in relative protection between agriculture and manufacturing, this time in favor of the former. One could add to this list a relatively low investment rate in the Philippines and poor infrastructure.

An inevitable outcome of a more open trade regime is that inefficient local firms are weeded out almost immediately because of the deluge of imports. It will take some time before the resources are re-invested in more efficient sectors which are usually export-oriented. The restructuring process is akin to the "J-curve" effect of a currency devaluation. In this case, the manufacturing sector contracts because of the closure of noncompetitive firms but it should start to grow rapidly once resources are used more efficiently. This explanation, however, conveniently ignores the fact that the bulk of trade liberalization took place in the late 1980s but the marked slowdown of the manufacturing sector occurred between 1995 and 1997 in spite of accelerated economic growth up to 1996.

The restructuring process would have been smoother if the currency were allowed to depreciate in real terms following the increase in demand for imports. The lower value of the peso would have acted as a cover for import-competing industries. Because of the overvaluation of the peso, import-competing firms were hit with a double-whammy: lower tariffs and an artificially strong peso both of which made imports cheap. An overvalued currency could also explain why exports are heavily concentrated in commodities that are import-dependent. Because it is relatively cheap to import, exporters focus on products whose inputs can be sourced from abroad making labor the primary source of value added.

Overall, the Philippines has taken great strides to enhance its outward orientation and is bordering on being a completely open economy by the year 2004. This progression is dovetailed to the process of globalization. Despite the policy reforms, however, manufacturing growth has not performed up to expectations. Apart from the factors discussed in this section, the reasons may deal with the structural aspects related to macroeconomic stability and weaknesses in the financial institutions.

## Empirical Results

Based on the analytical framework, the following general functions were estimated using data from 1980-1995.

$$RCA_{it} = \beta_1 + \beta_2 p_{it} + \beta_3 P_{it}/P^* + \beta_4 K_{it} + \varepsilon_{it} \quad (1)$$

$$I/GVA_{it} = \gamma_1 + \gamma_2 \sigma + \gamma_3 e + \gamma_4 M3/GNP + \gamma_5 FDI/GDP + \varepsilon_{it} \quad (2)$$

The index  $i$  refers to a particular manufacturing sector while  $t$  is a index for time.<sup>6</sup>

The revealed comparative advantage (RCA) index for the various manufacturing sectors was computed and was used as the measure of trade performance and an indicator of the trade pattern in the Philippines. Competitiveness of each sector was determined using a productivity measure,  $p$ . The simplest would be growth in labor productivity.<sup>7</sup> A more complicated procedure would be to estimate the Total Factor Productivity (TFP) for each sector.

TFP is a concept of efficiency where the economy's productive inputs like labor and capital are jointly used in production. It can be measured in two ways: 1) the deterministic approach, and 2) the stochastic approach. The deterministic approach is further divided into two categories; (a) index number approach, and (b) growth accounting approach. The latter two methodologies are simple and TFP estimates can be easily computed. However, a weakness of these approaches is the residual treatment of TFP which could render biased estimates.

The stochastic approach, on the other hand, assumes the existence of an unobservable production frontier function and from this, the actual production frontier is compared. In doing so, the residual treatment is eliminated and all factors contributing to production are accounted for. This approach can be used both for time series and cross-section data. Cororaton (1998) applied both the growth accounting and stochastic approach to Philippine manufacturing sector data.

The implicit price index for each sector  $i$   $P_{it}$  was used as an indicator of price competitiveness since unit labor costs are not available for the given sectoral breakdown. The price index was scaled by an import price index for non-fuel products,  $P^*$ , to get a measure of relative prices. The capability of an economy to deliver or its capacity is related to existing capital stock,  $K$ . Estimates of  $K$  for each sector were obtained by Cororaton using the perpetual inventory method. These values of  $K$ , which were also used to obtain the productivity figures, were used for the econometric estimation.

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<sup>6</sup>In the actual estimation, only 12 manufacturing sectors were included. These sectors both had nonzero RCA and an available estimate of capital stock.

<sup>7</sup>Labor productivity for a particular sector is simply value added in that sector divided by employment in that sector.

Since  $K$  is generated by investment, it is through the latter variable that the link between trade and financial development can be established. The investment rate per sector ( $I/GVA$ ), defined to be sectoral investment divided by sectoral gross value added, is modelled to be determined by volatility in the real effective exchange rate,  $\sigma$ , and the level of financial sector development which is captured by the ratio of broad money  $M3$  to  $GNP$ . The technique employed by Schwert (1989) was used to estimate volatility of the real effective exchange rate.

The amount of foreign direct investment ( $FDI$ ) scaled by  $GDP$  should also affect investment. The experience of the developing HPAs shows that the entry of foreign investment spurred an increase domestic investment that was put in place to support the requirements of  $MNCs$ . The real effective exchange rate,  $e$ , is added to incorporate the effects of an overvalued currency.

In the various estimates of the first equation (see Table 7)<sup>8</sup>, the coefficients for the growth in labor productivity,  $TFP$  using the growth accounting approach and  $TFP$  using the stochastic are all insignificant. As a matter of fact, the coefficient of labor productivity growth is negative and significant at the 10 percent level. The results show unambiguously that there is no empirical support for a link between the productivity measures and export performance. Changes in technology and productivity in the domestic manufacturing sector did not influence the pattern of Philippine exports during the period 1980-1995.

The variable representing relative prices carries the correct negative sign but the coefficient is not significant. What would be troubling though is the consistent negative sign of the coefficient for capital stock which is significant at the 10 percent level. It seems that increased investment activity that augments the capital stock does not contribute to better export performance and may even hamper it. This result, combined with the earlier observation that technological competitiveness and export performance are not related, is a clear indication that the export sector has its own dynamics, independent of the developments in the local manufacturing sector. A dichotomy exists between the domestic manufacturing sector and the export sector.

Estimates on the first equation were also run with  $\sigma$  and  $FDI/GDP$  as explanatory variables. Real exchange rate volatility may affect export performance directly since it affects the rate of return of exporters and hence their profit risk (Medhora 1998).  $FDI$  affects export performance in two ways. First, it relaxes the capacity constraint by providing more capital inputs for production. And second, to the extent that the  $FDI$  is export-oriented, it directly contributes to the level of exports, and hence a higher market share. The results, however, did not improve with the inclusion of these two variables in Equation 1. Perhaps the results would differ if  $FDI$  by sector were used. Unfortunately such data are not readily available.

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<sup>8</sup>Other specifications, which are not reported, include a variable to control for the growth of world trade which may affect  $RCA$ . This did not significantly change the results shown in Table 7.

Estimates of the second equation (Table 8) show a significant positive relationship between the investment rate and the measure of financial development. Because of the adverse relationship between capital stock and RCA obtained in the first equation, a conclusive statement on the impact of financial development on export structure cannot be made. A different line of analysis will be adopted and discussed in the latter part of the paper.

Another variable that is significant is foreign direct investment although it carries a negative coefficient. Apparently the entry of FDI displaces some local investment or else it leads to complacency among domestic entrepreneurs. This result, however, must be studied more carefully. Certainly it does not imply that policies discouraging FDI should be implemented.

The measure of exchange rate volatility is not significant although the level of REER carries a significant negative coefficient. A higher REER implies an appreciating peso in real terms which hurts import competing industries and exporters. This would of course discourage investment in these two important sectors. Other measures of exchange rate volatility could also be used to model more closely the extent of macroeconomic instability. If the inflation rate is used instead of exchange rate volatility there is a minor improvement in the equation but the variable for macroeconomic instability remains insignificant.

## **Competitiveness, Finance and Macroeconomic Stability**

### Major Hypothesis

The dichotomy between the domestic manufacturing sector and the export sector is the reason why the share of manufacturing value added to GDP has been stagnant despite the dramatic rise in the share of manufactured exports. One possible reason for the dichotomy is that the more efficient sectors are not allocated enough credit. This sections aims to provide empirical evidence to test this hypothesis.

In a world of perfect capital markets where the Modigliani and Miller and the Fisher separation theorems would be valid, the performance of firms and economic sectors could be explained without reference to the developments in the financial sector. But at the onset it was observed that the financial sector of the Philippines is far from perfect. Apart from the usual problems of asymmetric information in financial markets, the Philippine financial system has been hampered by structural problems related mainly to the oligarchic banking system. Access to credit thus is a key determinant of economic performance.

### The Role of Export Finance

Export finance is another area that may offer an explanation for the weak link between productivity growth and export performance . A survey of exporters revealed that only a minority were covered by the BSP's rediscount window, which was the most important export financing scheme in the Philippines at least in the 1980s. Only about 500 out of about 6,000 direct exporters

had access to the export loan discount scheme. As a result, export loans outstanding declined from 14 percent of export value in 1982 to just one percent in 1986-88 (Rhee, et al. 1990).

Indirect exporters were not eligible for the CB's preshipment export finance window even though they are several times more numerous than direct exporters. This failure to assure equal access to working capital financing for indirect exporters hindered the development of backward linkages as well as the development of trading companies (Rhee, et al. 1990). One mechanism suggested to expand the coverage to indirect exporters is the introduction of the domestic letter of credit.

The underdevelopment of the export financial system was generally a product of the underdevelopment of the entire financial system. For example, heavy collateral requirements by commercial banks has been cited as the major impediment to wider access to export financing. A preshipment export finance guarantee could have been designed to overcome this constraint. Such a scheme existed in the Philippines but had only a limited role at least in the 1980s. This could be explained by a shallow financial base that prevented effective risk sharing among the various parties involved.

### Framework and Empirical Results

In the absence of robust financial data at the firm level, the methodology of Rajan and Zingales (1998) will be adopted. In their study, the growth of a particular industry is linked to the external financial dependence of that industry and the degree of financial development of the economy. Their hypothesis is that industries that are more dependent on external finance grow faster in economies that are more financially developed.

To test this hypothesis, Rajan and Zingales estimate the technological demand for external finance that a firm operating in a specific industry would choose in a perfect capital market. Since the US comes closest to the criteria for a well functioning capital market, the observed ratio of external finance (defined to be the difference between investment and cash generated from operations) in the US for a particular industry is used as a benchmark. The external dependency ratio (EDR) for the various manufacturing sectors is shown in Table 9.

To test the relationship between the level of financial development on the one hand and competitiveness and trade pattern on the other, the EDR is compared with the growth rate of productivity--the measure of competitiveness--and RCA. In both cases, the sectors are ranked, first by labor productivity growth and then by RCA. A rank correlation coefficient using the EDR ranking as a basis for comparison is then computed for both cases.

In the context of a financially underdeveloped economy like the Philippines, there should be a negative correlation between the ranking obtained from EDR and the ranking obtained from the growth rate of labor productivity. This implies that inadequate access to credit prevents firms with a high EDR from reaching their potential growth, leading to low productivity performance. A similar explanation could be made in case of the RCA measure. A negative correlation would imply that he

economy is unable to develop a comparative advantage in particular sectors because of lack of access to credit.

The estimates of the rank correlation coefficients are shown in Table 10. There is no general pattern for the sample period 1980-1995 for both RCA and growth of labor productivity. Moreover, the values are closer to zero than to one. It would seem that access to credit plays no major role in determining competitiveness or the trade pattern.

Based on this evidence, the dichotomy between the export sector and the domestic manufacturing sector could be attributed more directly to real factors rather than financial constraints. What could be emphasized though is that the financial sector was a major source of macroeconomic instability leading to high inflation rates, an overvalued currency and a low investment rate.

## **Micro-Macro and Real-Financial Interactions**

### General Analysis

The dichotomy between the export sector and domestic manufacturing sector transcends the usual dualistic structure that exists between the traditional and modern sectors. A possible explanation for this structure in the manufacturing sector is provided by Dohner and Intal (1989). Philippine export promotion measures allowed producers to obtain imported inputs at world market prices, leading to the development of export processing based on imported materials and the low wages of Philippine labor. The retention and augmentation of the system of protection for manufacturing firms producing for the domestic market meant that value-added margins of these export producers would remain very thin; the higher cost and lower quality of domestic materials precluded the growth of domestic sourcing. The high degree of protection of the domestic markets also tended to limit export products to industries where the transport cost of materials was low and labor input requirements high. Garments and electronic components, which have been the top two export categories since 1982, fit those requirements perfectly. Dohner and Intal describe export growth as intensive rather than extensive.

This explanation--citing the highly protectionist system as the main factor behind the narrow export base--is largely consistent with the orthodox or neoclassical economic view. The natural policy recommendation would be a more open trade regime. Corollary to the orthodox position is the problem of an overvalued currency. An artificially cheap peso encouraged exports that are import intensive. Exporters offset the penalty of a low exchange rate by relying heavily on higher quality imports of raw materials and intermediate goods made relatively inexpensive by the overvalued peso.

The experience of the developed HPAEs provides a striking contrast to the neoclassical blueprint. Instead of working to get prices right, the economies of Japan, Korea and Taiwan implemented policies to get the fundamentals right. Among the major thrusts was to enhance their



technology capability through the judicious use of policy interventions (Lall, 1995). The developed HPAEs relied heavily on licensing agreements and reverse engineering and were selective on, even sometimes hostile to foreign direct investment (Lall, 1994).

Meanwhile, developing HPAEs and Singapore sourced the technological development of their export sector primarily from foreign direct investment. In this situation, the link between productivity growth in the manufacturing sector and export performance would depend on the level of FDI and degree of technology transfer. The evolution of the Philippine export sector since 1975 and its contrast to the experience of the developing HPAEs can largely be explained by the nature and extent of FDI flows into the economy.

Table 3 shows that the Philippines was a laggard in terms of attracting FDI mainly because of the adverse macroeconomic and political environment. The pattern of export growth in the Philippines in the last two decades was simply a response to the trend towards the internationalization of the division of labor where the industries which lost their comparative advantage in the more developed countries found their way into economies characterized by a relatively low wage scale (Broad, 1988). The inability of the export sector to effectively diversify into other commodities indicates that the Philippines was simply riding on the worldwide trend towards industry relocation rather than seriously implementing an industrial policy, particularly an export program. Unlike Singapore and Malaysia, there was no coherent strategy implemented to insure effective technology transfer.

A key finding of Cororaton, et al. (1995) is that foreign direct investment has not generally been contributing to the technical progress of the manufacturing sector. This conclusion is consistent with the survey results of Lindsey (1989) from the manufacturing sector where he finds that: 1) most of the equipment brought in by investors are already in use in the Philippines; 2) research and development activities are limited to quality control instead of basic research; 3) there is minimal diffusion of technology to local firms; and 4) the processes used are very simple, leaving little room for skills development.

### Implications for Policy

To bring about a more integrated economy, the standard response was followed by economic managers in the Philippines: adopting a program akin to the Washington consensus. Several analysts have cautioned against strict adherence to this framework (Rodrik 1992, Guerrieri 1994, Ffrench-Davis 1994). Structural transformation has a major influence on the acquisition of comparative advantage and is a cause of economic growth. Guerrieri argues that the economic metamorphosis should not be considered as an automatic by-product of an outward-oriented strategy and sound macroeconomic policies, as free trade orthodoxy regards it. Neoliberal economics largely disregards the key role played by technology in changing trade patterns and hence misses the structural dimension of a country's competitiveness.

Echoing this sentiment, Lall (1995) argues that the more important and pervasive source of

market failure is likely to be learning processes in production rather than scale economies or externalities. This fact is particularly important for developing countries, which are latecomers to industrialization and thus face established competitors that have already undergone the learning process.

Depending on the extent of the learning costs involved, as well as the efficiency of the relevant factor markets and supporting institutions, there may be a valid case for selective and variable infant industry protection and for the gradual exposure of existing activities to import competition.

Since protection itself reduces the incentive to invest in capability building, however, it has to be carefully designed, sparingly granted, strictly monitored, and offset by measures to force firms to aim for world standards of efficiency. The most effective offset to the disincentives to capability development that arise from protection seems to be strong pressures to enter export markets, as a commitment to exporting disciplines not only firms but also those who design and administer policy.

In Lall's view the true contribution of export orientation to industrialization was to provide the right framework for selective interventions.

The emerging external environment, however, constrains the available policy options. As Lall (1994) points out: "...the international scene, the GATT, and the pressures exerted by the developed Western countries, are inimical to selective intervention...Many instruments of industrial policy are increasingly constrained in the name of liberalization." He correctly asserts, however, that if there is a valid case for intervention, then a review of the international rules of the game is warranted.

The recent performance of the Philippine manufacturing sector supports the aforementioned concerns. Despite the reforms implemented in the late 1980s and accelerated in the early 1990s, the manufacturing sector experienced a deceleration even prior to the 1997 financial crisis.

Meanwhile, the liberalization of the financial system and the capital account in order to spur financial development also has its downside risks as painfully revealed by the 1997 East Asian financial crisis. These twin liberalizations could fuel what is termed "financierism" which is characterized by the growing supremacy of financial activity over productive activity (Ffrench-Davis, 1994). The adverse effects of financierism could be attributed to the inadequate regulatory structure in place at the time of liberalizing the financial system. Some analysts put the blame squarely on the corrupt practices in some of the East Asian countries citing the behest loans in Korea and crony capitalism in Indonesia.

What is certain is that the situation is more complicated than this. Many of the East Asian economies that were buffeted by the crisis had relatively strong macroeconomic fundamentals and were dragged into crisis by the financial panic of foreign investors. Krugman (1999) for instance does not agree that Asian economies are being punished for crony capitalism since the "the scale of punishment seems wholly disproportionate to the crime." He has joined the bandwagon of those calling for the reform of the international financial architecture.

The ideology of liberalization should not cloud the objective of policy reforms: the improvement of the technological capability of the manufacturing sector, the establishment of a

dynamic link between the manufacturing and export sectors, and the development of a stable financial system. Granted that globalization is an irreversible process, the Philippines must strive to attract foreign direct investment and achieve the success of the developing HPAEs in this regard. Simultaneously economic managers must apply strategic interventions to facilitate the transfer of technology. These would include:

1. Encourage the practice of “mirroring” similar to the case of Korea. An expatriate engineer would be assigned a local counterpart whom he should train. The local engineer would eventually assume the responsibility of the foreign engineer.
2. Encourage multinational corporations to link up with a domestic firm and develop the latter as a source of intermediate inputs. Such subcontracting was practiced extensively in Singapore and Malaysia.
3. The government must set clear strategies and policies on technology development--whether adoption, modification, or generation--by industry.
4. Develop in parallel the human resource capital to cope with the requirements of technology transfer.

These recommendations are consistent with the findings of a recent PIDS study (Yap, 1998) showing that the Philippines has many weak links at the microeconomic level preventing the benefits from macroeconomic reforms from being realized. This would include a low level of technological capability that hampers backward and forward linkages in industries; a poor record in human resource development that contributes to low labor productivity; extremely slow alleviation of poverty and income inequality that gnaws at the basic fabric of social cohesion; and inadequate infrastructure that discourages domestic and foreign investment. These shortcomings are at the root of coordination failures that threaten macroeconomic stability.

Policy recommendations for the financial sector have to be studied more carefully given the recent experience in East Asia. The study of Rhee et al (1990) recommended the establishment of a foreign currency loan scheme for exporters to take advantage of the lower international interest rates. Presumably this need was addressed when the capital market was liberalized. Unfortunately, the dollar-denominated loans were not limited to exporters and borrowers without a natural exchange rate hedge also availed of these loans. This situation was one of the primary causes of the downward economic spiral when the crisis struck.

There are, of course, the standardized proposals for reform of the banking sector. It has been recommended that prudential regulation and supervision be strengthened by implementing comprehensive risk-based assessment and supervision instead of focusing primarily on credit risk. In addition, there is a need for more stringent information disclosure requirements, adequate accounting and auditing standards, as well as clearer rules and greater transparency in asset classification and provisioning (Intal and Llanto, 1998).

These reforms, however, must take into consideration political and institutional factors which are at the core of the problems in the banking sector. For example, no matter how comprehensive the risk assessment that is required, it is ineffective if bank supervisors fall prey to the pressures of particularistic interests. While making reforms more difficult to implement, these factors are fundamental in nature and would definitely bring about a beneficial transformation of Philippine society.

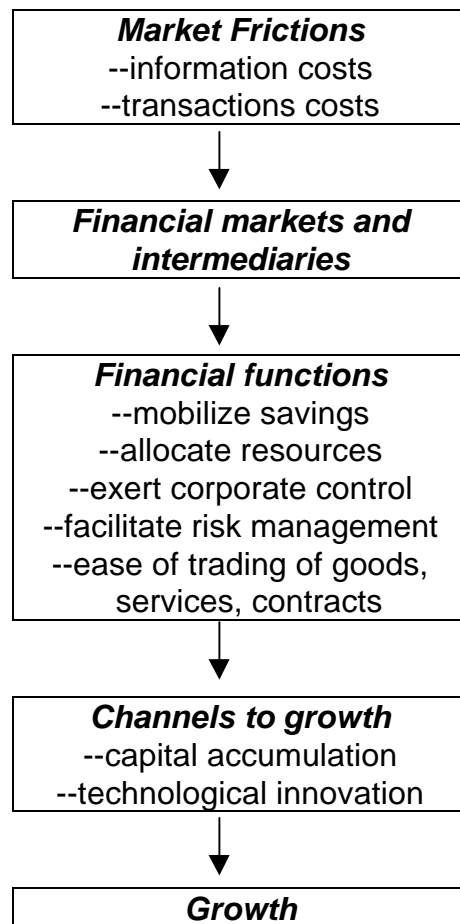
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**Figure 1. A Theoretical Approach to Finance and Growth**



Source: Financial Development and Economic Growth (Levine 1997)

<b>TABLE 1</b> <b>The Philippines, Selected Economic Indicators</b>							
	1970-74	1975-79	1980-82	1983-85	1986-89	1990-92	1993-97
<b>Income (growth rates)</b>							
Real GDP	5.4	6.2	4.1	-4.3	5.2	0.9	4.4
-Agriculture	2.8	4.5	2.8	-2.1	3.3	0.2	2.5
-Industry	8.0	7.9	4.0	-8.9	5.8	-0.5	5.3
-Manufacturing	7.9	5.2	2.6	-6.1	5.7	0.2	4.5
-Services	5.0	5.4	4.9	-1.1	5.6	1.8	4.7
<b>Real GDP (%share)</b>							
-Agriculture	27.4	24.5	23.3	23.2	23.9	22.6	21.6
-Industry	35.3	39.6	40.7	38.0	35.2	34.9	35.2
-Manufacturing	28.0	27.9	27.2	25.5	25.2	25.4	25.0
-Services	37.4	35.9	36.0	38.8	40.9	42.5	43.2
<b>External Sector</b>							
Degree of openness (% of GDP) <i>a/</i>	40.5	41.6	53.7	48.7	58.7	70.3	97.2
Value of Exports (US\$)	1583	3209	5510	5008	6364	8950	17615
Share of Manufactured Exports	8.6	24.4	41.0	51.1	60.7	72.1	80.7
Current Balance/GDP (%)	0.7	-5.3	-6.8	-4.1	-0.6	-3.3	-4.9
BOP/GDP (%)	1.8	-1.2	-2.4	0.6	1.9	1.8	0.8
Real Effec. Exchange Rate Index <i>b/</i>	98.9	96.8	102.5	86.4	68.8	71.2	83.6
<b>Public Sector</b>							
Public sector deficit/GDP <i>c/</i>		-8.4	-13.6	-5.4	-3.9	-2.9	-0.6
<b>Monetary Sector</b>							
Money Supply-M3 (growth rate)	23.2	18.9	18.6	11.8	14.6	15.0	22.6
M3/GNP	24.3	29.1	29.0	25.9	24.9	27.7	36.9
<b>Labor Sector</b>							
Unemployment rate (%)	5.6	7.5	8.9	11.2	10.4	9.5	9.1
Underemployment rate (%) <i>d/</i>	13.4	11.6	26.3	30.8	24.6	21.8	21.2



<b>Real wage (non-agricultural, pesos)</b>	93.2	63.0	58.0	68.7	72.1	80.8	82.8
<b>TABLE 1 (continued)</b>							
<b>The Philippines, Selected Economic Indicators</b>							
	1970-74	1975-79	1980-82	1983-85	1986-89	1990-92	1993-97
<b>Sectoral employment (% share)</b>							
-Agriculture	52	52.1	51.6	50.0	47.6	45.3	43.3
-Industry	15.8	15.3	14.7	14.5	14.7	15.8	16.0
-Services	32.2	32.5	33.8	35.5	37.7	39.2	40.6
<b>Prices</b>							
Inflation rate (%)	18.8	9.9	13.4	26.8	5.9	13.1	9.4
Internal terms of trade (% change) e/	5.4	-1.4	-5.4	-0.7	-0.2	-1.4	-1.4
<b>Population</b>							
Population growth rate (%)	2.8	2.7	2.6	2.5	2.4	2.6	1.8
<b>GNP per capita (US\$)</b>	336	587	723	547	700	831	1070
<b>Real pesos of 1985</b>	10507	11642	12762	11641	10885	11559	11923

a/ Defined as the ratio of the sum of imports and exports of goods and services to GDP; both terms at constant prices

b/ Trade weighted real exchange rate

c/ Includes general government, state-monitored corporations and Central bank

d/ Defined as workers working less than 40 hours per week

e/ Ratio of implicit GDP deflator of agriculture to that of non-agriculture

Sources: NSO, National Income Accounts; NSO, Philippine Statistical Yearbook; Central Bank, Annual Report

<b>TABLE 2</b> <b>Indices Of Average Labor Productivity</b> <b>Overall, Agriculture and Manufacturing (1975=100)</b>							
		1975		1980	1985	1990	1996
<b>China</b>	overall	100		122	131	140	...
<b>Indonesia</b> (1993 prices)	overall	100	a/	126	131	148	204
	agri	100	a/	104	121	114	160
	mftg	100	a/	155	194	242	310
<b>Malaysia</b> (1978 prices)	overall	100		125	138	161	216
	agri	100		133	158	201	281
	mftg	100		104	118	143	181
<b>Philippines</b> (1985 prices)	overall	100		119	92	102	99
	agri	100		117	100	109	108
	mftg	100		119	96	108	100
<b>Singapore</b> (1985 prices)	overall	100		116	137	171	233
	agri	100		114	194	177	288
	mftg	100		115	128	171	272
<b>Thailand</b> (1988 prices)	overall	100		116	132	181	297
	agri	100		101	113	118	234
	mftg	100		121	133	178	210

a/ 1976; b/ 1995

Sources: Intal and Basilio, "The International Economic Environment and the Philippine Economy", PIDS Discussion Paper (1998)  
ADB Key Indicators, 1988 & 1997

<b>TABLE 3</b>					
<b>Selected Indicators, East Asian Economies</b>					
	<b>1980</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>1997</b>
<b>Indonesia</b>					
M2/GNP	13.7	24.8	45.5	52.8	61.1
Inflation	18.0	4.7	7.4	9.5	6.1
Savings/GNP	30.5	31.1	33.8	31.5	32.0
Investment/GNP	21.8	29.2	32.2	32.9	32.6
FDI (mil. US\$)			746*	4348	5350
<b>Malaysia</b>					
M2/GNP	53.4	67.9	69.3	95.1	111.8
Inflation	6.7	0.3	2.6	5.3	2.7
Savings/GNP	34.2	35.2	34.9	41.5	46.7
Investment/GNP	31.6	29.7	32.7	45.7	45.1
FDI (mil. US\$)			1605*	4132	3754
<b>Philippines</b>					
M2/GNP	22.8	26.8	34.2	49.0	59.0
Inflation	18.3	23.2	14.1	8.1	5.0
Savings/GNP	26.8	19.5	18.8	14.2	14.8
Investment/GNP	29.3	14.9	24.3	21.6	23.9
FDI (mil. US\$)			501*	1459	1253
<b>Thailand</b>					
M2/GNP	38.5	59.6	70.7	80.6	92.7
Inflation	19.8	2.5	6.0	5.8	5.6
Savings/GNP	23.2	25.2	34.7	37.8	37.0
Investment/GNP	29.4	28.7	41.9	42.5	36.1
FDI (mil. US\$)			1325*	2002	3600
<b>China</b>					
M2/GNP	37.4	58.5	78.9	104.0	120.8
Inflation	7.5	11.9	3.1	16.9	2.8
Savings/GNP	35.2	37.7	34.6	41.5	

Investment/GNP	34.1	35.5	38.6	41.7	
FDI (mil. US\$)			3105*	35849	45300

**TABLE 3** (continued)  
**Selected Indicators, East Asian Economies**

	1980	1985	1990	1995	1997
<b>Korea</b>					
M2/GNP	34.1	36.6	38.5	44.1	48.9
Inflation	28.7	2.5	8.6	4.5	4.5
Savings/GNP	24.8	34.7	36.4	37.1	35.7
Investment/GNP	33.0	30.6	37.2	37.4	35.4
FDI (mil. US\$)			863*	1776	2341
<b>Singapore</b>					
M2/GNP	66.4	69.8	90.5	83.7	84.0
Inflation	8.5	4.1	3.5	1.7	2.0
Savings/GNP	40.2	39.2	45.3	49.9	48.7
Investment/GNP	48.1	41.0	35.7	33.4	36.4
FDI (mil. US\$)			3592*	8210	10000

Sources: International Finance Statistics, IMF World Investment Report 1998

<b>TABLE 4</b> <b>Revealed Comparative Advantage</b> <b>Phil Share/ World Share per industry</b>																
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
<b>Food manufactures</b>	4.74	4.52	5.36	3.97	4.05	3.80	3.48	3.05	2.91	2.79	2.64	2.50	2.41	2.23	1.66	1.40
<b>Beverage industries</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Tobacco manufactures</b>	1.39	2.05	1.88	1.58	1.34	1.29	1.07	0.72	0.62	0.57	1.14	1.41	0.60	0.42	0.31	0.25
<b>Textile manufactures</b>	0.49	0.47	0.47	0.32	0.37	0.33	0.35	0.32	0.29	0.22	0.14	0.24	0.23	0.21	0.28	0.27
<b>Footwear and wearing app.</b>	2.80	3.33	3.11	3.16	2.11	2.42	2.08	1.67	1.70	2.12	2.42	5.41	2.22	1.96	1.84	1.77
<b>Wood and cork prod.</b>	6.11	6.60	6.38	6.98	5.72	5.27	4.89	3.69	3.21	2.67	1.84	2.09	1.26	0.81	0.81	0.73
<b>Furniture and fixtures</b>	2.67	3.09	2.87	3.30	3.28	3.35	2.89	2.67	2.98	3.24	2.80	2.33	2.07	2.01	1.97	1.79
<b>Paper and paper prod.</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.12	0.14	0.12	0.11	0.08
<b>Publishing and printing</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Leather and leather prod.</b>	0.00	0.00	0.00	0.00	0.00	0.51	0.52	0.47	0.50	0.76	0.91	1.06	0.85	0.70	0.79	0.93
<b>Rubber products</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Chemical &amp; chemical prod.</b>	0.14	0.19	0.19	0.20	0.25	0.56	0.86	0.63	0.47	0.46	0.42	0.46	0.31	0.26	0.24	0.20
<b>Petroleum and coal prod.</b>	0.03	0.03	0.03	0.13	0.09	0.05	0.14	0.14	0.22	0.23	0.22	0.29	0.30	0.27	0.23	0.24
<b>Non-metallic mineral prod.</b>	0.36	0.28	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.20	0.22	0.22	0.20	0.17
<b>Basic metal industries</b>	3.21	2.62	2.05	1.95	1.44	2.01	1.96	1.28	1.53	1.35	1.45	1.23	1.10	0.86	0.77	0.74
<b>Metal industries</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.05	0.03	0.36	0.04	0.04
<b>Machinery exc. Electrical</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Electrical machinery</b>	0.17	0.22	0.27	0.51	0.79	0.63	0.73	0.73	0.68	0.76	0.92	2.07	1.17	1.55	1.25	1.24
<b>Transport equipment</b>	0.07	0.08	0.05	0.05	0.06	0.05	0.06	0.09	0.02	0.02	0.06	0.03	0.05	0.08	0.12	0.13
<b>Misc. manufactures</b>	3.63	4.74	5.77	5.44	6.21	6.07	5.13	4.71	4.43	4.51	4.53	0.70	4.69	4.92	5.27	5.51

Source of basic data: UN International Trade Statistics, 1980-1988, 1990-1995. Figures for 1989 were obtained by taking the average of 1988 and 1990

**TABLE 5**  
**Contribution to Trade Balance, 1980 - 1995**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
<b>Food</b>	0.294	0.272	0.307	0.231	0.232	0.184	0.186	0.180	0.141	0.118	0.097	0.118	0.101	0.083	0.057	0.070
<b>Tobacco</b>	0.001	0.003	0.002	-0.001	0.001	-0.007	-0.009	-0.012	-0.007	-0.004	0.001	0.001	-0.004	-0.003	-0.007	-0.003
<b>Textile</b>	-0.014	-0.018	-0.017	-0.029	-0.028	-0.035	-0.051	-0.051	-0.051	-0.052	-0.052	-0.089	-0.047	-0.040	-0.036	-0.033
<b>Wearing Apparel</b>	0.048	0.061	0.055	0.063	0.046	0.057	0.060	0.066	0.063	0.074	0.085	0.226	0.088	0.073	0.069	0.062
<b>Leather</b>	0.000	0.000	0.000	0.000	0.000	0.002	0.003	0.003	0.003	0.001	0.003	0.000	0.001	0.001	0.003	0.004
<b>Footwear</b>	0.012	0.013	0.011	0.011	0.009	0.009	0.007	0.006	0.007	0.009	0.010	0.016	0.012	0.012	0.013	0.009
<b>Wood</b>	0.082	0.072	0.062	0.078	0.062	0.055	0.055	0.056	0.051	0.037	0.021	0.025	0.012	0.006	0.009	0.006
<b>Furniture</b>	0.014	0.016	0.013	0.017	0.017	0.019	0.020	0.024	0.028	0.026	0.024	0.021	0.019	0.017	0.018	0.016
<b>Paper</b>	-0.014	-0.013	-0.014	-0.014	-0.018	-0.019	-0.024	-0.022	-0.021	-0.018	-0.013	-0.015	-0.011	-0.012	-0.012	-0.015
<b>Printing</b>	-0.004	-0.003	-0.003	0.000	0.000	-0.002	-0.003	-0.004	-0.003	-0.003	-0.002	-0.005	-0.003	-0.003	-0.003	-0.003
<b>Chemicals</b>	-0.077	-0.075	-0.075	-0.075	-0.079	-0.080	-0.088	-0.083	-0.082	-0.069	-0.062	-0.064	-0.057	-0.054	-0.050	-0.050
<b>Petroleum</b>	-0.299	-0.319	-0.276	-0.268	-0.265	-0.289	-0.171	-0.184	-0.124	-0.132	-0.130	-0.131	-0.117	-0.097	-0.079	-0.079
<b>Rubber</b>	-0.003	-0.002	-0.004	0.000	0.000	0.000	0.000	0.000	0.000	-0.004	-0.003	-0.002	-0.004	-0.004	-0.004	-0.004
<b>Plastics</b>	-0.013	-0.013	-0.016	-0.022	-0.016	-0.013	-0.023	-0.024	-0.022	-0.022	-0.025	-0.030	-0.023	-0.024	-0.026	-0.026
<b>Non-metals</b>	0.001	0.003	0.003	0.000	0.000	0.000	0.000	0.000	0.000	-0.006	-0.001	0.003	-0.001	0.002	0.002	0.000
<b>Basic Metals</b>	0.142	0.109	0.042	0.055	0.046	0.082	0.056	0.014	0.022	0.018	0.009	-0.017	-0.021	-0.034	-0.031	-0.043
<b>Fabricated</b>	-0.013	-0.015	-0.018	-0.016	-0.007	-0.011	-0.007	-0.005	-0.006	-0.006	-0.006	-0.008	-0.007	-0.013	-0.013	-0.006
<b>Machinery</b>	-0.125	-0.104	-0.123	-0.112	-0.065	-0.067	-0.073	-0.075	-0.082	-0.096	-0.102	-0.070	-0.101	-0.113	-0.109	-0.100
<b>Electrical</b>	-0.032	-0.035	-0.034	-0.014	-0.001	0.003	0.010	0.018	0.015	0.018	0.024	0.041	0.035	0.086	0.061	0.052
<b>Transport</b>	-0.061	-0.051	-0.034	-0.033	-0.035	-0.006	-0.006	-0.008	-0.039	-0.048	-0.062	-0.055	-0.058	-0.084	-0.074	-0.067
<b>Prof. Scientific</b>	-0.007	-0.006	-0.009	-0.010	-0.007	-0.009	-0.009	-0.008	-0.008	-0.008	-0.008	-0.001	-0.008	-0.010	-0.008	-0.009
<b>Misc. Manu.</b>	0.067	0.105	0.127	0.137	0.106	0.127	0.067	0.109	0.116	0.167	0.193	0.036	0.194	0.211	0.221	0.220

Source of basic data: UN International Trade Statistics, 1980-1988, 1990-1995. Figures for 1989 were obtained by taking the average of 1988 and 1990

<b>TABLE 6</b>																
<b>Share to Total Exports, 1980 – 1995</b>																
	<b>1980</b>	<b>1981</b>	<b>1982</b>	<b>1983</b>	<b>1984</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>
<b>Food</b>	34.78	33.23	41.96	29.16	29.30	25.64	25.24	22.73	21.10	19.07	17.32	16.90	15.94	14.40	10.65	12.14
<b>Tobacco</b>	0.50	0.84	0.93	0.67	0.53	0.52	0.43	0.32	0.27	0.26	0.60	0.79	0.34	0.23	0.17	0.12
<b>Textile</b>	1.30	1.22	1.24	0.84	0.98	0.85	0.97	1.11	0.95	0.67	0.43	0.78	0.74	0.65	0.87	0.82
<b>Wearing App.</b>	4.68	5.90	5.89	6.14	4.36	5.39	5.68	6.21	5.92	6.93	8.32	21.25	8.59	7.50	6.66	6.06
<b>Leather</b>	0.00	0.00	0.00	0.00	0.00	0.21	0.24	0.28	0.30	0.42	0.53	0.62	0.54	0.47	0.56	0.63
<b>Footwear</b>	1.16	1.28	1.24	1.10	0.86	0.84	0.64	0.55	0.64	0.81	0.95	1.52	1.19	1.25	1.30	0.88
<b>Wood</b>	7.94	6.96	6.68	7.69	5.95	5.24	5.17	5.32	4.81	3.49	2.36	2.61	1.55	1.10	1.08	0.88
<b>Furniture</b>	1.33	1.53	1.43	1.67	1.64	1.81	1.85	2.28	2.60	2.45	2.31	2.02	1.84	1.79	1.78	1.58
<b>Paper</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.29	0.31	0.25	0.23	0.19
<b>Printing</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Chemicals</b>	0.42	0.50	0.60	0.72	1.00	2.33	4.12	3.35	2.64	2.45	2.28	2.56	1.59	1.32	1.28	1.13
<b>Petroleum</b>	0.63	0.55	0.64	2.21	1.53	0.74	1.27	1.65	2.04	2.13	2.21	2.63	2.42	2.01	1.59	1.50
<b>Rubber</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Plastics</b>	0.19	0.32	0.19	0.19	0.17	0.59	0.63	0.69	0.71	0.63	0.57	0.67	0.71	0.63	0.58	0.62
<b>Non-metals</b>	0.65	0.41	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.37	0.41	0.42	0.38	0.32
<b>Basic Metals</b>	20.99	15.37	11.87	10.80	7.82	10.99	10.13	7.32	10.18	9.04	8.06	6.72	5.37	4.03	3.63	3.82
<b>Fabricated</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.04	0.43	0.05	0.04
<b>Machinery</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	3.73	1.97	1.89	1.73	2.53
<b>Electrical</b>	0.92	1.44	1.83	3.90	6.85	5.62	7.30	8.38	8.39	8.89	10.08	22.41	13.35	20.29	17.42	17.39
<b>Transport</b>	0.52	0.57	0.38	0.46	0.49	0.46	0.63	0.99	0.20	0.23	0.59	0.31	0.55	0.85	1.23	1.20
<b>Prof. Scientific</b>	0.34	0.36	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.00	0.00	0.00	0.00
<b>Misc. Manu.</b>	18.00	23.63	28.65	28.17	33.26	32.87	29.91	32.78	32.85	33.96	34.91	4.11	35.61	39.21	39.65	41.80

Source of basic data: UN International Trade Statistics, 1980-1988, 1990-1995. Figures for 1989 were obtained by taking the average of 1988 and 1990

Note: Breakdown of Misc. Manufactures: Toys, sporting goods, etc., gold, silver ware, jewelry, musical instruments, other manufactured goods special transactions gold, non monetary nes.

**TABLE 7**  
**Estimation of Equation 1**

***Estimation of Equation 1***  
***Using Growth Rate of Labor Productivity***

Dependent Variable: RCA?  
Method: GLS (Cross Section Weights)  
Sample: 1981 1995  
Included observations: 15  
Total panel (balanced) observations 165  
Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.169304	0.073901	2.290947	0.0233
GLP?	-0.001219	0.000559	-2.180934	0.0306
RELP?	-3.826360	2.255614	-1.696372	0.0918
K?	-3.44E-05	1.77E-05	-1.947312	0.0532
RCA?(-1)	0.929035	0.016572	56.06052	0.0000
Weighted Statistics				
R-squared	0.909251	Mean dependent var		1.795564
Adjusted R-squared	0.906983	S.D. dependent var		1.396951
S.E. of regression	0.426053	Sum squared resid		29.04335
Log likelihood	83.07333	F-statistic		400.7776
Durbin-Watson stat	2.332512	Prob(F-statistic)		0.000000

***Estimation of Equation 1***  
***Using Growth Rate of TFP (Growth Accounting Approach)***

Dependent Variable: RCA?  
Method: GLS (Cross Section Weights)  
Sample: 1981 1995  
Included observations: 15  
Total panel (balanced) observations 180

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.131304	0.084445	1.554896	0.1218
TG?	0.144839	0.095450	1.517425	0.1310
RELP?	-2.746532	2.570912	-1.068310	0.2869
K?	-3.64E-05	1.94E-05	-1.877880	0.0621
RCA?(-1)	0.931458	0.015758	59.11175	0.0000



### Weighted Statistics

R-squared	0.915674	Mean dependent var	1.541699
Adjusted R-squared	0.913746	S.D. dependent var	1.272487
S.E. of regression	0.373717	Sum squared resid	24.44122
Log likelihood	91.13248	F-statistic	475.0681
Durbin-Watson stat	2.308555	Prob(F-statistic)	0.000000

### ***Estimation of Equation 1 Using Growth Rate of TFP (Stochastic Approach)***

Dependent Variable: RCA?

Method: GLS (Cross Section Weights)

Date: 11/19/98 Time: 11:36

Sample: 1981 1995

Included observations: 15

Total panel (balanced) observations 180

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.060769	0.195637	-0.310623	0.7565
TS?	20.13391	17.27408	1.165556	0.2454
RELP?	-2.237510	2.451574	-0.912683	0.3627
K?	-3.31E-05	1.79E-05	-1.844362	0.0668
RCA?(-1)	0.927263	0.016447	56.38029	0.0000

### Weighted Statistics

R-squared	0.903338	Mean dependent var	1.707719
Adjusted R-squared	0.901128	S.D. dependent var	1.330213
S.E. of regression	0.418271	Sum squared resid	30.61633
Log likelihood	107.3332	F-statistic	408.8559
Durbin-Watson stat	2.285064	Prob(F-statistic)	0.000000

### Variable Definitions:

RCA? - revealed comparative advantage by sector (indexed by ?)

GLP? - growth rate of labor productivity by sector (indexed by ?)

TG? - growth rate of total factor productivity by sector (indexed by ?) using growth accounting approach

TS? - growth rate of total factor productivity by sector (indexed by ?) using stochastic approach

RELP? - relative price per sector; defined as  $P_i/P^*$  where  $P_i$  is the implicit price index of sector  $i$  and  $P^*$  is the price index of non-oil imports.  $P^*$  is not available on a sectoral basis.

K? - capital stock by sector

**Table 8**  
**Estimation of Equation 2**

*Estimate of Equation 2 Using REER Volatility*

Dependent Variable: INVA?

Method: GLS (Cross Section Weights)

Date: 11/19/98 Time: 12:48

Sample: 1981 1995

Included observations: 15

Total panel (balanced) observations 180

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.006326	0.003867	1.635895	0.1037
SIGMA	-1.84E-05	0.000693	-0.026515	0.9789
M3GNP	0.000306	0.000121	2.524540	0.0125
FDIGDP	-0.002243	0.000979	-2.291524	0.0231
REER	-0.000137	5.01E-05	-2.729968	0.0070
INVA?(-1)	0.730557	0.053361	13.69080	0.0000
Weighted Statistics				
R-squared	0.534363	Mean dependent var		0.016618
Adjusted R-squared	0.520983	S.D. dependent var		0.020799
S.E. of regression	0.014396	Sum squared resid		0.036058
Log likelihood	816.4368	F-statistic		39.93638
Durbin-Watson stat	2.509469	Prob(F-statistic)		0.000000

*Estimate of Equation 2 Using Inflation as Volatility Measure*

Dependent Variable: INVA?

Method: GLS (Cross Section Weights)

Date: 04/29/99 Time: 11:49

Sample: 1981 1995

Included observations: 15

Total panel (balanced) observations 180

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007200	0.003515	2.048365	0.0420
INFL	-3.76E-05	3.63E-05	-1.034215	0.3025
M3GNP	0.000267	0.000126	2.120790	0.0354
FDIGDP	-0.002290	0.000914	-2.505885	0.0131
REER	-0.000127	4.97E-05	-2.558213	0.0114
INVA?(-1)	0.718011	0.054607	13.14881	0.0000

#### Weighted Statistics

R-squared	0.490294	Mean dependent var	0.016001
Adjusted R-squared	0.475647	S.D. dependent var	0.019529
S.E. of regression	0.014141	Sum squared resid	0.034796
Log likelihood	816.6738	F-statistic	33.47463
Durbin-Watson stat	2.512686	Prob(F-statistic)	0.000000

#### Variable Definitions:

INVA? - investment per sector as a ratio to sectoral value added (indexed by ?)

SIGMA - measure of exchange rate volatility

M3GNP - ratio of total domestic liquidity to GNP

FDIGDP - ratio of foreign direct investment to GDP

REER - real effective exchange rate (1980 =100), an increase in REER implies  
an appreciation

INFL - inflation rate

**TABLE 9**  
**Values of EDR**

<b>ISIC Code</b>	<b>Industrial Sectors</b>	<b>External Dependence</b>
314	Tobacco	-0.45
361	Pottery	-0.15
323	Leather	-0.14
3211	Spinning	-0.09
324	Footwear	-0.08
372	Non-ferrous metal	0.01
322	Apparel	0.03
353	Petroleum refineries	0.04
369	Non metal products	0.06
313	Beverages	0.08
371	Iron and Steel	0.09
311	Food products	0.14
3411	Pulp, paper	0.15
3513	Synthetic resins	0.16
341	Paper and products	0.18
342	Printing and publishing	0.20
352	Other chemicals	0.22
355	Rubber products	0.23
332	Furniture	0.24
381	Metal Products	0.24
3511	Basic exclud fert	0.25
331	Wood products	0.28
384	Transportation equipment	0.31
354	Petroleum and coal products	0.33

Source: Rajan, R. And L. Zingales, "Financial Dependence and Growth"

<b>TABLE 10</b> <b>Estimates of Spearman Rank</b> <b>Coefficient</b>		
<b>Year</b>	<b>EDR, RCA</b>	<b>EDR, GLP</b>
1981	0.121	0.046
1982	0.121	-0.380
1983	0.288	0.204
1984	0.288	-0.165
1985	0.099	-0.301
1986	0.099	0.200
1987	0.099	0.327
1988	0.110	0.429
1989	0.143	0.512
1990	-0.058	0.222
1991	-0.162	-0.301
1992	-0.102	0.442
1993	-0.052	-0.235
1994	0.080	0.077
1995	-0.190	0.209

Note:

EDR - External Dependence Ratio

RCA - Revealed Comparative Advantage

GLP - Growth rate of Labor Productivity