

David, Cristina C.

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Philippine Institute for Development Studies

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For comments, suggestions or further inquiries please contact:

The Research Information Staff, Philippine Institute for Development Studies

3rd Floor, NEDA sa Makati Building, 106 Amorsolo Street, Legaspi Village, Makati City, Philippines

Tel Nos: 8924059 and 8935705; Fax No: 8939589; E-mail: publications@pidsnet.pids.gov.ph

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Economic Policies and Agricultural Incentives: The Philippine Case

Cristina C. David*

Introduction

In the 1980's, the Philippines adopted various structural adjustment and stabilization policies to correct fundamental distortions in the economic incentives and imbalances in the external and public sector accounts, as well as to minimize the potential instability in the process of those reforms. These included trade policy reforms to remove quantitative trade restrictions, lower average and limited dispersion of tariffs, eliminate implicit and explicit taxes on traditional exports, and abolish price controls on food and other essential consumer goods; liberalization of regulations on foreign investments; financial liberalization including the decontrol of interest rates and more liberal banking regulations; tax policy reforms to minimize inefficiencies and inequities in the tax structure, improve tax administration, and raise tax revenues; privatization to shift resources from the government to the private sectors; currency devaluation to reduce deficit in the balance of payments, and so forth (Clarete, 1992).

Those policy reforms have potentially profound direct and indirect effects on the agricultural sector. Many major agricultural commodities and inputs such as rice, corn, sugar, meat, fertilizers, and others, have been historically subject to quantitative trade restrictions and/or domestic price controls. Export taxes applied mostly to major agricultural exports such

* Research Fellow, Philippine Institute for Development Studies. The author is grateful to Rowena Carpio and Jennifer del Prado for invaluable research assistance.

as coconuts, bananas, pineapples, and so forth. Most agricultural commodities are tradeables whose prices are greatly affected by the real exchange rate. Not often recognized is the critical role of public sector provision of support services to agriculture, such as research and development, irrigation and market infrastructure, price stabilization, which have public good characteristics, externalities, and economies of scale. With the budgetary squeeze caused by the stabilization measures and the emphasis on privatization, public expenditures for those support services were bound to suffer.

Past studies have already amply demonstrated that up to the early 1980's, price intervention policies, both commodity-specific and economywide, have created an incentive structure that is significantly biased against agriculture (David 1983; Bautista 1987; Intal and Power 1991). Moreover, that bias has been mainly through the overvaluation of the peso due to the industrial protection system and economywide policies to defend the disequilibrium in the balance of payments. Presumably, therefore, the structural adjustment program should boost agricultural incentives and accelerate agricultural growth.

Ironically, Table 1 shows that the growth rates of gross value added in agriculture (GVA), agricultural exports, and food production per capita declined in the 1980's. Whereas the Philippines in the 1970's ranked second or third in terms of GVA and food production per capita among developing countries in Asia, the country ranked among the lowest in the 1980's, similar to Sri Lanka and Bangladesh. This poor performance was not specific to agriculture, but was economywide as the Philippines also had the lowest growth rate of gross domestic product during this period.

The decline in performance of the agricultural sector in the 1980's cannot be readily attributed to the structural reforms themselves for a number of reasons. World commodity prices were severely depressed during this period. And indeed, growth rates of agricultural exports declined sharply in all of the ASEAN and South Asian countries during this period. Note, however, that with the exception of Sri Lanka, growth rates of agricultural gross value added and food production per capita accelerated in South Asia. Although in the ASEAN countries, growth rates of GVA and food production per capita generally decreased (except food production per capita in Indonesia), the decline was more pronounced the Philippines. It should be noted that such pattern can also be observed in the growth rates of gross domestic product. Since most of the above Asian countries were also implementing structural adjustment reforms, there must be other factors why the Philippines had the weakest performance during this period.

There have been a number of recent studies analyzing the impact of structural and stabilization policies on the agricultural sector and on income distribution. Based on a general equilibrium model, Clarete (1992) simulated the impact of the tariff changes embodied in the Executive Order 470 and the currency devaluation on agricultural production and trade. On the other hand, Bautista (1992) used a multi-market model to quantify the impacts of changes in monetary, fiscal, and exchange rate policies on agricultural prices and outputs, specifically on rice, corn, coconut, sugar, livestock and fish. Based on Bautista's simulation results, Balisacan (1994) examined further the implications of those short-term macro-economic reforms on household welfare, particularly on the poor.

These studies are ex ante impact analysis because the data are not yet available to conduct rigorous ex post analysis. A major problem with these studies, however, aside from certain

weaknesses in model specifications, stems from the fact that changes in the book tariff rates were analyzed. Most major agricultural commodities are not affected by the book rates of tariffs because these are often exportable, non-traded, or subject to quantitative trade restrictions which make tariff protection often redundant or ineffective in domestic price formation.

Estimation of the impact of economic policies on agricultural incentives based on domestic and border price comparisons have covered only the period up to the early 1980's, before the bulk of the structural reform measures were adopted. The purpose of this paper is to analyze the impact of economic policies on agricultural incentives from 1960 up to 1992. Aside from economic policies affecting price incentives, I will also cover public expenditures for agricultural support services which influence agricultural incentives by raising productivity.

The first section of this paper documents the structure and performance of agricultural production and trade. Estimates of the impact of commodity-specific policies on prices of major agricultural outputs and inputs are presented in the second section. The third section reports the indirect impact of trade and macroeconomic policies through the trends in the real exchange rate. The trends in public expenditures for agriculture by policy instruments are analyzed in the fourth section. The final section provides some concluding remarks.

Structure and Performance of Agriculture

Despite the strong industrialization bias of Philippine development strategy, agriculture continues to be a major source of income and employment in the total economy. Two-thirds of the population are located in the rural areas. Agriculture employs nearly half of the total labor force and contributes about 25 percent of gross domestic product. When all economic activities

related to agricultural processing and supply of non-farm agricultural inputs are included, the agricultural sector broadly defined accounts for about two-thirds of the labor force and 40 percent of the gross domestic product. Agriculture has also been historically a major source of foreign exchange.

Patterns of Structural Change

Table 2 shows selected indicators of structural change in the economy, while Table 3 reports the growth rates of gross domestic product by sector and by major agricultural commodities. The relative size of the agricultural economy (i.e., including fishing and forestry) changed only gradually between 1960 and 1980. In fact, agriculture's share in gross domestic product hardly changed up to the late 1970's, as its share in total labor force decreased from 60% to 50% between 1960 and 1970. Growth rate of agriculture was about 4.5%, way above the population growth rate and as mentioned earlier, compared favorably with other countries in the region.

The performance of the crop subsector was even more remarkable as growth rates between 1965-1980 was close to 6%. This was due mainly to the more favorable agricultural prices caused by high world commodity prices, technological change in rice, and rapid expansion in new exportable crops, e.g., bananas and pineapples. Adoption of modern varieties, greater use of fertilizers, and expansion of irrigation in rice increased rice cropping intensity and doubled yields within a span of 15 years. The high growth rate of corn may be attributed to growing demand for corn as feed by the rapidly growing commercial poultry and hog subsectors. The growth rates of coconut and sugar, the principal traditional exports, was relatively high mainly because of favorable world prices which induced crop area expansion, but not so much

higher yields. The entry of multinationals in the banana and pineapple production largely explains the remarkably high growth rates of bananas and other crops.

The 1980's witnessed a marked slowdown in the growth rate of the agricultural sector along with the rest of the economy. The share of agriculture in GDP decreased from 26% to 22% and in total employment from 52% to 45%. This was true particularly for the crops and forestry subsectors, as livestock, poultry, and fishery maintained relatively high rates. Among crops, coconut and sugar, as well as the major non-traditional exports of bananas and pineapples generally showed negative growth rates.

While that poor performance was undoubtedly caused in part by depressed world prices, the lack of any significant technological developments, especially in coconut and sugar, contributed to the growing uncompetitiveness of Philippine agriculture in the world market. The problem was exacerbated by the expanded land reform program which discouraged investments, limited access to credit, and accelerated land conversion from farm to urban and industrial uses.

The growth rate of the major food crops -- rice and corn -- also declined in the 1980's, but remained positive and close to or even above the population growth rate. Both crops are importables so that demand is based on population and income growth and domestic prices can more easily be protected from sharp drops in world prices. While there were also no major technological breakthroughs in these crops during this period, yields were generally maintained and even increased slightly in the case of corn where some new hybrids and open pollinated varieties were introduced by private sector seed companies and public sector research institutions. Moreover, land reform had already been largely implemented (though not completely) in the rice sector by the early 1980's. On the other hand, the corn areas are already generally cultivated by small owner-operators.

Agricultural Trade

Agriculture's share in total exports declined much more rapidly than those of value added and employment (Table 4). Between 1960 and 1980, the contribution of agriculture to total exports declined from about 64% to 35%, but its share to total imports also decreased by more than half from about 20% to 8% (Table 5). Thus, the net contribution of agriculture to foreign exchange earnings did not change as evidenced by the constant ratio of imports to exports during this period.

Since the late 1970's, agriculture has ceased to be the major earner of foreign exchange as the agriculture's share to total exports dropped sharply from 54% in 1975 to only 14% by the early 1990's. Indeed, because agriculture's share to total imports remained at 10%, the agricultural sector apparently barely made any net contribution to foreign exchange. It should be noted, however, that industrial exports contained substantial import components (Krugman et al 1993) and thus agriculture's net foreign exchange contribution in value added terms may not be so low.

The composition of exports also changed markedly, away from the traditional exports of coconut, sugar, tobacco, abaca, and forest products in favor of bananas, pineapples, fishery products (principally tuna and prawns), and other non-traditional export crops. Note, however, that with the exception of fishery products, bananas, tobacco and other non-traditional export crops, the value of major agricultural exports declined in absolute terms. In fact, the Philippine share in world markets of all of our major agricultural exports has been decreasing since the 1960's in the case of sugar, the mid-1970 for coconut products, and the 1980's for bananas and pineapples (Table 6).

The declining importance of agriculture is a phenomenon consistently observed in the economic history of developed countries and in cross-section comparisons between poor and rich countries (Chenery and Syrquin, 1977). This trend is often attributed to Engel's Law, discovery of synthetic substitutes for agricultural products, and rapid technological change in agriculture. Presumably, this trend should not necessarily occur, or at least be slower in small, open economies, unless world commodity prices are also falling as those factors operate worldwide. There are economic policies, however, which may hasten the declining importance of the agricultural economy among less developed countries. First, the generally heavy protection of the agricultural sector in developed countries limits the potential export market for agricultural products of LDC's and may, in fact, exacerbate the falling trend of world prices when excess supply are dumped on to world markets. Second, domestic economic policies pursued by LDC's typically bias economic incentives against agriculture in favor of industrialization, accelerating this process of structural transformation. And third, public investments for research and development, irrigation, market infrastructure and other productivity enhancing public investments may not be sufficient to maintain or enhance the country's competitive advantage in agriculture. The issue, therefore, is not so much the declining importance of agriculture, but whether or not economic policies may have unduly hastened that trend, hindering the achievement of a sustained overall economic progress.

Price Intervention Policies

It is the proper role of the public sector to ensure an incentive structure that reflects the true social opportunity costs of outputs and inputs. While a freely operating market economy would, by and large, generate that price structure, government interventions may be necessary

to "get the prices right" in cases of market failures. Some examples are in the provision of support services with public good characteristics (e.g., technology development); presence of externalities (e.g., pesticides); extreme instabilities in production or prices, and in cases of inadequate or asymmetries of information or high transaction cost. For a "large" country in the world market of a commodity, there may be an "optimal" export or import tax to capture any monopoly rents from the world markets. In practice, the Philippines, as in many other developing countries, intervene directly in agricultural output and input prices through a variety of commodity-specific policies in pursuit of other objectives. These are to raise government revenues, to protect domestic producers from foreign competition, to lower food and raw material prices to consumers, and to achieve food self-sufficiency. Even policies which are intended mainly to stabilize domestic prices seasonally or annually often influence not only the variability, but also the level of domestic prices.

Agricultural incentives are also affected, indirectly and often more importantly, by economywide policies that distort the exchange rate and the terms of trade between agriculture and non-agriculture. The trade policies to protect domestic industries by high tariffs, for example, artificially lower the exchange rate by restricting the demand for foreign exchange. The exchange rate is also undervalued when an unsustainable deficit in the current account is temporarily defended by unusually high levels of foreign investments (borrowing) or by expansionary monetary policies.

Commodity-specific policies

A wide variety of policy instruments directly affect agricultural output and input prices. Whereas import tariffs are levied on nearly all agricultural products and inputs, their protective

effect apply only to a limited segment of domestic agriculture. For exportable agricultural products which constitute a significant share of gross value added, tariff protection is essentially redundant. Because of prohibitive marketing cost, roots, tubers, certain fruits, and vegetables are effectively non-traded. Tariffs on the major imports such as wheat, soybeans, milk products, fertilizers, pesticides, and a few others which are not locally produced in any significant quantities and/or are considered "essential" are levied relatively low tariffs. Moreover, quantitative trade restrictions, import or export bans, export taxes, direct government involvement in marketing, and price control tend to be the most important instruments of price interventions in Philippine agriculture.

With the exception of rice, corn, sugar, there were few commodity-specific price interventions up to the end of the 1960's. Import controls in the 1950s and tariffs in the 1960's may have potentially provided protection to a limited number of import-competing agricultural products. There were few attempts to intervene in the production and trade of export crops except in the special case of sugar, and briefly, by restricting foreign currency conversion as a stabilization measure after the 1962 devaluation. Because of the need to administer the Philippine sugar to the highly protected United States market, a domestic quota system guided its distribution among the domestic producers. In the 1960's, sugar exports were restricted to reduce the burden on domestic consumers of the higher export prices resulting from the 1962 devaluation and the greater US quota allocation resulting from the Cuban crisis. The government has directly intervened in the marketing of rice and corn since the late 1930's through a government monopoly on their international trade and domestic procurement and disbursement operations to defend official floor and ceiling prices.

A greater variety of price and market interventions were instituted during the 1970s initially as a policy response to the floating of the exchange rate in 1970 and then to the unprecedented turbulence in the oil and commodity markets in the mid 1970's. The policy instruments used to address this short-run problem of price instability eventually led to the pervasive regulation of the agricultural sector and the government's direct involvement, frequently as a monopoly, in the marketing of virtually all major agricultural commodities.

Taxation of agricultural exports began with the floating of the exchange rate in 1970 when export taxes from 4% to 6% were imposed as a stabilization measure. These have been continued, however, as convenient means of raising government revenues. A higher rate was levied on traditional exports of copra and sugar (6%) to promote greater processing of agricultural exports. Most of the other agricultural commodities (i.e., coconut oil, desiccated coconut, molasses, abaca, bananas, pineapples, tobacco, prawns, lumber, plywood and veneer) were subject to a 4% export tax. Between 1973 and 1975, additional export premium duties were temporarily levied to siphon off part of the gains from higher world prices.

The end of the sugar quota policy in 1973 motivated the nationalization of the domestic and international wholesale marketing of sugar under the National Sugar Trading (NASUTRA). Under the system, producers are paid a composite price, which is derived as a weighted average of the export price, domestic wholesale price, and a domestic reserve price. These weights change depending on the export price and what the government decides to be the consumer price.

The problem of protecting domestic consumers from the sharp rise in world prices of coconut products initially motivated the imposition of a levy called the Coconut Consumers

Stabilization Fund in 1973. Although collected by the government, disbursements were handled privately. About 20 percent of the revenues apparently supported the direct subsidy on domestic consumption of coconut oil products, the remainder was supposed to be used to finance development programs in the coconut industry, such as replanting, vertical integration, and scholarships.

Using part of the levy funds, about 80% of the coconut oil milling industry was purchased and put under the monopoly control of the United Coconut Oil Mills (UNICOM). This was ostensibly to address the problem of overcapacity induced mainly by investment incentives provided by the Board of Investments. The UNICOM, however, operated as a monopsonist and therefore further lowered farm prices of copra (Clarete and Roumasset, 1983). As world prices of coconut oil dropped in 1982, the levy was lifted only to be replaced by a copra export ban to protect the coconut oil mills.

Government monopoly control over major import competing food commodities expanded in the early 1970's. When world wheat prices tripled in 1974, the wheat mills requested the government corporation with monopoly control over imports/exports of rice and corn, now called National Food Authority (NFA), to import the wheat grains and avail indirectly of the tax exemption privilege of the NFA in order to comply with the official ceiling prices of wheat floor. NFA was formally conferred monopoly rights to import wheat in 1975 when world prices declined, supposedly to stabilize supply and wheat products in the domestic market. NFA also gained monopoly control on imports of soybeans, soybean meal and other feed stuffs during this period.

The four-fold increase in world prices of fertilizers in 1973 because of the oil crisis also led to government direct interventions in the fertilizer industry. Under a new government agency the Fertilizer Industry Authority, now the Fertilizer and Pesticide Authority, price controls were instituted, imports were regulated, and direct subsidies to fertilizer companies were provided.

There were other government policies instituted during this period such as import bans on garlic, onions, and potatoes to protect farmers from foreign competition. Import permits were required for many fresh produce such as meat, and fruits for health and quarantine reasons, which also effectively became protective instruments for these products. Presumably to prevent world prices from falling, a hectareage limitation was imposed on banana plantations producing for export. Although this instrument does not directly affect domestic prices, it does nevertheless affect resource allocation in agriculture.

By the late 1970's, world commodity prices began to fall. However, the policies and institutions established in the early 1970's to cope with high world prices continued, because these proved to be convenient means for raising revenues that were largely used to support private interests and bureaucratic inefficiencies. It was not until 1986 with the installation of a new government that several of these direct government price and market regulations were dismantled. Export taxes, including the copra export ban, were abolished. Government monopoly control over international trade in coconut, soybeans, soybean meal, and fertilizers and marketing of sugar were removed. Import controls on fertilizers were removed and tariffs on agricultural inputs -- fertilizers, agricultural chemicals, and others -- were lowered substantially. Despite the strong push for trade liberalization since the late 1980s, import

controls on a number of major agricultural commodities -- specifically rice, corn, sugar, meat, onions, garlic and others, remain in place. In fact, new regulations, specifically on imports of new seeds, that raise domestic prices were instituted in recent years. Furthermore a "Magna Carta for Farmers" was also recently legislated that ensures farmers blanket protection against foreign competition.

Nominal Protection Rates

The impact of commodity-specific policies on producers' incentives is measured by the trends in the nominal protection rates (NPRs) for major agricultural products as reported in Table 7. NPR is the percentage difference between domestic and border price (converted at official exchange rates), the latter representing the domestic price without government interventions. In Figs. 1a to 1f, the trends in domestic and border prices in nominal dollar and in real terms are depicted.

Several general patterns emerge from Table 7 and Figs. 1a to 1f. First, NPRs differ greatly from tariff protection as shown by the figures in parenthesis, because many agricultural commodities are exportables, such as coconut, sugar, bananas and others, and/or quantitative trade restrictions are more important policy instruments even up to the early 1990s. As noted earlier, the government has not been successful in removing quantitative trade restrictions for many major agricultural products despite trade liberalization.

Second, export commodities, as expected, receive less protection than import-competing products. The heavy burden on the coconut farmers of the government coconut policies in the 1970's is evidenced by the more than 20% implicit tax on copra, which was basically passed on to the coconut farmers. Other major agricultural exports were levied export taxes between 1970

and 1985. Although sugar was also penalized in the 1970's, it was highly protected in the 1960's and 1980's, as reflected in the comparison between domestic and the ISA world price because of the country's special access to the highly protected US sugar market. Government policy largely conferred that benefit to sugar landowners at the expense not only of US but of local consumers. Whereas some attempt to reduce the burden of domestic consumers from the high US prices were made up to the early 1980's as the NPRs based on export unit value were negative, this was not the case after 1985 when domestic prices were about equal to the export unit values. The import restriction on sugar caused the NPR based on ISA price to be much higher than book tariff rates after 1985, and certainly in comparison not only to other agricultural commodities but to the manufacturing industries as well.

Third, nominal protection rates generally declined in the 1970's and rose again in the 1980's. This suggests that government price interventions are motivated in part by the objective of price stabilization. With the nearly 100% peso devaluation in 1970 and boom in world commodity prices in the mid-1970's, various means of protecting consumers from the concomitant higher prices among the tradeable agricultural products were instituted. Although equally major devaluations occurred in the 1970's, the world prices dropped even more sharply and hence greater restrictions on imports were imposed and penalties to exports removed to protect farmers from falling prices. Table 8 which compares coefficients of variation between domestic and world prices in real terms indicates that with the exception of coconut products, government market interventions have lowered domestic price instability.

Fourth, the sugar and the poultry subsectors has been historically the most highly protected segment of agriculture. Corn is also now highly protected as its NPR is much higher

than average protection rates for the total economy.

Fourth, despite the generally increasing NPRs in the 1980's, domestic prices in real terms have fallen except for sugar, pork, and chicken. In the cases of pork and chicken, world prices in real terms have not fallen as much as agricultural crops. Moreover, implicit tariff on its most important input, corn, has risen to 60%, suggesting that effective protection rate for pork may even be near zero. The rising real price of sugar on the other hand is due mainly to the sharp increase in its NPR. And given declining implicit tariffs on agricultural inputs as reported in the next section, effective protection rate of sugar will even be higher than its NPR.

Implicit Tariffs

Government interventions in the agricultural input markets are often intended to offset the low price objective of agricultural output price policy. With the exception of gravity irrigation, which covers about half of rice area, government policies generally tax farmers for use of tradeable agricultural inputs. Pesticides, tractors, threshers, and irrigation pumps are subject to tariffs and advance sales tax, while fertilizers were subject to quantitative trade restrictions between 1973 and 1986.

The implicit tax on agricultural inputs were generally higher than the nominal protection rates on agricultural outputs up to the mid-1980's. This was the case even during the period when direct subsidies to fertilizer companies were provided in the 1970's. With the removal of the advance sales tax in 1984, the liberalization of import controls on fertilizers in 1986, and lowering of tariffs in the late 1980's, implicit tariffs on agricultural inputs generally declined. At least with respect to import competing crops such as rice and corn, these are now lower than nominal protection rates on outputs.

Economywide Policies

Distortions in the foreign exchange have been found to be the most important source of bias against agricultural incentives (David 1983; Bautista 1987; Intal and Power 1991). Overvaluation of the peso results from the industrial protection system and from the tendency to delay foreign exchange adjustments to correct the disequilibrium in the balance of payments. The structure of tariffs, indirect sales tax, and other trade restrictions to promote industry reduce import demand, artificially raising the value of the peso relative to other currencies. Disequilibrium in the balance of payments defended by drawing down international reserves and by heavy foreign since the late 1970s also have periodically exacerbated the peso overvaluation. Various estimates of the degree of overvaluation by different analysts (Medalla 1990; Intal and Power 1991; Bautista 1987) showed remarkably similar results and this is in the order of 25% between 1960 and 1986. For the period 1975 and 1980, Bautista estimates that the overvaluation of the peso due to restrictive trade policy is 16-18%, while that due to trade imbalance is 8%.

Because of the generally high level of effective protection received by manufacturing (more than 40%), the net effective protection rate remains positive at about 20%. In contrast, average effective protection rate of agriculture (excluding fisheries and forestry) is currently in the order of 15% (Medalla and Associates, 1994) which implies a negative net effective protection rate of about -10%. This is even much lower for agricultural exports and remains negative for rice, the most important crop. Only a few agricultural products subject to a highly restrictive import policy such as corn, sugar, garlic, and others are conferred positive net protection rates.

In order to infer the potential impact of economywide policies on domestic prices, an agricultural terms of trade function was estimated based on time series data from 1960 to 1992. It is hypothesized that domestic agricultural terms of trade will be influenced by changes in the world terms of trade, the real exchange rate, the average nominal protection rate and the relative rate of technical change between agriculture vis a vis non-agriculture. Because of lack of time series data for the average NPR and rate of technical change, this was omitted in specifying the estimated function.

Fig. 2 portrays the trends in the Philippine agricultural terms of trade (T_d), the world terms of trade (T_w), and the real exchange rate. The following observations maybe made: T_d follows T_w to some extent; policy interventions tend to stabilize domestic prices; and exchange rate adjustments (F_x) in the 1980's prevented the sharp fall in T_w in being fully transmitted in the domestic market. While the real exchange rate depreciated between 1983 and 1990, it appreciated again after 1990. It is, therefore, not clear whether and to what extent the structural adjustment measures have already had favorable effects on the real exchange rate because these were adopted at the end of the 1980s.

It is not surprising to find that T_w and F_x are highly significant explanatory factors to the trends in T_d as indicated by the following econometric results:

$$\ln T_d = 2.19 + 0.36 \ln T_w + 0.39 \ln F_x$$

(5.22)
(4.34)

$$R^2 = 0.49$$

About half of the variations in the T_d is explained by the included variables. The relatively large unexplained variations suggests that trends in the intersectoral differences in NPRs and

rates of technical change would likely be found to be equally significant variables. The fact that the coefficients (elasticities) of T_w and F_x are only 0.4 further suggests that commodity specific policies themselves may be partly aimed at offsetting the price instability that may be caused by sharp changes in these variables.

Public Expenditure Policy

Because of unique features of agriculture that cause market failures, public expenditures to increase productivity, improve market efficiency, promote sustainability and protect the environment are called for to maintain and enhance the country's competitive advantage in the sector. Public expenditures in agriculture may also be aimed at correcting the highly unequal distribution of land-ownership which not only exacerbates the poverty problem, but may also be causing inefficiencies in resource allocation. Often-times, public expenditures for fertilizer price subsidies, concessional credit programs and other types of price subsidies are provided to mitigate the implicit taxation of agriculture through price intervention policies.

Fig. 3 depicts the trends in public expenditures for agriculture in real terms and its ratios to total public expenditures and gross value added in agriculture. In Fig. 4, the trends in public agricultural expenditures by policy instrument are presented to infer changes in priorities pursued by the government within the sector. It should be noted that two measures of public expenditures are depicted, i.e., with (G_a) and without (G'_a) expenditures for the agrarian reform program and development and regulation of the environment and natural resources.

Public expenditures for agriculture in real terms increased nearly five times in the 1970's. As ratios of total government expenditures and gross value added in agriculture, the increases were also dramatic. That rapid growth was motivated by the high world commodity prices, easy

availability of foreign development grants and loans, and the introduction of modern rice varieties which raised profitability of irrigation investments and fertilizer use. The main beneficiary of that growth is the rice subsector as the bulk of the increase in public expenditures in the 1970's was spent on irrigation.

The agricultural sector bore the brunt of the contractionary policies in the early 1980s as public support to the sector fell by half from its earlier peak level in 1978. Relative to the total government expenditures, public expenditures for agriculture in the mid-1980's were only about equal to the 1955 levels. By 1990, public expenditures in agriculture reached a higher peak that is more than a third higher than in 1978. The 1990 ratio to total expenditure still appears to be much lower than in 1978 mainly because government debt service which was only 7% in 1978 now constitutes 42% of total public expenditures. When the cost of debt service is excluded from total public expenditure, the ratios of agricultural public expenditure to total as well as to gross value added in agriculture in 1990 are already comparable to those achieved 1978.

It should be emphasized, however, that overall public support to agriculture is still comparatively low by Asian standards (David 1992). The Philippine ratio of agriculture expenditure to total expenditures and to gross domestic product in 1988 are the lowest among the ASEAN countries. In fact, these are only about half the ratios reported for Thailand, the fastest growing country in the region. Such relatively low ratios reflect not only the comparatively lower priority accorded the agricultural sector, but also the comparatively lower tax effort in the country as evidenced by the ratio of total revenue to GDP which is only about 14% compared to 21% in Thailand.

The priorities clearly shifted by the late 1980's. Irrigation, the single largest item, accounting for close to half of agricultural public expenditures from 1974 to 1984 dropped sharply and remained low in the late 1980's. Expenditures for agricultural research which was already relatively low also suffered major cuts in the budget. The apparent increase in public expenditures for grain stabilization simply replaced the profits from monopoly on wheat, corn, and soybean imports, which had been the main source of revenue of NFA prior to 1986. The bulk of the increase in public support to the sector in the late 1980 was allocated to agrarian reform activities and environmental management.

While about two-thirds of the agrarian reform expenditures were for support services such as credit and extension (Adriano 1991), the linkage to land reform rather than to technological and market opportunities reduced the cost-effectiveness of such public expenditures. The allocation of funds was biased towards short-term support projects (e.g. credit subsidies) against institution building efforts or projects that would have had long-term impacts (e.g. agricultural research). The allocation of funds depended not so much on which would have the highest economic pay-off, but rather on the priority areas of the land reform program which largely depended on ease of its implementation. And finally, it increased the cost of bureaucracy in the allocation of funds for and implementation of agricultural support services.

The misallocation of funds within the agricultural bureaucracy is clearly exemplified by the underinvestment in public agricultural research. While the country's ratio of expenditures for agricultural research to gross value added in agriculture was above the average among developing countries in the 1960s and early 1970s; it is now the lowest among major Asian

countries (Fig. 4). The relatively weak support to agricultural research explains the decline in the competitive advantage of Philippine agriculture, particularly in the traditional export crops like coconut and sugar, where yields have remained essentially stagnant throughout the postwar decade.

It is therefore unfortunate that the acceleration of public expenditure for agriculture in the late 1980s focused mainly on the implementation of land reform and environmental protection. While these expenditures may have long-term benefits, the very limited support to growth-enhancing investment such as research, irrigation and market infrastructure, is clearly a major reason for the poor record of agricultural production in the past decade.

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Table 1. Average growth rates of gross domestic product, agricultural value added, food production per capita, agricultural exports in selected South and Southeast Asian countries, 1970-1992 (%).

	1970-1980				1980-1992			
	Gross domestic product	Agriculture gross value added	Food per capita	Agriculture export	Gross domestic product	Agriculture gross value added	Food per capita	Agriculture export
Indonesia	8.4	4.4	1.4	17.5	5.6	2.9	2.1	2.6
Malaysia	9.1	6.5	5.1	17.5	6.2	3.4	3.9	1.8
Thailand	6.7	4.2 ^c	2.1	20.7	9.9	5.8	0.5	5.2
Philippines	6.1	4.9	1.6	14.3	1.5	1.1	-1.4	-3.2
India	3.9	1.8	0.2	14.3	5.6 ^a	3.8 ^b	1.6	5.1
Pakistan	5.3	3.0	0.5	15.5	6.0	4.2	0.9	1.6
Nepal	2.0	0.8	-0.9	-1.8	4.5	4.6	1.1	-1.0
Bangladesh	4.7	1.4	-1.2	0.1	4.0	2.9	-0.3	-1.5
Sri Lanka	3.7	1.9	1.2	7.8	4.1	1.8	-1.6	-0.4

^a Data up to 1990 only.

^b Data up to 1991 only.

^c Average of 1972-80.

Table 2. Selected economic indicators in the Philippines, 1960-1992 (%).^a

	1960 ^a	1965	1970	1975	1980	1985	1991
Share of population in rural areas	79	76	69	67	63	60	57
Share of GDP							
Agriculture ^b	27	27	30	30	26	24	22
Industry	31	31	32	35	39	36	34
(Manufacturing)	25	24	25	26	26	25	25
Services	42	42	39	35	36	40	44
Share of labour force							
Agriculture	61	58	53	54	52	50	45
Industry	16	16	16	15	15	14	16
Services	23	27	31	31	33	36	39
Exports/GDP	8	13	15	17	17	16	19
Imports/GDP	9	14	16	22	23	18	27
Agriculture's share of exports	64	63	44	54	35	26	14
Agriculture's share of imports	19	22	14	10	8	11	10
Agriculture's imports/exports	31	36	34	26	31	46	96

^a Three year averages centered at year shown.

^b Agriculture includes crops, livestock and poultry, fishery and forestry.

^c Agriculture is defined broadly to include agricultural products which have some manufacturing content such as processed food, coconut oil, plywood, and so forth.

Table 3. Growth rates of gross domestic product by sector and major agricultural commodities in the Philippines, 1960-1992.

	1960*-65	1965-70	1970-1975	1975-1980	1980-1985	1985-1991
GDP	5.2	4.8	5.9	5.7	-0.4	3.1
Agriculture	4.1	5.3	4.3	4.4	0.0	1.9
Rice	2.3	5.2	3.6 (10.7)	4.9 (11.2)	2.7 (11.8)	2.1 (13.0)
Corn	2.3	7.8	6.5 (4.6)	4.2 (5.1)	2.7 (5.2)	2.7 (6.0)
Sugar	1.9	5.3	7.3 (5.1)	-1.6 (4.9)	-3.7 (4.1)	-1.3 (2.8)
Coconut	6.4	1.7	6.6 (7.8)	3.2 (8.6)	-0.8 (7.5)	-8.1 (5.3)
Bananas	16.7	5.6	10.3 (1.0)	15.4 (1.9)	-0.5 (2.3)	-4.6 (1.8)
Other crops			11.3 (20.8)	6.4 (27.1)	-2.9 (25.0)	4.0 (25.8)
Poultry			4.9 (3.1)	13.4 (4.0)	1.3 (5.5)	10.0 (6.8)
Livestock			0.4 (9.8)	1.6 (7.9)	2.5 (8.1)	6.3 (10.2)
Industry	5.7	5.7	8.7	7.0	-2.8	2.6
Manufacturing	5.1	6.5	7.0	5.2	-2.3	3.4
Service	4.9	4.7	5.1	5.2	1.7	4.2

* Three year averages centered at year shown.

- Distribution of GVA by sector and commodity (in percent) 1975-80

Industry & Livestock

Rice

Share of GVA by major prices in each sector

Table 4. Value (and share) of agricultural exports by leading commodity in the Philippines, 1960-1992, (\$ million, fob).

	1962 ^a	1965	1970	1975	1980	1985	1991
Crops and livestock	355.2 (73.5) ^b	488.4 (70.4)	484.7 (60.9)	1,357.3 (80.8)	1,848.6 (74.9)	1,298.2 (75.0)	1,290.0 (69.3)
Coconut products	179.0 (35.0)	261.3 (37.8)	209.7 (25.8)	538.3 (32.1)	861.7 (35.2)	552.0 (31.6)	533.0 (28.6)
Sugar products	145.3 (27.3)	153.3 (22.1)	191.3 (24.5)	612.7 (36.2)	502.0 (20.1)	208.0 (11.7)	134.0 (7.2)
Bananas	-	-	7.3 (0.5)	64.7 (4.0)	112.7 (4.6)	121.7 (7.1)	160.0 (8.6)
Pineapple products	11.6 (2.7)	11.0 (1.6)	20.0 (2.8)	42.7 (2.6)	98.0 (4.0)	123.7 (7.3)	63.3 (3.5)
Abaca products	31.3 (5.8)	27.0 (3.9)	16.0 (2.3)	31.7 (1.8)	31.3 (1.3)	34.3 (2.0)	25.3 (1.4)
Tobacco products	11.3 (2.5)	14.7 (2.1)	15.7 (2.2)	31.7 (1.9)	37.7 (1.5)	28.3 (1.7)	52.7 (2.8)
Others	1.2 (0.2)	21.1 (3.0)	24.7 (2.9)	35.6 (2.2)	205.3 (8.3)	230.2 (13.5)	321.6 (17.2)
Fishery products	0.1	0.4 (0.1)	3.5 (0.3)	20.6 (1.2)	125.3 (5.1)	153.5 (9.2)	417.9 (22.4)
Shrimps and prawns	-	0.1	2.0 (0.1)	9.3 (0.6)	27.1 (1.1)	68.9 (4.2)	236.6 (12.7)
Tuna products	-	-	-	0.4 (-)	79.7 (3.2)	61.8 (3.6)	110.4 (5.9)
Others	0.1	0.3	1.5 (0.1)	10.9 (0.7)	18.5 (0.8)	22.9 (1.4)	70.9 (3.8)
Forestry products	137.3 (26.5)	204.3 (29.5)	274.7 (38.8)	302.0 (18.0)	491.0 (20.0)	273.3 (15.8)	157.3 (8.3)
Total agricultural exports	483.3	693.1	762.9	1,679.9	2,464.9	1,725.0	1,865.2

^a Three year averages centered at year shown.

^b Figures in parenthesis are percentage shares of agricultural exports.

Imports
- 5.7% of value of ag. exports
leading commodity

Table 5. Value (and share) of agricultural imports by commodity groups in the Philippines, 1960-1992, (\$ million, cif).

	1962 ^a	1965	1970	1975	1980	1985	1991
Food and animals	76.2 (69.5) ^b	139.0 (79.3)	121.7 (75.9)	267.4 (76.6)	461.3 (78.4)	460.7 (78.3)	975.8 (78.5)
Meat and meat products	7.5 (6.8)	6.1 (3.5)	7.8 (4.9)	7.7 (2.2)	15.5 (2.8)	3.8 (0.6)	22.6 (1.8)
Dairy and egg products	22.0 (20.1)	26.9 (15.6)	38.2 (24.0)	60.1 (17.2)	118.2 (20.4)	85.8 (14.6)	252.4 (20.4)
Cereal and preparations	27.6 (25.2)	75.1 (42.3)	58.2 (36.0)	162.7 (46.5)	210.3 (35.7)	262.2 (44.4)	404.8 (32.2)
Rice	1.0 (0.0)	37.5 (20.6)	10.3 (5.8)	32.2 (9.2)	-	55.7 (9.2)	40.9 (3.0)
Corn	-	-	1.7 (1.0)	14.8 (4.2)	27.0 (4.2)	22.4 (3.8)	2.1 (0.2)
Wheat & wheat flour	24.6 (22.4)	32.1 (18.5)	39.6 (25.1)	99.8 (28.5)	138.5 (24.1)	143.6 (24.5)	255.0 (20.6)
Others	3.0 (2.8)	5.4 (3.2)	6.6 (4.1)	15.9 (4.6)	44.8 (7.4)	40.5 (6.9)	106.8 (8.5)
Fruits and vegetables	3.8 (3.5)	7.7 (4.5)	4.5 (2.9)	4.7 (1.4)	13.2 (2.3)	11.2 (1.9)	54.4 (4.4)
Coffee, tea, cocoa & spices	2.6 (2.4)	3.5 (2.0)	3.1 (1.9)	8.4 (2.4)	30.5 (5.0)	6.6 (1.1)	25.5 (2.1)
Feeding stuffs	2.7 (2.5)	3.1 (1.8)	6.5 (4.1)	21.6 (6.2)	64.2 (10.7)	80.3 (13.8)	166.3 (13.5)
Others	10.0 (9.1)	16.6 (9.6)	3.5 (2.2)	2.3 (0.7)	9.4 (1.6)	10.9 (1.9)	50.0 (4.0)
Beverages and tobacco	2.1 (1.9)	2.7 (1.6)	8.7 (5.5)	24.9 (7.1)	51.2 (9.0)	63.1 (10.7)	110.7 (9.1)
Crude materials	28.0 (25.5)	27.7 (16.3)	23.5 (14.8)	48.5 (13.9)	51.1 (9.2)	42.8 (7.3)	124.2 (10.2)
Animal and vegetable oils	3.4 (3.1)	4.9 (2.9)	6.0 (3.8)	8.5 (2.5)	18.9 (3.4)	21.6 (3.7)	27.5 (2.2)
Total agricultural imports	109.7	174.2	159.9	349.4	582.5	588.3	1,238.3

^a Three year averages centered at year shown.

^b Figures in parenthesis are percentage shares of agricultural imports.

Table 6. Trends in the share of world trade of selected Philippine agricultural exports, 1960-1992.

	Coconut products					Sugar ^b	Bananas	Pineapple
	Total	Copra	Coco oil	D'cated coconut	Copra meal			
1960-64	48	54	31	56	34	9	0	-
1965-69	55	62	47	52	47	7	0	-
1970-74	56	61	53	53	46	7	3	-
1975-79	63	60	65	61	54	4	8	18 ^c
1980-84	65	38 ^a	68	62	59	4	9	20
1985-89	57	34 ^a	59	51	51	1	7	15
1990-92	52	26	59	43	45	1	5	14

^a 4 year average only because of copra export ban in 1984 and 1985.

^b Includes centrifugal and refined sugar.

^c Average of 1978 and 1979 since world export data on pineapple started in 1978 only.

Table 7. Trends in nominal protection rates of selected agricultural commodities, Philippines, 1960-1992.^a

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-92
Rice ^b	38	10	-1	-11 (70)	-8 (50)	11 (50)	16 (50)
Corn	46	38	19	30 (70)	25 (50)	67 (20)	62 (20)
Copra	0	0	-12	-22 (50)	-28 (20)	-6 (20)	-3 (10)
Coconut oil	0	0	-4	-4	-4	7	13
Dessicated coconut	0	0	-4	-4	-4	0	0
Copra cake and meal	0	0	-4	-4	-4	0	0
Sugar							
Export unit value	-20	-26	-43	-28	-17	3	-4
ISA	30	123	-26	-15 (70)	37 (50)	155 (50)	89 (50)
Bananas, pineapple, tobacco, abaca	0	0	-4	-4	-4	0	0
Pork	54	50 (15)	18 (12) ^c	-7 (10)	9 (5)	43 (17) ^d	31 (27) ^e
Chicken	104	122 (70)	58 (70)	57 (70)	67 (50)	57 (50)	94 (50)

^a Figures in parenthesis are based on book tariff rates.

^b Border price refer 35% broken fob Bangkok adjusted by 20% to obtain CIF value.

^c Tariff reduced to 10% by 1973.

^d Tariff changed to 20% by 1986.

^e Tariff changed from 20% to 30% by 1991.

Table 8. Coefficients of variation of domestic and world prices in real terms of selected agricultural commodities, Philippines, 1960-1992 (%).

	Real prices	
	World	Domestic
Rice	39.6	17.9
Corn	30.6	18.1
Sugar	76.3	19.2
Copra	41.7	43.2
Coconut oil	42.9	41.8
Pork	21.6	12.3
Chicken	14.5*	9.04

* Coefficients of variation for the real prices of chicken (world and domestic) only cover the years 1980-1992.

Table 9. Trends in implicit tariffs on agricultural inputs, Philippines, 1960-1992.

	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-92
Fertilizer ^a	36	42	-14	27	19	13	11
	(35)	(35)	(35)	(35)	(35)	(20)	(2)
Urea ^a	49	55	-13	28	21	11	12
Ammosul							
Ammophos ^a	17	32	-9	54	19	15	12
Mixed ^a	na	49	-22	-5	12	17	8
Pesticides ^b	24	24	29	35	35	20	13
Tractors ^b							
2 wheel	24	20	21	46	46	30	13
4 wheel	24	20	21	24	24	10	10
Threshers ^b	24	24	24	24	24	30	23
Irrigation pumps ^b	46	46	46	46	46	30	27

Note: Figures in parenthesis are tariff rates.

^a Percentage difference between ex-warehouse price and CIF import unit value multiplied by 1.15 to adjust for transport cost. Average implicit tariff for fertilizer was estimated using the following weights: urea (.67), ammophos (.17), and mixed fertilizer (.16). These weights are based on the recently conducted nationwide survey of fertilizer use in rice by the AAPP project at the Department of Agriculture.

^b Based on book rates. Implicit tariff from 1960-1984 includes the import tariff and advance sales tax (10% and 25% mark-up). The advance sales tax was abolished in 1986 and hence the implicit tariff from 1985 onwards include only the tariff rate.

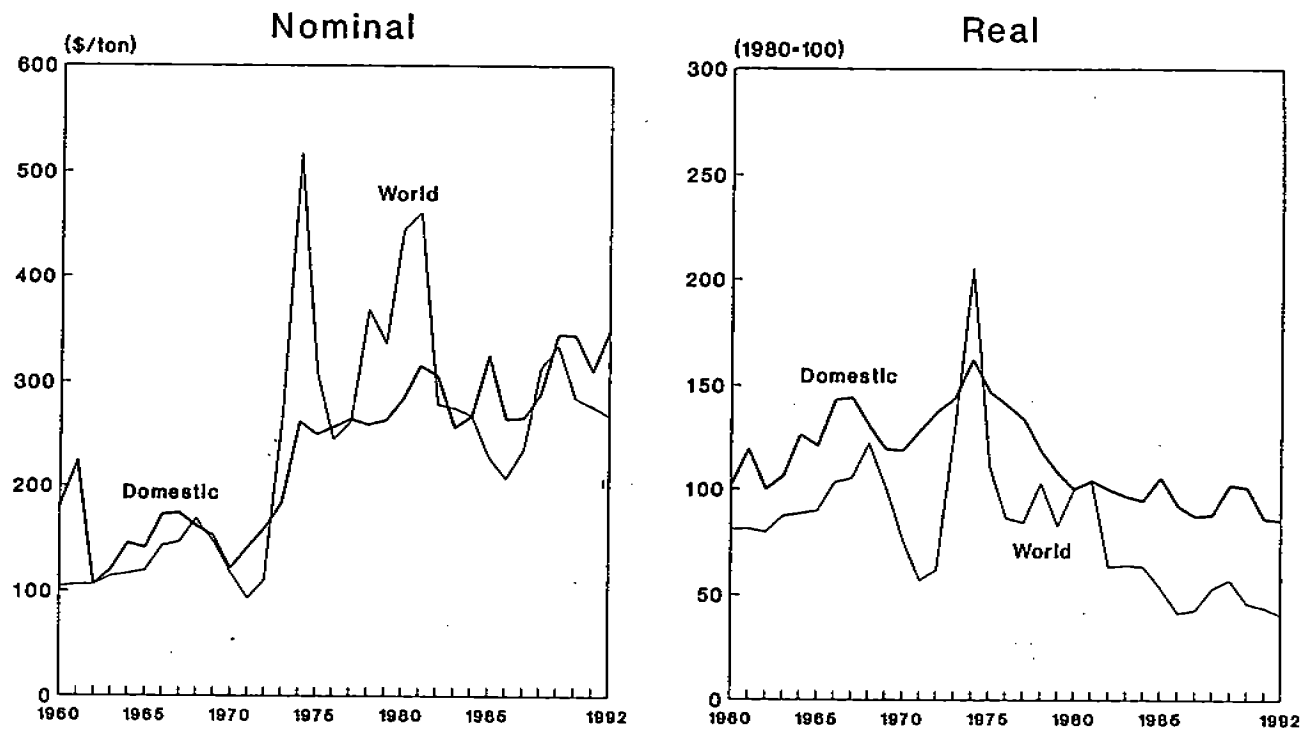


Fig.1a. Trends in nominal and real domestic and world price of rice, Philippines, 1960-1992.*

* Domestic price deflated by the implicit price of gross value added of manufacturing; world price by the manufacturing unit value index of the US.

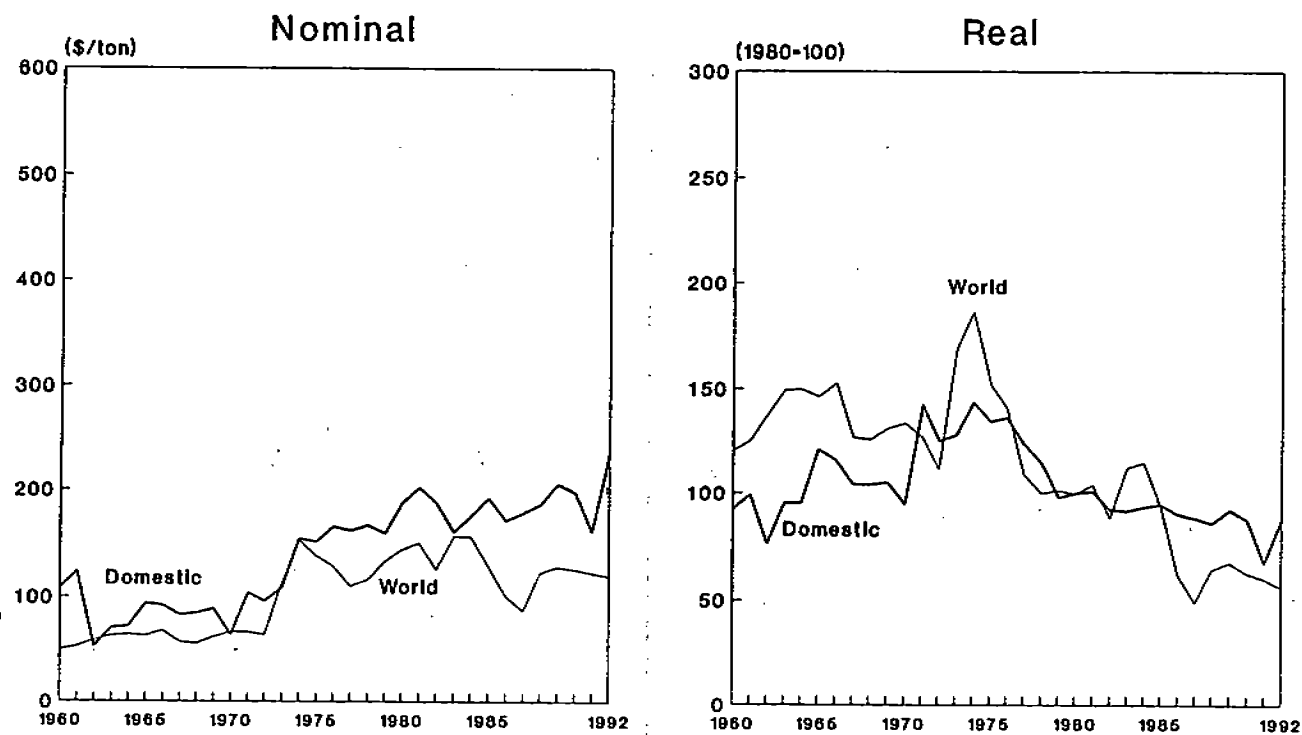


Fig.1b. Trends in nominal and real domestic and world price of corn, Philippines, 1960-1992.*

* Domestic price deflated by the implicit price of gross value added of manufacturing; world price by the manufacturing unit value index of the US.

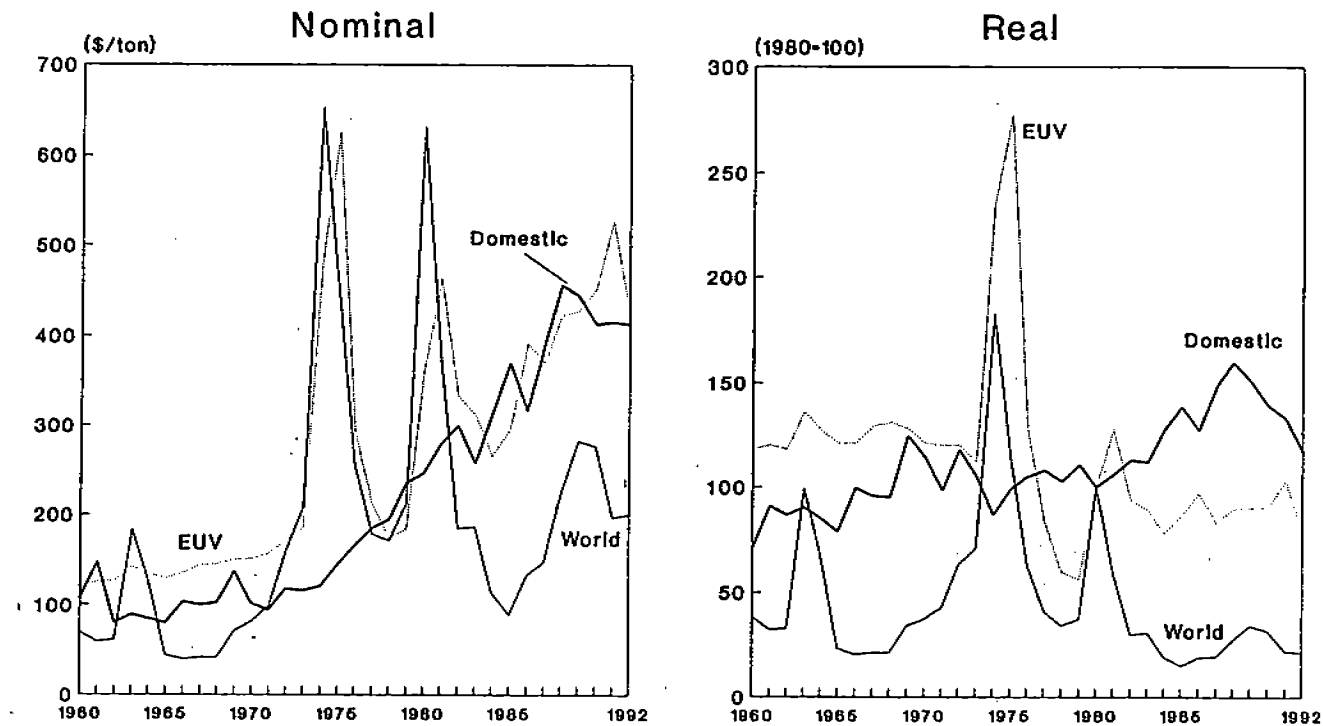


Fig.1c. Trends in nominal and real domestic price, world price, and export unit value (EUV) of centrifugal sugar, Philippines, 1960-1992.*

* Domestic price deflated by the implicit price of gross value added of manufacturing; world price and EUV by the manufacturing unit value index of the US.

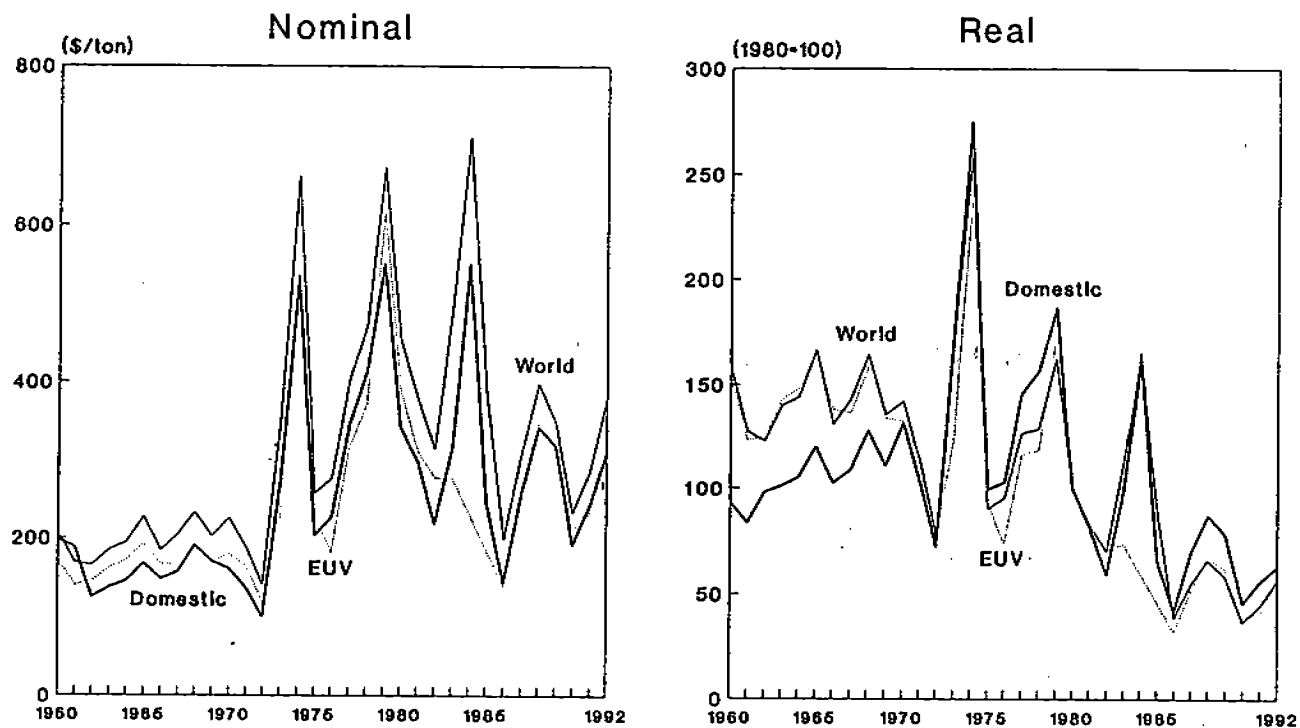


Fig.1d. Trends in nominal and real domestic price, world price, and export unit value (EUV) of copra, Philippines, 1960-1992.*

* Domestic price deflated by the implicit price of gross value added of manufacturing; world price and EUV by the manufacturing unit value index of the US.

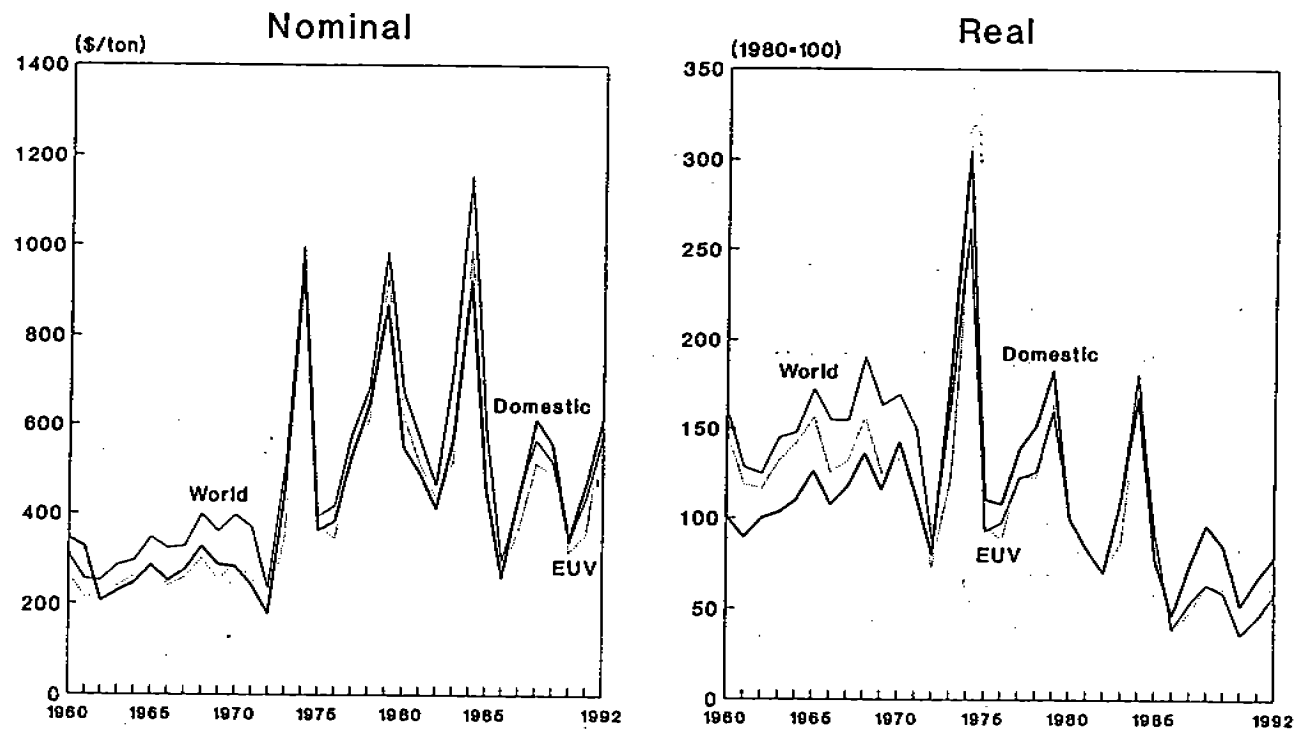


Fig.1e. Trends in nominal and real domestic price, world price, and export unit value (EUV) of coconut oil, Philippines, 1960-1992.*

* Domestic price deflated by the implicit price of gross value added of manufacturing; world price and EUV by the manufacturing unit value index of the US.

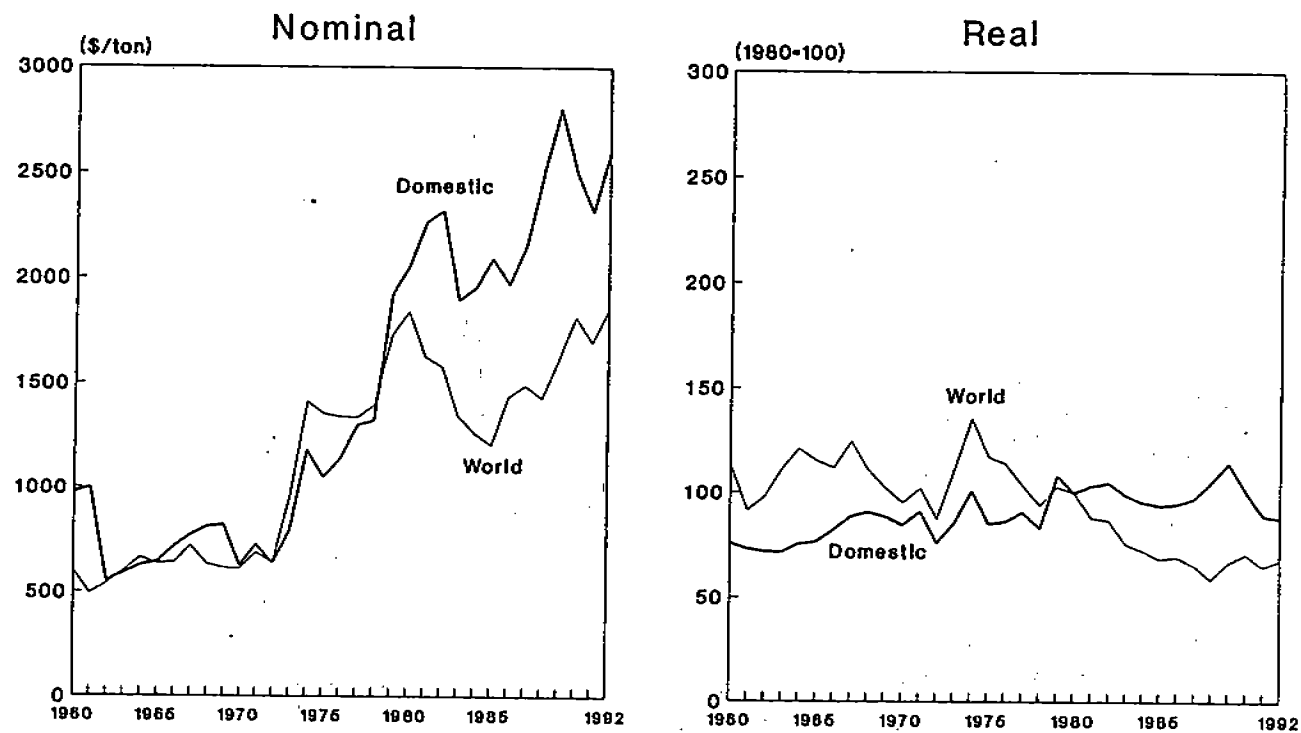


Fig.1f. Trends in nominal and real domestic and world price of pork, Philippines, 1960-1992*.

* Domestic price deflated by the implicit price of gross value added of manufacturing; world price by the manufacturing unit value index of the US.

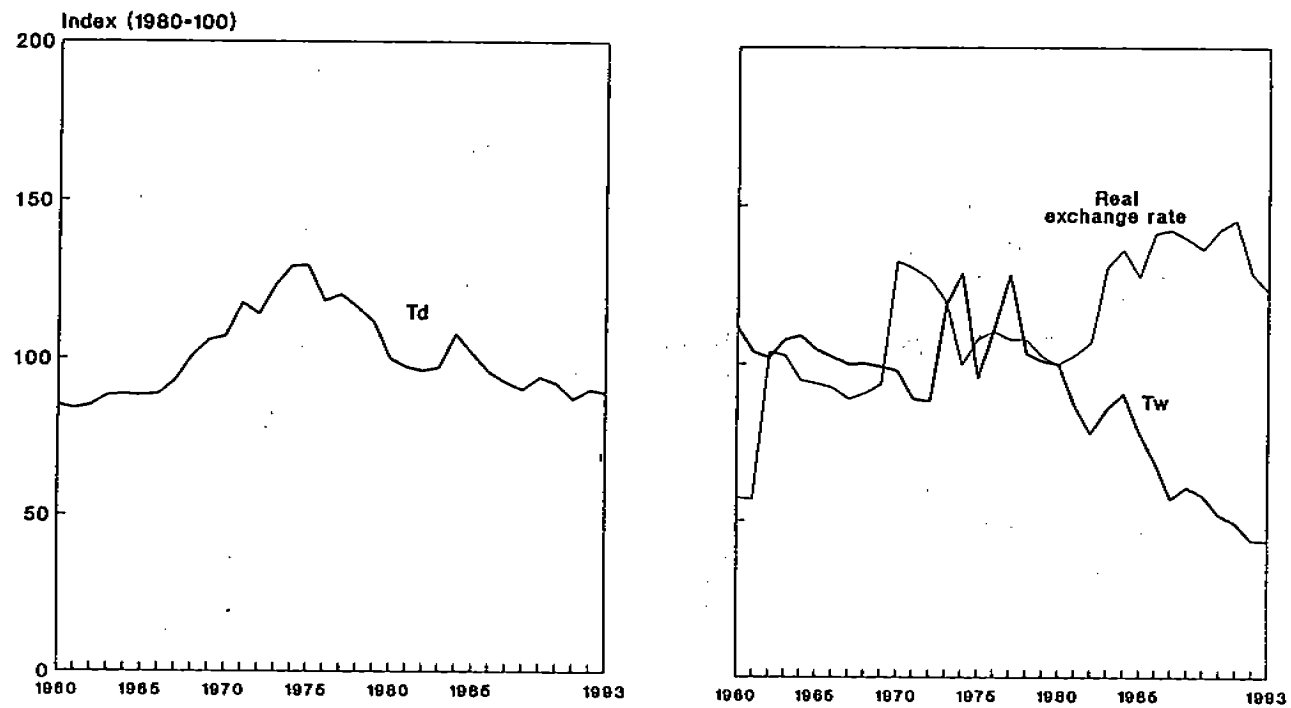


Fig.2. Trends in the real exchange rate and world (Tw), and domestic (Td) agriculture/non-agriculture terms of trade, 1960-1993.

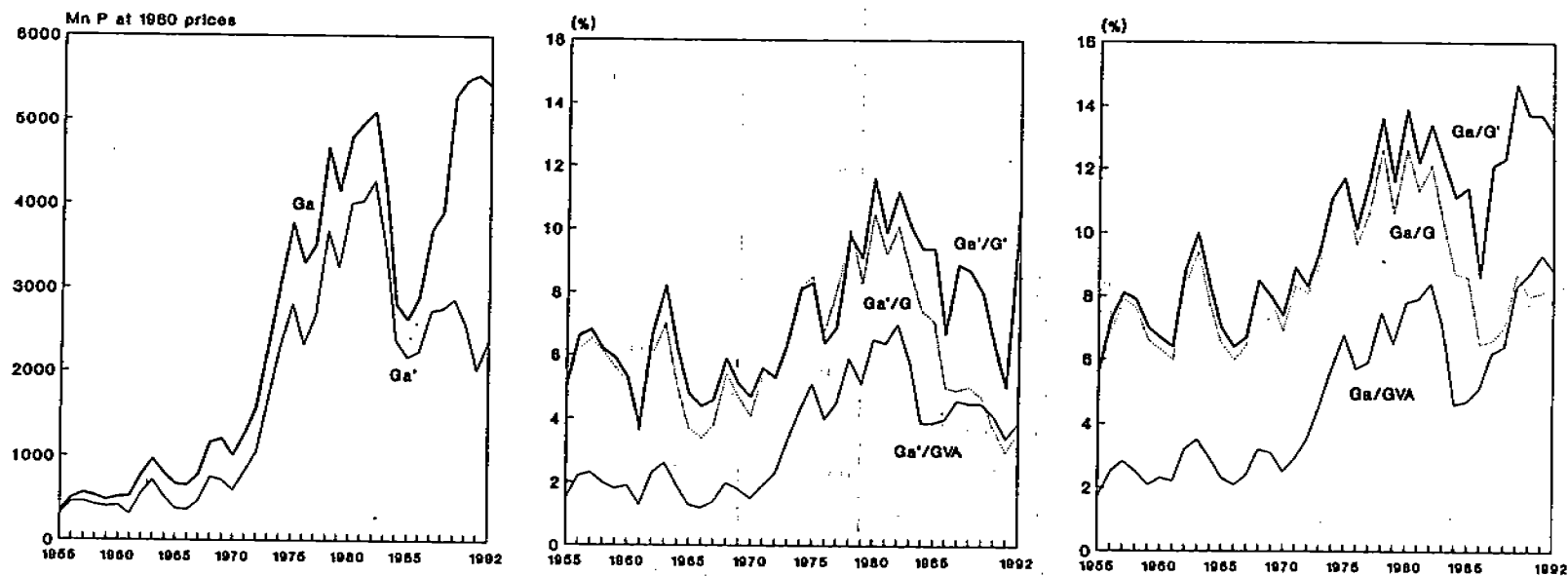


Fig. 3. Public expenditures in agriculture (G_a) as percent of gross value added in agriculture (GVA) and total expenditures including and excluding cost of debt service (G and G').

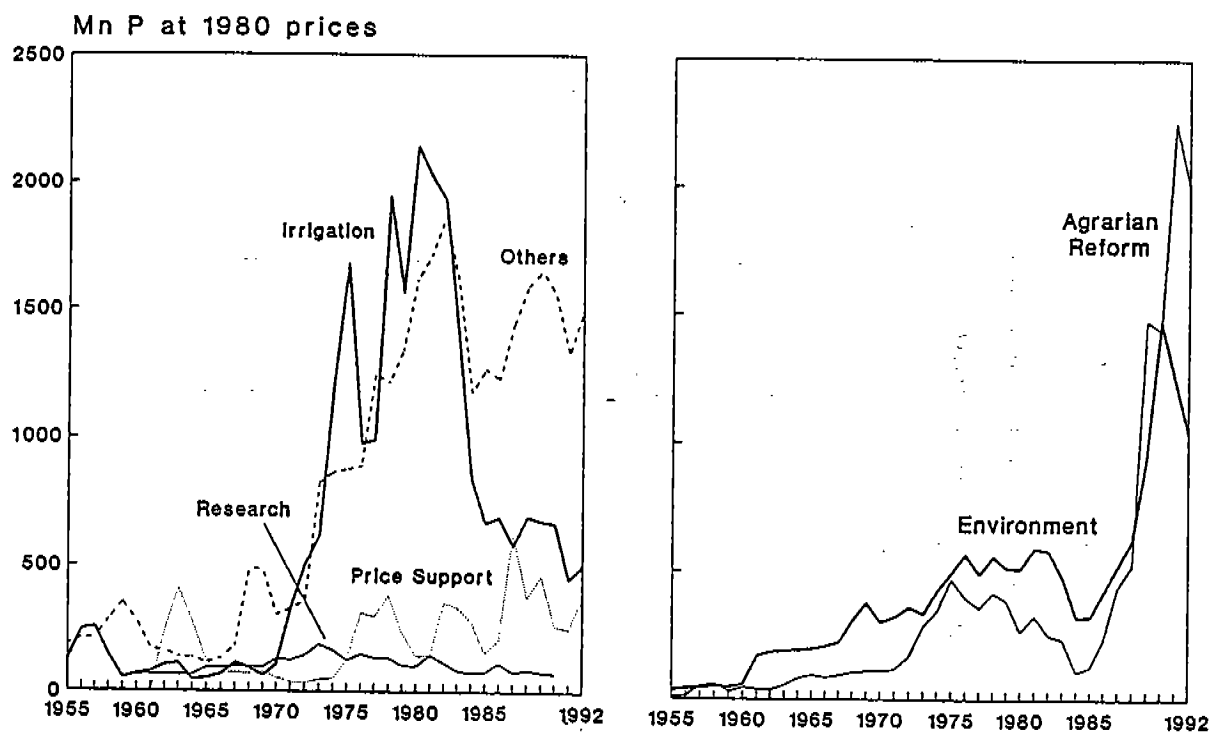


Fig. 4. Trends in public expenditures in agriculture by policy instrument, 1955-1992.

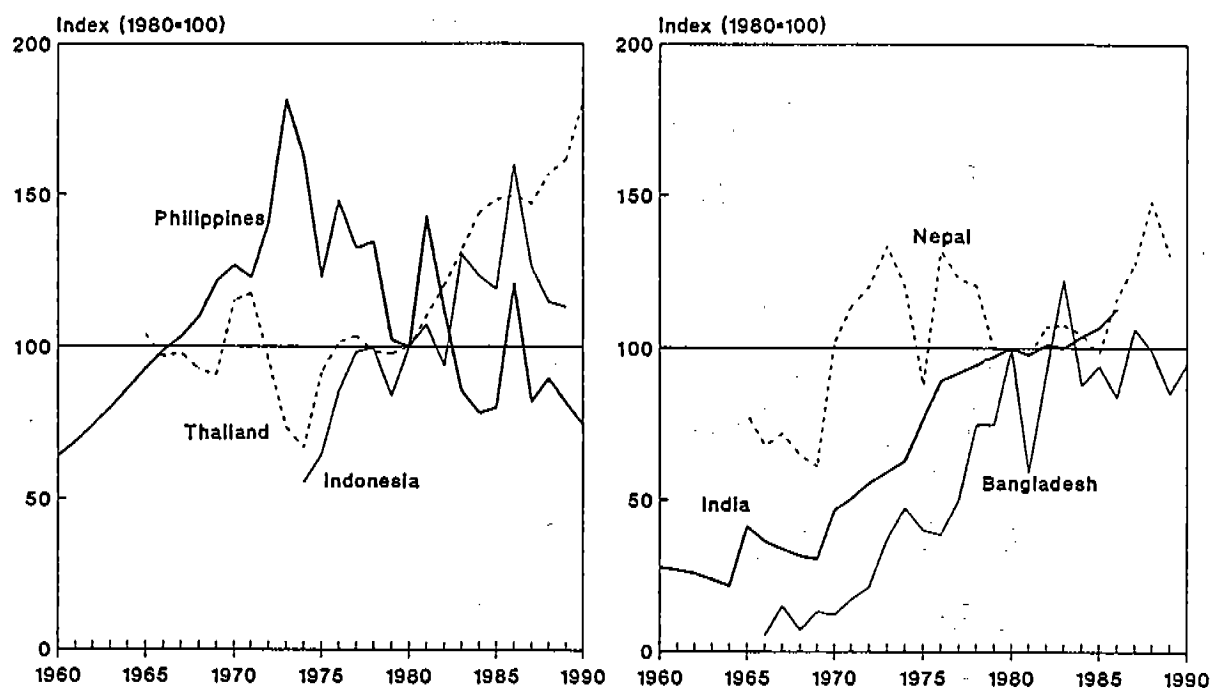


Fig 5a. Trends in agricultural research expenditures in real terms

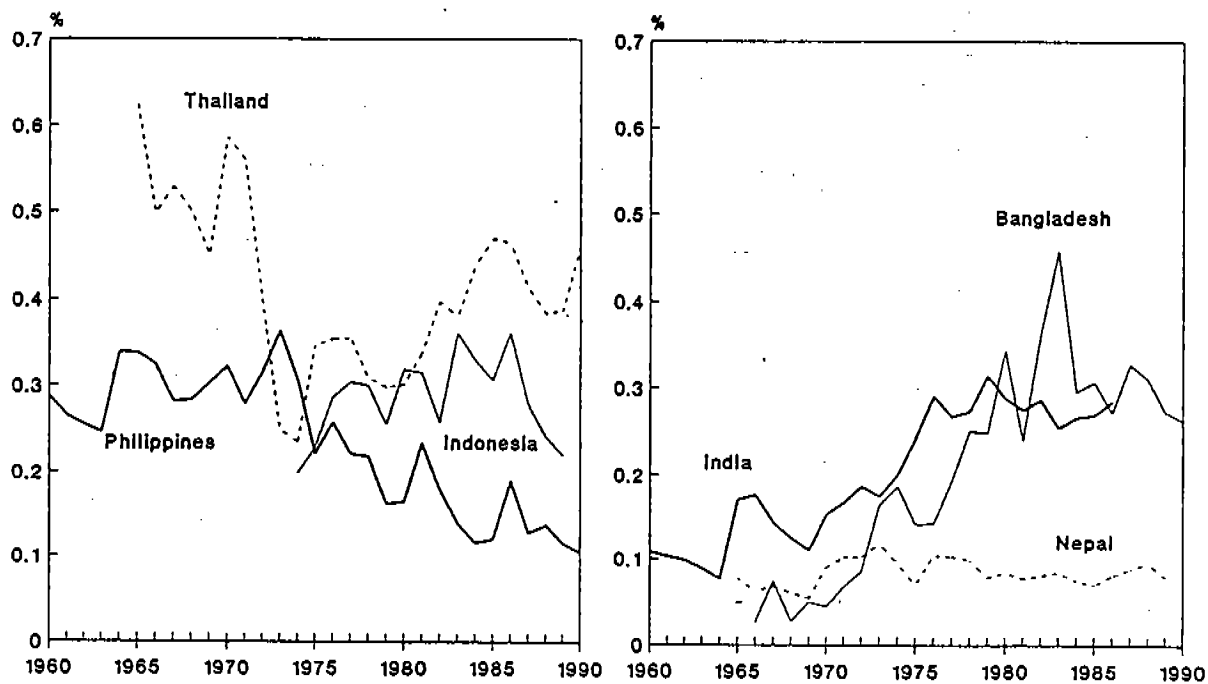


Fig 5b. Trends in agricultural research intensity ratios (% of agricultural research expenditures to gross value added in agriculture)

Source: Evenson, R. and C.C. David, 1993