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"Private Vices by the dexterous Management of a skilful
Politician may be turned into **Publick** Benefits."

The Fable of the Bees
Bernard Mandeville (1670-1733)

I. Introduction

Much of the debate on the role of agriculture in economic development centers on whether agriculture should be taxed or subsidized. The classical prescription for economic development is investment in industrial modernization financed by an agricultural surplus. Proponents of agricultural development have cautioned, however, that squeezing the agricultural sector will stifle the engine of growth and lead to economic stagnation (e.g., Johnston and Mellor, 1961; Krishna, 1967). Instead, they have advocated the opposite policy of stimulating agricultural development through investment and subsidies to the agricultural sector.

The 1980s witnessed a widespread recognition that either taxing or subsidizing agriculture wastes resources and reduces the incentives for investment (see e.g. World *Development* Report, 1983 and 1987). This leads to the conundrum that motivates the present paper: how can agricultural development be stimulated without distorting the incentives for efficient resource allocation and investment?

Section II below provides an approach which simultaneously promotes efficiency and agricultural growth by removing the barriers to specialization and trade. Section III provides an illustration of these principles in the context of impediments to agricultural development in the Philippines. Section IV develops principles for

efficiency-enhancing investment and section V summarizes the policy guidelines.

II. Must farmers be martyred for economic development?

In much of the literature concerning the role of agriculture in economic development, the welfare of farmers must be sacrificed for the progress of the larger economy. This literature goes back at least to Preobrazhensky (1926), who proposed that a socialist state could capture an investable agricultural surplus. Similarly, in the Fei-Ranis (1961) model, taxing traditional agriculture or subsidizing the modern, nonagricultural sector transfers labor from low to high productivity employment. Either way, farmers are sacrificed.

Even investing directly in agriculture stimulates economic development at the expense of farmers. Stimulating agricultural output lowers food prices and the real wage and simultaneously increases incomes available for nonagricultural goods. Agricultural investment thus provides both supply and demand stimuli to the modern sector but penalizes farmers with lower prices. Farmers can be compensated for lower prices by government subsidies directed at output and inputs such as fertilizer, pesticides, and seeds. But these programs distort economic incentives by driving wedges between consumer and producer prices and by increasing tax friction due to the need for additional government revenue.

A theory more supportive of farmer interests, and therefore more suitable for agricultural economists and public agricultural agencies, is one in which agricultural development proceeds without depressing the prices of agricultural goods. The keys to maintaining agricultural prices in the face of increased production are **good** agricultural markets and government policies that facilitate trade instead of regulating and distorting it. If domestic markets are well integrated and **international** trading opportunities left open, then the benefits of greater production can be passed back to **farmers** as well as agricultural workers. Allowing farmers to appropriate the benefits of their increased productivity also preempts farmer-led political pressure for import controls that would otherwise penalize consumers. Rural financial markets are also important so that farmer savings can be mobilized to fund investment.

It is also not usually recognized that agricultural marketing activities themselves are legitimate income and employment generating activities and that marketing services are an increasingly important part of economic growth as development proceeds. Under competitive conditions, the wedge between farm gate and retail prices represents the value added by product transformation over space, time, and form. Transportation, communication, storage, and agricultural processing facilities are all subject to economies-of-scale. This means that the per-unit prices of product transformation activities decline with development. However, the quantity of transformation services often increases by more than enough to offset the decline in **per-unit** price such that the value added by product transformation increases as a fraction of the retail price. For example, the per-kilometer cost of transporting a **ton** of rice may decline by 20 percent while the average distance that a ton of rice is transported increases by 30 percent, thus increasing marketing costs as a percent of retail price. Thus, increasing marketing margins are not *prima facie* evidence of inefficiency. They may be a reflection instead of the **rapid** growth of marketing services.

Given the importance of agricultural markets to the welfare of both farmers and consumers, the appropriate focal point of agricultural development strategy is agricultural traders. As traders

invest more in transportation, communication, storage, and processing facilities, the effective demand for farm goods increases and farmers' incomes rise. At the same time, the marketing industry itself becomes a new source of income and employment generation. Thus far from being the nemesis of farmers as he is so often portrayed by rent-seeking politicians, the trader is the farmer's best ally.

Tall tales of **trader** "profiteering," "hoarding," conspiratorial collusion and exploitation are **greatly** exaggerated. Profit-seeking serves the essential social function of directing investment in agricultural marketing to where it will do the most good. "Hoarding" is nothing more than private storage, and storage serves the socially useful function of "transporting" commodities over time from seasons of surplus to seasons of deficit. If storage were banned under fully enforced anti-hoarding laws, price fluctuations would greatly increase, and shortages in deficit periods would be much more acute.

Occasionally, traders in particular locations do manage to restrict competition and garner monopoly rents. This only happens, however, when government policy helps to restrict entry, **e.g.** by prosecuting unlicensed dealers. Justice requires that the force of government be used to allow free entry of traders. This is all that is required to limit profits of middlemen to whatever cost advantage they can maintain over the marginal traders. Sometimes when collusive cartel arrangements are investigated, it turns **out** that the police **and/or** other government officials are helping to enforce the cartel by harassing potential entrants. According to one story, trading at the Divisoria market in Manila is controlled by a cartel that pays the police to prevent potential competitors from unloading their trucks. It is not the "evil ways" of traders that must be attacked in these cases but the abuse of power by government. So long as commercial rights are vigorously maintained and freedom of entry is assured, private interests will be tuned to social good.

Government also has an important role to play in the maintenance of a legal environment conducive to the formation and maintenance of contractual relationships. This includes the **protection** of truth in labeling and the enforcement

of product liability law. The potential for adulterating agricultural chemicals and safety hazards **is often** used as a rationale for licensing agricultural suppliers. The licensing requirement, however, can easily become a barrier to entry and an invitation to graft. It is generally preferable to use the other instruments of the law to prosecute illegal trading practices.

III. High Return Areas for Public Investment in Philippine Agriculture

The key to efficiency-enhanced agricultural development is the support of the private agricultural marketing sector. This does not mean subsidizing existing agricultural traders, such as the alleged "rice cartel" in the Philippines, but increasing the productivity of the marketing industry. Three specific areas deserving of support are: 1) increasing competitiveness by removing government-imposed barriers to entry, 2) removing economic policies biased against agriculture, and 3) **improving** marketing infrastructure, especially communication and transportation.

Agricultural development in the Philippines is still strained by unnecessary biases against agriculture. There has been some progress in decreasing taxation of export-oriented agriculture (especially in the coconut sector), some dismantling of government-controlled marketing monopolies, and diminished tariff protection of manufactured import substitutes. Unfortunately, indirect controls on foreign exchange and **foreign-debt** financed deficit spending kept the exchange rate from being devalued sufficiently to confer expansionary benefits of trade liberalization to the export-oriented agricultural sector. Moreover, agriculture was also disadvantaged by a faster rate of liberalization which hurt the import-substituting parts of agriculture such as livestock. Finally, agriculture's share of public investment declined even further to less than one-fourth of what it would be if public investment were allocated according to agriculture's share in the economy's gross domestic product (for further details, see Clarete, 1989).

Getting agriculture moving in the Philippines will require improved telecommunication facilities. In Bangkok and even in Jakarta, private **traders**

are able to coordinate deliveries from **rural** areas to distant European ports. In filling a particular European order, the trader will know how much cargo space to reserve on a particular vessel and will communicate to his rural operatives what quantities should be purchased and what prices the rural operatives are authorized to cover. Reliable telecommunications are critical to these operations. In the Philippines, one cannot even rely on even getting through on the telephone to the province.

One of the constraints to developing better telecommunications in the Philippines is the granting of monopoly privileges to particular carriers. There is no compelling case for obstructing competition in the telecommunications industry. Sheltering inefficient suppliers from competition severely taxes the development of agriculture and the service industries and also leads to excessive concentration of development in Manila. The Department of Agriculture has a strong mandate on behalf of farmers and also for the promotion of food security to deregulate telecommunications in order to promote agricultural marketing. If general deregulation is impossible, then limited deregulation may be arranged for the benefit of agricultural marketing centers. For example, **satellite** communications facilities could be explored to provide limited telephone, FAX, and computer linkages specializing in the communication of agricultural information, orders and contracts.

Another primary area for public investment in support of agricultural development is transportation infrastructure. Since the Department of Agriculture does not have primary responsibility for road development, their role should be one of advocacy through the Department of Public Works and other parts of the government. The Department of Agriculture can play a potentially influential role of advocacy by allying itself with other parts of the government with an interest in road development. For example, developing the road along the Western side of Bukidnon to Cagayan de Oro City would be very valuable to the military in helping to improve the peace and order situation and would also provide a market outlet for exporting the surplus from the rich corn area of Bukidnon.

Irrigation is another appropriate way for **gov-**

ernment to support the infrastructure of agricultural development. Irrigation investment has fallen dramatically worldwide, partly in response to lower prices of rice and other grains. The declining investment is reflected in World Bank lending for irrigation. The largest drop in the relative importance of irrigation lending by the World Bank has been in Southeast Asia. Irrigation lending in 1986-87 was 80 percent lower than in 1977-79 and fell from 22 percent of total lending to 7 percent over the same period (Levinc et al., 1988).

The Philippines has also been underinvesting in irrigation during the same period. Even using low projected long-run prices based on the low prevailing rice price in 1985-1986, Rosegrant et al. (1987) found that new construction would be economically viable in many cases. Moreover, in its irrigation investment plan for 1987-2000, NIA called for a dramatic reduction in irrigation investment. At the same time, however, target areas for rehabilitation were increased by 13 percent. This shift in priorities is not justified by estimated rates of return. Rosegrant et al. find only very modest rates of return to both rehabilitation and rotational irrigation.

Studies of rate of return estimates of new irrigation systems, rehabilitation and intensified water management, show that the performance of irrigation investment varies considerably across projects, with a preponderance of low rates of return. The implication is that there are large potential gains from improved management at all levels of project design and implementation, including site selection, engineering design, water distribution, system maintenance and cost recovery. While communal systems in general have a better record for controlling cost overruns and providing for sustainability, the "bottom-up" approach does not provide a complete answer. More efficient management will require greater devolution of responsibility in design, construction, operation and maintenance of irrigation systems. The National Irrigation Authority should specialize in providing technical assistance to local governments, farmer organizations and private developers. Subsidies for irrigation, above cost recovery from direct beneficiaries, should be based on the relative magnitude of indirect benefits and should be coordinated through the Ministry of

Finance.

It is often noted that the highest rates of return to public investment in agriculture lie in the area of agricultural research. Cross-country studies report rates of return to agricultural research of 40% and higher. While high rates of return imply a general pattern of underinvestment across countries, the rate of investment in agricultural research is even lower in the Philippines than in other countries. In a study of South and Southeast Asian countries, Pray and Ruttan (1985) found that the Philippine invested only .16 percent of its agricultural product in agricultural research, the lowest of all countries reviewed, including Indonesia, Thailand, India, Pakistan, and Bangladesh.

At the same time, reviews of the research and extension programs in the Philippines suggest substantial inefficiency in the composition of spending and in the generation of notable results. First, the allocation of research and extension expenditures is inordinately biased in the direction of extension, especially given the paucity of environmentally appropriate and economically viable products of agricultural research. Second, the allocation of research expenditures has been biased towards import-substituting products such as cotton, tobacco, and poultry and away from export products including sugar, pineapples, bananas, citrus, fruits, and coffee (David, 1983). Third, research expenditures have sometimes been spent on the development of research facilities and procurement of equipment without commensurate attention to performance-based management of research. While there is awareness of these problems within the Department of Agriculture, much of the action appears to be concentrated on organization building, priority setting, planning, surveying, program reviewing, and constructing acronyms ("FARMERS WELFARE"). Mechanisms are needed to channel available funds on the basis of research results with a demonstrable economic benefit to farmers, agricultural workers, and consumers. This may mean greater emphasis on supporting agricultural research in the private sector and less emphasis on centralized planning of research.

Considered together, investment in agricultural research and infrastructure provides a clear picture of what is wrong with public support of agricultural

development. On the one hand, there is a **strong prima facie case that investment** in each of the arenas is critical for agricultural growth and **appropriate for public sector support**. On the other hand, there is some evidence that existing investments in roads, irrigation, and research have not been well-managed in the past. There is need for more investment in research irrigation facilities so as to increase productive capacity and **communication and transportation facilities** so that **farmers will utilize** the additional capacity and benefit from it. At the same time, it is critical that these investments be well-managed so that the **potential returns are realized**.

Similar care must be taken to avoid **central planning of agribusiness development**. Government development agencies everywhere succumb to the temptation to "pick the winner," i.e. establish priorities among alternative industries to target for rapid growth, and then subsidize the governmental favorite. This approach presumes that government can "lead" development much as the Development of Agriculture's LEAD program is designed to lead **agribusiness**. But progressive economic development is the result of evolution, not central design. Government can, however, facilitate the growth of **agribusiness** by creating an environment that is supportive of many diverse enterprises and by maintaining the competitive forces that promote the natural selection of those enterprises that employ resources in their highest and best use.

The most important priority for improving the productivity of **Philippine agriculture** is to improve the **legal infrastructure** and the general commercial environment to enhance the ability of entrepreneurs to negotiate and to execute agreements without interference. The current business climate is replete with interference with transportation (e.g. military and dissident checkpoints) and a plethora of government regulations involving, for example, foreign trade, labor and land use, credit environmental impacts, and the use of natural resources. These regulations can be easily used as vehicles for political patronage and can pervert freedom of exchange into an environment where commercial entrepreneurship is an ill-bought privilege.

In the public sector, the great need is not so

much setting priorities among competing proposals as establishing mechanisms of public administration so that private interests are directed to public benefits. This requires going beyond the sloganeering of "privatization" and "decentralization." Privatization without competition and free entry will just convert public waste into private inefficiency. Similarly, decentralization is not a panacea, if local governments are accessing central funding subsidized through foreign assistance. Sound public administration requires that project beneficiaries be given some control over project design and operation, that they be responsible for financial viability, and that subsidies be given only in accordance with indirect benefits not captured by primary users (Roumasset, 1989).

IV. Investment Priorities, Selection Criteria, and Management Principles

Leaving measurement problems aside, the best method of selecting priorities among alternative agricultural investments is benefit-cost analysis. Benefit-cost analysis is a method of estimating the increase in the value of production induced by a particular vector of government expenditures. The basic method involves evaluating the induced changes in the vector of outputs through the use of shadow prices. Shadow prices of outputs measure the value of other goods forgone in order to produce an extra unit of a particular product. Shadow prices of inputs measure the value of output of other goods forgone by diverting a unit of a resource into the government enterprise. Due to inevitable distortions in the economy, resources diverted into government projects may be worth more or less than their market value — hence the term "shadow price."

For a fixed allowance for current expenditures, that set of projects can be found that maximizes the sum of present values subject to the constraint that the expenditure allowance is not exceeded. An alternative algorithm involves ranking projects by their internal rates-of-return (i.e. the discount rate such that the present value of a project is zero) and going down the list of ranked projects until the expenditure allowance is exhausted. This approach is theoretically inferior to the present value criterion and has no particular

advantages to commend it.

An important practical issue in applying benefit-cost analysis is adopting safeguards to limit the overestimation of project benefits and underestimation of project costs. Irrigation projects, for example, are notorious for both types of error. Command areas typically **turn** out to be much less than were prescribed, water delivery is unreliable, actual yield increases are smaller than those projected, and the systems depreciate faster than expected. Moreover, construction often is more expensive and takes longer than forecast. Output prices are also often forecast based on a sequence of past prices that is especially favorable to high estimates of future prices. Other pitfalls to avoid are the application of regional product multipliers (without a proper accounting of costs incurred in increasing the production of related goods and services) and low estimates of the shadow price of labor justified by the apparent underemployment of unskilled labor. These pitfalls are best avoided by training programs that stress not only techniques of measurement but the meaning of project evaluation.

In the face of apparently multiple objectives and measurement difficulties, many government agencies are replacing benefit-cost analysis with Delphi methods of project evaluation. The Delphi method is little more than a glorified popularity contest. Subjective methods are used to establish criteria, to weigh the criteria, and to assess the extent to which projects achieve the criteria. Even though the criteria may be interrelated (e.g. the generation of income, employment, and foreign exchange), the method does not contain a disciplined way of inserting the structural relationships into the problem. Thus evaluators may make implicit assumptions about the consequences of projects that are either inconsistent or defunct and there is **no** corrective mechanism in the evaluation technique to correct such errors or to accord them less weight.

In contrast, benefit-cost analysis contains a built-in theoretical structure about interrelationships in an economic system that provides consistency in the way various consequences of projects are estimated. It should be noted, however, that benefit-cost analysis was not originally intended, nor is it well suited, as an instrument of

central planning. Benefit-cost analysis was first used in the **U.S.** during the 1930s as a tool to *screen* out inefficient projects. If discounted benefits are less than costs, **i.e.** if the project's present value is negative, then diverting resources from the private sector will obstruct the allocation of resources to their highest and best use and decrease real national income.

In the case of resources being provided to the Philippines on a subsidized basis, costs should reflect opportunities forgone to the national economy. If the subsidized funds can be transferred to the private sector, even subsidized resources should be reckoned at their full opportunity costs. Only if the subsidized resources are constrained to particular forms of public investment is there reason to calculate costs **on** the basis that the resources will be unavailable if not expended in those particular uses. In these cases foreign-assisted projects should place increased weight on employment and payments to low and **middle**-income producers, not so much on the grounds of income distribution but to decrease rent-seeking and "repatriation" of project income into private financial accounts abroad.

Given the propensity of project present values to be overestimated, benefit-cost analysis, while appropriate for screening out inefficient projects, should not be regarded as a sufficient criterion for project approval. The management and incentive structure of the project should also be assessed. An effective way to avoid incentives that promote rent-seeking is to finance a large proportion of project costs from direct beneficiaries. If this is not feasible then other criteria are needed to evaluate the incentive structure proposed for effective management.

Another crucial criterion for the evaluation of public investment in agriculture is whether or not a strong case has been made that the government has a comparative advantage in serving the proposed capacity. The investment areas discussed above, including appropriate agricultural research and marketing infrastructure, can be clearly justified as **areas** wherein the government has an important role to play.

Many of the agricultural investment projects currently being proposed at the provincial and regional level, however, do not carry with them a

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clear rationale for public subsidies. For example, the International Development Cooperation Coordinating Office presently receives many requests for warehouses, cold storage, ice plants, and ports. All of these facilities are susceptible to control by local politicians for private gain. Under the **Marcos** administration, it was widely circulated that public warehouses were being rented out by public officials to private traders. The current clamor for storage facilities by local politicians may be partly due to the temptation to use these facilities in a similar fashion. There is no general rationale for public ownership of storage facilities. Government's role should be limited to providing technical assistance in the design and management of such facilities. In the case of ports, special care needs to be taken to insure that access to port facilities is allocated without prejudice and privilege. Users should be charged in accordance with the marginal cost of using the port facilities, inclusive of "congestion costs" (i.e. recognizing that marginal costs rise rapidly as the maximum capacity of the port facilities is approached.)

V. Policy Guidelines: A Summary

Agriculturally-led growth can be sustained by strategies that benefit farmers and which enhance efficiency generally. This can be done by improving the productivity of agricultural marketing in promoting specialization and exchange. A three-pronged strategy for increasing productivity of agricultural marketing is to: **1)** increase competitiveness, **2) reform** economic policies that are biased against agriculture, and **3)** promote efficient public investments in marketing infrastructure and in agricultural productivity itself.

The first criterion for the approval of proposed public investments in agriculture is whether or not the implied role of government is appropriate. In general, government coordination and facilitation of agricultural infrastructure is an important priority. Reliable communication is probably the most constraining bottleneck, followed by **transportation**, then by agricultural research infrastructure and then by irrigation and other infrastructure.

The second criterion regards sound project

management. Only projects which have been classified as being potentially sound on the first two criteria should be subject to a third criterion regarding economic feasibility. Unfortunately, this third criterion receives primary attention in both theory and practice.

Delphi-type methods of selecting projects may be little more than aggregated opinions thinly veiled as objectively rational planning. **Benefit-cost** analysis is logically sound but is easily manipulated in practice. In addition to a project selection screen, the project proposal should contain a clear and conceptually sound rationale for government support and a convincing case that the project objectives are congruent with the mission and general priorities of the Department of Agriculture. Perhaps most important, a solid case needs to be made that the project will be well managed.

Evaluation of a project management and administration plan should not be based on an assessment of the quality of the prospective managerial personnel but on the incentive structure and safeguards against rent-seeking abuses. Where direct beneficiaries of **the** project can be identified, as in e.g. irrigation projects, then they should be responsible for a substantial proportion of project costs. This will create a political voice for project efficiency and will promote participation in the operation and maintenance of the project. Where cost recovery from project beneficiaries is not administratively feasible, other **efficiency-maintaining** institutions can be adopted. Windfall profits taxes can be assessed on producers that benefit indirectly from government expenditures (e.g. rice millers that benefit from irrigation projects). Surcharges on property and other taxes can be assessed on a regional basis in accordance with benefits of public expenditures and earmarked for specific uses.

In summary, that which should be done under the auspices of central government is that in which the government has a comparative advantage and can execute well. Projects that are likely to increase private production and exchange should be explored further. Projects that substitute public control for private entrepreneurship (e.g. public marketing and storage facilities) **and** those that are thinly disguised programs of political

patronage should be discouraged. Economic feasibility should not be regarded as a sufficient condition for public sponsorship but merely as a screening device to cull projects that would divert resources from private employment into inefficient public enterprises.

Finally, a healthy skepticism should be maintained towards project that fail the test of economic feasibility but which are advocated nonetheless on the grounds of "poverty alleviation." One of the lessons of the East Asian success story is that the best enemy of poverty is economic opportunity. Agricultural growth has long been considered a centerpiece of "growth with equity." Increased agricultural production increases the welfare of workers both by increasing the demand for their services **and** by increasing the supply of the primary wage good (food). Increasing the productivity of agriculture also contributes to the reduction of temporary poverty by enhancing food security. Agricultural production generates income providing workers with the ability to purchase food and simultaneously helps to insulate poverty-prone regions from prohibitive prices in times of national food storage. In addition to the maintenance of free exchange (absence of mercantilistic privilege) and the promotion of agricultural development, the government can also foster enhanced opportunities and higher levels-of-living among lower income groups by programs that improve education and health. It is not necessary to justify such programs on extra-efficiency grounds. Education and health are part of the basic infrastructure of progress and are fully within the economic mandate for "public works and institutions."

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