

1992 TDRI Year-End Conference on
Thailand's Economic Structure: Towards Balanced Development?

**Between the Farmer and the State:
Towards a Policy Analysis of the
Role of Agribusiness in Thai Agriculture**

The 1992 Year-End Conference

***THAILAND'S ECONOMIC STRUCTURE:
TOWARDS BALANCED DEVELOPMENT?***

Background Report

**Between the Farmer and the State:
Towards a Policy Analysis of the Role
of Agribusiness in Thai Agriculture**

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Between the Farmer and the State: Towards a Policy Analysis of the Role of Agribusiness in Thai Agriculture*

1. INTRODUCTION AND SUMMARY OF THE ARGUMENTS

Thai agriculture has been at a crossroads for about a decade. It cannot rely on the two primary factors that supported its growth in the past, namely surplus land and healthy, stable markets abroad for its commodities. This fact has provoked leading policy makers to rethink Thailand's agricultural development prospects and design new strategies for maintaining comparative advantage over the coming decade. One strategy that has gained great currency among officials is to expand the role of large agribusiness firms in the agricultural sector. A perception has emerged that Thailand is losing its comparative advantage in staple food crops, and that future success in agriculture will depend on private firms to create more value added and innovate technologies in new and more sophisticated commodities. Promotional incentives for large firms are cited as one means to meet these objectives.

The following paper explores the policy implications of this agribusiness promotion strategy. As a pedagogical device, a framework is developed for assessing the appropriate role of agribusiness. The framework is based on evidence garnered from both development theory and concrete experiences in Thailand and other less-developed countries (LDCs).

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On the basis of that analysis, the paper offers two sets of arguments regarding the role of agribusiness in new policy initiatives. First, a strategy of blanket promotions for agribusiness overlooks critical differences in the characteristics of individual commodities. A promotional policy must recognize biogenetic and technological differences among crops, livestock, and aquaculture, and also within these categories. The current inclination to classify commodities as "winners" and "losers" distracts from sound analysis of policy issues at hand. Lack of uniformity among commodities should not be construed in terms of some innate comparative advantage or disadvantage. Differences, rather, lie in biological and genetic traits. These traits suggest "appropriate" roles for public and private actors, and these roles will vary from one commodity to the next. Appreciation of this fact yields a more delicate policy choice set than the bold picking of winners and losers suggests.

The paper argues secondly that preoccupation with agribusiness as a "panacea" may distract from glaring deficiencies in the public sector's own performance. At issue is not the comparative advantage of the agricultural sector, but rather *the comparative advantage of the state and its institutional capacities to intervene effectively in agriculture*. Theory and practice both suggest that the public sector has a role to play, notably in technological and institutional innovations. Though the government cannot plan agriculture, it cannot turn over all development functions to private firms. Instead, the government needs to plan incentives and inducements which are proven to be appropriate for the state to manage. The promotion of agribusiness alone is not enough to correct the policies and bureaucratic weaknesses that presently harness the innovation of incentives. Issues that demand public sector attention include biotechnology research and the reform of existing institutions, such as property rights laws and credit arrangements. Innovations in these areas may require the state to reorganize many of its own practices, not simply rely on agribusiness as a panacea.

The paper unfolds in four remaining parts. Section 2 summarizes trends in Thai agriculture and outlines the substance and assumptions of the commercialization strategy. Section 3, by way of theoretical review, suggests the challenges relevant to the agricultural sector and offers a framework for policy analysis with which to approach the agenda. The fourth section identifies specific policy issues involving agribusiness and scrutinizes the privatization strategy based on past performance and the policy framework advanced in section 3. The conclusion follows.

2. OVERVIEW OF POLICY AND AGRICULTURAL DEVELOPMENT

2.1 Two Waves of Agricultural Diversification

During the 1950s, 60s, and 70s, surplus land and demand for food exports encouraged Thailand's "first wave" of diversification out of rice and rubber. Farmers expanded production of upland field crops, mostly cassava, kenaf, maize, and sugar, and also mung beans and sorghum. Output in the traditional commodities rose as well (see table 1). Expansion was achieved largely through extensification, though large public investments in roads and primary irrigation projects supported steady growth in output. Modest improvements in yields were added to many of these crops, including rice, though yields declined measurably in cassava, sugarcane, and mung beans (Onchan 1990:15).

Table 1 **Structure and Growth of the Agricultural Sector, 1970-88**

(percent)

	Growth Rate 1970-78	Growth Rate 1981-88	Share in 1988
Paddy	2.1	0.9	27.8
Upland Field Crops	5.3	1.9	14.9
Rubber	6.2	9.5	9.0
Fruits	5.5	5.4	4.4
Vegetables	4.3	2.3	3.6
Garlic, Shallots, Pepper, Chilies	0.3	-1.8	2.4
Coconuts and Oil Palm	7.1	10.0	1.6
Pineapples and Watermelons	9.1	7.2	0.8
Cocoa, Coffee, and Tea	17.3	13.0	0.5
Orchids and Flowers	17.6	2.3	0.2
Others	2.5	-0.7	0.7
All Crops	3.9	2.7	66.0
Livestock	6.1	7.0	10.0
Fisheries	1.6	1.9	6.1
Forestry	-1.9	-0.9	3.8
Agricultural Services	2.7	-0.4	3.2
Simple Processing	5.5	6.3	10.9
All Agriculture	3.9	3.4	100.0

Source: Siamwalla 1991.

A second wave of diversification began in the late 1970s. This wave has been marked by a shift into oilseeds, horticulture, tree crops, livestock, and aquaculture. Economies of scale in processing are generally large, owing to advanced processing technologies. Higher value added can thus be achieved in the processing stage. Some of these commodities are import substitutes, and some become inputs for manufactured goods. Examples include fruits, vegetables, soybean, oil palm, fast-growing tree crops, dairy cattle, prawns, poultry, swine, and beef.

To support this shift into the second wave, the Board of Investment (BOI) revised its investment promotions Acts in 1972 and 1977 to promote capital-intensive processing on a broad scale. Among the first industries promoted by the Investment Act of 1972 were feedmilling and vegetable oils. When the Act was revised in 1977, BOI promotions were authorized for fish storage and canning, fruit and vegetable canning, oil palm crushing and refining, dairy farms, and poultry processing. Many of these industries promised high export earnings and fit well with the announced shift to export-oriented industrialization in the early 1980s. Others offered new user-industry linkages to small-scale agriculturalists.

One consequence of the second wave and the promotional privileges supporting it has been rapid growth in food industries. Crops and food manufacturing combined now account for just less than one-fourth of gross domestic product, or nearly one-half the non-service sector of the Thai economy. The prominence of these industries, Thailand's strong comparative advantage in agriculture, and the country's natural resource base have persuaded leading policy makers to appropriate the term "NAIC," or newly agro-industrialized country, to differentiate the development path of Thailand from that of other industrializing countries. Agribusiness, it is said, is an ingredient for NAIC-building.

2.2 Commercialization Strategy

It is widely regarded among policy makers that Thailand must succeed at completing the second wave of diversification if the country is to maintain its comparative advantage in agriculture, diversify farm incomes, and boost living standards among the rural poor. And there is a growing perception that Thailand is losing its comparative advantage in "first wave" staple crops because of resource constraints and competition from countries, such as Vietnam and Pakistan, that have lower production costs. To be sure, the demands of the second wave have not been lost on senior policy makers. Policy

makers concede that existing policies and practices may be inadequate to the tasks implied by the second wave. But there is debate over the specific means for achieving these tasks.

In general, NESDB planners and officials at the Agriculture and Commerce Ministries perceive the challenge as rooted in a shortage of commercialization in the countryside. Precisely what aspects of commercialization are in short supply is the subject of debate and controversy. One view was articulated as early as 1975 when it was perceived there was simply not enough commercial credit in the rural areas. In response, agricultural lending requirements were imposed on the commercial banks.

The apparent need for more commercialization has been expounded upon in a lengthy study by a former NESDB official and Minister of Agriculture and Cooperatives (Panpiemras 1991). Central to this contemporary view is the idea that large agribusiness firms can act as a cardinal tool for speeding commercialization and tackling the second wave of diversification. Agribusiness, rather than government or small agriculturalists, is the innovator, the lead entrepreneur. This view is related to a broader initiative known as the "Plan for Harmonizing Cooperation Among Four Groups," or Si Prasarn in Thai, which envisions close collaboration among farmers, private firms, the state (i.e. the Ministry of Agriculture and Cooperatives), and financial institutions (Panpiemras 1991:162-165).

At least three related arguments have been cited in support of this policy and the promotion of agribusiness. They are summarized briefly here and will be scrutinized below. First, large firms are, in theory, more equipped to mobilize long-term capital than farmers, middlemen, or small processors are. Many second wave commodities promise greater economies of scale than we find in some of the staple crops, such as rice, and long-term risk capital is required for commercial expansion in ventures such as tree crops, livestock, aquaculture, and fruit or vegetable plantations. Second, many of the second-wave commodities are more research-intensive than those of the first wave. Again in theory, large private firms can absorb research costs and relieve the strain on the public research apparatus implied by more sophisticated crops and biotechnologies.

And third, it is said that much modern technology and other inputs elude small-scale farmers and might even exceed their acumen and skill. Private firms are deemed to be more innovative than the government, and there is a wide space between the farmer and the state for firms to step in. Sub-contracting between firms and farmers will channel

inputs and credit to the farmer, disseminate new technologies, and make the farmer more productive. Underpinning this view is the notion that the market must be brought to the farmer and navigated hence by firms. In this respect, the relationship between firms and farmers takes the form of an expert endowing the apprentice with knowledge and skills.

2.3 Existing Policies

There has been no singular policy initiative ever implemented to realize these objectives. Instead these views represent a contemporary vision of various public agencies toward the agricultural sector.

Generally speaking, the most comprehensive articulation of the strategy is found in the NESDB's Sixth National Development Plan, which targeted the development of "agro-industry" as a solution to the income distribution gap between agriculturalists and urban manufacturers (NESDB 1987). Incremental measures both before and after the Sixth Plan have favored private firms and helped boost their profits in agricultural production and processing. And during 1991 the Ministry of Agriculture and Cooperatives, under the Anand I Cabinet, proposed that incentives be redesigned to promote large firms as a means to achieve the objectives outlined above.

Specifically, an expanded role for agribusiness generally involves one or several of the following. The most noteworthy policies are the BOI investment incentives, cited above, that were authorized during the 1970s. In addition, there have been sporadic episodes of BOI intrusions in agribusiness, for example the promotion of private eucalyptus plantations and large-scale shrimp farms since the mid-1980s.

Another critical policy is the Bank of Thailand's agricultural lending requirements (Siamwalla et.al. 1990). Commercial banks can fulfill a share of these requirements by lending money to agribusiness. A typical deal involves the provision of credit to an agribusiness conglomerate. A portion of the financing is in turn delivered to the farmer through contract-farming arrangements. These transfers are prevalent in poultry and swine and have been instrumental to the rapid growth of these industries since the mid-70s (Christensen 1993, Poapongsakorn 1985). Indeed, officials often have the success of poultry very much in mind when they laud the virtues of agribusiness. But neither the government nor the central bank has employed selective credit controls to guide the lending

requirements into strategic commodities. Investment coordination tasks have fallen on leading banks and firms who act in response to market opportunities and constraints.

Another form of credit that bears mention is the discounted credit policies of the Bank of Thailand. One form of credit is the short-term rediscounted bills extended to exporters, or "packing credits." Again, the central bank been both unwilling and unable to guide rediscounts into select commodities. In rice milling, however, rediscounts are allocated to commercial rice mills to subsidize miller stockpiling of rice. The rationale behind these credits is that they give the mills more bargaining leverage vis-a-vis the exporters, who are said to benefit already from packing credits. The stockpiling credits do not finance capital improvements by the mills and there is no follow-up by the central bank to monitor whether higher prices for milled rice are passed on to the farmer. It is therefore difficult to qualify these credits as consistent with the commercialization objectives outlined above.

Finally, there are occasional incidents where firms have been given (temporary) access to quality land or water resources which fall under the regulation of one of the many government agencies handling rural land allocation. In these instances firms have attempted projects ranging from cashew plantations to contract farms in rice and have received support or incentives in the form of nominal fees for leases on the land or free access to water.

3. TOWARDS A FRAMEWORK FOR POLICY ANALYSIS

3.1 The Burden of Proof

A policy that favors a greater role for agribusiness and policy promotions to facilitate that role should first make a sound case in support of such an initiative. Thus far the case has been made on the basis of the notion that the model devised in poultry, which involves contract-farming arrangements linking firms and small producers, is a good thing because it has enhanced agricultural productivity in a new commodity, introduced new technologies, and garnered export earnings. It is also said that "commercial farms," rather than small plots, would raise productivity and producer incomes in staple crops like rice, cassava, and maize (Panpiemras 1991:146-148). "Commercial farms" is a vaguely defined term in this sense and often refers to the large farms and contract-farming linkages that

dominate sugarcane production. We shall see below that these arrangements work in sugar because of certain technologies pertinent only to this commodity, a fact that limits the transferability of such a model to other staple crops (Siamwalla 1978).

But the real burden of proof for proponents of agribusiness promotions is to show that these would create *positive externalities*, which are the benefits of one individual's actions that spill over to others and accrue to the economy at large. Examples of goods that create these externalities include infrastructure such as roads and irrigation, or the new rice seed varieties introduced by the Green Revolution. Externalities, or "external economies" as they are known otherwise, present a dilemma because they involve "market failure," meaning the free market will be unable to generate them because they are difficult to price or because private entrepreneurs cannot capture the gains from the benefits they yield. The free market, in other words, cannot express demand for externalities. It becomes the job of far-sighted entrepreneurs and strategic policies to correct market failure and induce innovations that would yield net societal benefits.

This argument in favor of positive externalities is actually counter-intuitive to the logic which has driven economic policy in many of the NICs. There, governments often subsidized large firms in order to limit the spillover of net gains onto smaller producers. This was pursued to enable a small number of large business groups, mostly in the manufacturing sector, to develop rapidly and to gain modern technological capabilities. As we shall see below, such a strategy is problematic in the agricultural sector, because this sector is one in which small-scale producers dominate the landscape, especially in LDCs like Thailand. For Thailand's commercialization strategy to achieve its stated purposes, it must induce the spillover of net gains to the farmer at large, not simply allow the gains to accrue only to the firm.

Proponents of the agribusiness promotion policy therefore must show that positive externalities can be created better by firms than by government, by the incremental innovations of independent farmers, or by market forces generally. Proof of positive externalities involves the identification of relevant market failures which neither farmers nor the state would have incentive to correct, but which would be cured by the resources and innovations of large firms. If this can be shown, in theory and practice, it can be said that agribusiness has a crucial development function to perform. An argument could then be forged in favor of promotional incentives that would induce firms to fulfill that function.

Such an argument would also be supported by an outline of how the firms would be compensated for the externalities thus created and how the costs of compensation would be distributed. Promotional incentives, as one form of compensation, would help subsidize the creation of positive externalities. These supporting details, however, have largely eluded Thai policy proposals regarding the role of agribusiness. As section 4 will suggest, supporting details are lacking because the case for positive externalities, as voiced to date, has either been weak or has not been made on the basis of sound policy analysis.

3.2 Public-Private Roles: Agreement and Disagreement

The first step towards an analysis of market failures and appropriate public-private roles in the creation of net social benefits is to review what we know about the comparative advantage of private firms and government in the area of agricultural development. The record is based on both theory and the experiences of other LDCs.

A most important finding in the literature is that government has and will continue to have a very critical role to play in agriculture. The idea that more space is needed for private firms should not, therefore, gloss over the fact that there are many policy issues in which government has a comparative advantage.

There is widespread agreement that the most important areas in which government must have effective policies are physical and social infrastructure (roads, irrigation, human resources), biotechnology research, extension, the enforcement of grades and standards in traded commodities, and the provision of law and order to secure contracts and property rights (Timmer 1991; table 2). It is regarded that the Thai state has performed measurably well (until recently) in the provision of rural infrastructure, namely large-scale irrigation, roads, and primary education. It has performed less well in research and dissemination and the provision of rural property rights.

Table 2 Government Intervention: Agreement and Disagreement

Agreement	Disagreement
infrastructure; research research and extension; law enforcement; ensure grades and standards; provide rural property rights	marketing boards and direction trade; price subsidies; border price intervention; direct production and processing; land redistribution; privatization of "common pool" resources (e.g. forest, land, and water)

Sources: Stiglitz 1987 and Timmer 1991.

One of the motivations of Thailand's privatization impulse is that the public sector, in admission of its own limitations, would like private firms to become more active in biotechnology research and also in extension, as through arrangements such as contract farming. Owing to externalities issues, this may be appropriate in some commodities but not in all. Regarding law and property rights, the argument in favor of the state's role is that the state, in theory, possesses a comparative advantage in violence or law enforcement. As a violence monopoly the state ostensibly has the authority to enforce private ownership rights and exclude one person from another's claims to resources. Property rights refers to those political and legal arrangements governing rural land use, and also laws governing intellectual property and technological innovation, namely in the area of patenting.

There is widespread disagreement over whether government should intervene in other areas, including the marketing and exporting of commodities through government marketing boards; price subsidies; direct controls over the allocation of credit and foreign exchange; border pricing by way of taxes, tariffs, or surcharges; and the direct production and processing of commodities. There is also an emerging debate over the appropriate role of government in land tenure issues. One area involves the state's role in land reform and land allocation programs (Timmer 1991:15-16). Another is the issuance

of private land rights. In some instances, cooperation in the management of land and forest resources is found to be more effective under local community-based institutions (Wade 1987). Thus far, the Thai state, in particular the Royal Forestry Department (RFD), has looked on community forestry with a suspicious eye and has not sincerely evaluated this very real option.¹

The Thai state, like most LDC states, has intervened variously in all these areas of disagreement. Its interventions in most cases have been subject to widespread scrutiny and debate. Often these episodes of intervention have involved price distortions, waste of tax revenues, and high-level corruption. Hence the scrutiny. Examples of the more controversial and renowned interventions include rice export taxes; Commerce Ministry intervention in rice procurement and exporting; the Express Transit Organization (ETO), which has monopolized the transport of crops regulated by the Commerce Ministry; and the state pork slaughterhouse, the Sahasammakhi Livestock Trading Company, or LTC. In addition, the authorities have proposed recently to create a National Agricultural Council, or NAC, as part of the strategy to boost the role of large firms and implement the Si Prasarn idea. The NAC would oversee the actual planning of agricultural production, involving Ministry of Agriculture bureaucrats, agribusiness executives, and selected farmer representatives. Such planning has not worked in other contexts, as the experiences of former Communist countries have made abundantly clear, and it is one area that attracts widespread condemnation among development theorists.

Why Externalities are Relevant: The debate over the comparative advantage of the state versus that of private firms in these issue-areas centers precisely on the nature of the benefits generated by innovation. Here we must recognize that there are two types of benefits. First, there are external economies, or externalities. External economies yield *diffuse* benefits, meaning they create benefits which cannot be captured by the agent who invests in creating them. An example is the successful invention of a new technology by one farmer which may convey valuable information to her neighbors, thus giving the neighbors a positive externality or net gain. Such gains are often referred to as non-excludable. Some types of externalities can be made excludable by third-party

¹ This evaluation is based on numerous interviews by the author at Royal Forestry Department offices in Bangkok and Chiang Mai.

intervention, as when the state patents the discovery of the innovative farmer and thus requires her neighbors to pay for the benefits yielded by its application.

Second there are those benefits that private actors can *internalize*. These benefits are excludable, meaning that the agents who create them can exclude them from others and even sell them as a priced and tradeable commodity. An example in agriculture is hybrid seeds. Because farmers cannot keep their own hybrid seeds for use in the next planting season, owing to genetic deficiencies of hybrid offspring, they must return each season to the producer to obtain new seed. Firms that invest in hybrid research therefore have a natural lever of market control over their product. Once genetic stocks are built up by one firm they cannot be appropriated by another firm by any means short of outright robbery. Innovators are able to capture the returns on the innovation, insofar as the market can bear the price which must be charged to recover the investment in the innovation. Hybrid innovations in rice, for instance, are so expensive that the market has thus far prohibited private entrepreneurs from investing in them. The price firms would need to charge to cover their costs would be too high for farmers and consumers to bear. The benefits of private innovations are thus commodity-specific, a fact that calls for caution when advocating promotions for agribusiness.

The respective roles of public and private actors are related to these benefits. Research and extension in open-pollinated seeds like rice are not likely to attract the interest of private firms, and here the state must act. Farmers or firms are also not likely to build roads, bridges, or irrigation canals on their own unless a third party enforcer, such as the state, can intervene and confer ownership rights for these goods on the innovator and give the innovator the right to charge others for using them.

But sometimes the state can intervene in an "inappropriate" manner. An example is when firms are granted monopoly rights or subsidies in areas where the costs of their innovations or services are very high, or where the enforcement costs of excludability are high. Examples would include commodities in which innovations have very diffuse externalities but where rights are given to firms to try and internalize the gains thus yielded by innovations. Promotions in these areas have been central to a "picking winners" strategy in the manufacturing sectors of the NICs. But this strategy is oftentimes inappropriate in the agricultural sector.

An example is an attempt, some twelve years ago, by Chia Tai Seeds of the Charoen Pokphand Group to create contract-farming arrangements in rice. It introduced its special seeds, fertilizers, and pesticides to farmers who were obligated by contract to deliver their harvest to Chia Tai and share their profits with the firm. Farmers, however, would be the first to instruct that rice is one commodity that is not amenable to centralized management, much less to outright planning.

Chia Tai's experience quickly turned sour, much to the chagrin of the Ministry of Agriculture bureaucrats who authorized the project. The firm found that farmers sold many of the inputs to middlemen. The farmers also sold some of the harvest on the free market, in both instances shirking their contract obligations. The benefits of Chia Tai's inputs thus accrued to farmers who were not under contract with the firm, and Chia Tai was not able to capture the benefits of the high-quality crop thus yielded. The gains were diffuse in this case, not internalized. Upon computing the costs of enforcing excludability on farmers and traders, Chia Tai reasoned that the political repercussions of engaging the local law enforcement apparatus in the effort would be too great to bear.² Had obligations been enforced, however, this would have been an example of "forced contracts." Forced contracts are a delicate issue which requires careful consideration of appropriate roles for the state and private firms.

One lesson of the Chia Tai case is that a firm's willingness to initiate a project does not alone support the case for positive externalities or promotions and subsidies. Persuasive lobbying by firms for a larger role and/or promotions should not be mistaken as a sign of market feasibility.³ The Chia Tai case also suggests what the political costs may have been had the state enforced excludability (i.e. the contract obligations) on the firm's behalf. Farmers and traders would have been punished, in this case, for responding to market signals. Producer choice would clearly have been minimized, and farmers would have been coerced. The case suggests furthermore the dubiousness of any policy that advocates either planning or managing the production of open-pollinated crops, whether by way of firm promotion, or else by bureaucratic direction such as that envisioned in the

² Chia Tai scraps seeds project," *The Nation* December 18, 1982.

³ It is interesting to note that despite Chia Tai's failure in this project, the Agriculture Ministry provided the Charoen Pokphand Group (CP) yet another opportunity to create contract-farming arrangements in rice, starting in 1986. This time CP engaged in active management of farm labor by creating "teams" among which the tasks of planting, maintenance, and harvesting were divided. That project, too, failed.

NAC proposal. Such proposals should be subject to great scrutiny in view of the externalities specific to the commodity at hand, the distribution of economic costs and benefits, and the costs and benefits of third-party enforcement of contract obligations.

This points toward an additional issue that hazards concern, namely the competence and quality of government intervention. Areas in which market forces alone cannot price externalities, guarantee their market viability, or enforce excludability constitute market failures. These failures create opportunities for third-party enforcement and provision, in short for the state to intervene. But cases where the state fails to evaluate the appropriateness of its interventions and promotions can lead to market distortions and to political problems as well.

3.3 The Policy Agenda: Technological and Institutional Innovation as the Impulse for the Second Wave

What are the issues in which an analysis of externalities and appropriate roles are relevant? We have thus far argued that promotions for private firms in the area of agribusiness must be based on an identification of relevant market failures, areas where market forces will not provide incentives to the creation of positive externalities. But before the externalities criteria can be applied we must identify the specific issues on the agenda which allow us to test the appropriateness of a stronger role for firms. This can be accomplished by citing the challenges of the second wave and by consulting briefly with development theory.

Recall that the first wave was made possible by the land surplus and investments in irrigation and roads. With the exception of taxes on rice and rubber exports, Thailand's surplus resource endowments permitted a relatively liberal trade regime and conservative macro-economic policies. Modest innovations were introduced in select crops, notably in maize with the discovery of the Suwan 1 variety in the 1960s (Setboonsarng 1990). Incremental innovations were achieved in mechanization. Working capital was supplied adequately by both formal and informal sources. All in all the first wave required little government intervention. And the distortions created when the state did intervene were not egregious enough to damage Thailand's strong comparative advantage (Siamwalla and Setboonsarng 1989, Siamwalla 1991).

But public and private actors now have to address a different set of issues. Many commodities require a different organizational framework and even more centralized, hands-on management. Thailand's typical arms-length agricultural markets, which have been the forte of most first wave crops (save for sugar and hybrid maize), may be less adequate to the task of promoting new products on both the supply and the demand sides. The case of poultry, for instance, suggests that some commodities may yield more efficiency when closely-coordinated arrangements replace arms-length markets. In both poultry and swine, integrated contract farms have proven more productive than small-scale, backyard operations. In light of this example, vertically-integrated firms, with interests in multiple stages of production, figure prominently in the minds of officials as a panacea to speeding commercialization.

One danger with the commercialization strategy, based on promotions for large firms, is that it invites the public sector to fall back on practices it used during the first wave and turn second wave responsibilities over to private firms. First wave practices featured basic infrastructure, border pricing policies (i.e. taxes), and dissemination of improved seed through an expanded extension program. But agricultural development theory offers a more delicate set of issues, suggesting that the challenges of maintaining productivity have moved beyond these first wave practices.

Development Theory and Institutional Change: A new and more micro-level agenda centers now on institutional innovations as the impulse for sustained productivity (Hayami and Ruttan 1985). A brief review of how development theory arrived at this agenda is instructive. Key aspects of the main schools of thought are listed in table 3.

Table 3 **Agricultural Development Schools of Thought**

	Orthodox	Structuralist	Institutionalist
Unit of Analysis	market, producer	terms of trade	economic organization, institutions
Impulse for Growth	free trade, price incentives	cross-sectoral resource transfers	institutional innovation
Obstacles	price distortions, "government failure"	meager investment in productivity	free-riding, information probs, transaction costs
Role for the State	provide infrastructure, enforce contracts (Schultz: stabilize prices)	infrastructure, technology, resource distribution	resolve information and free-rider problems, enforce property rights and law

Source: Christensen 1993: chapter 1.

The orthodox and structuralist schools of thought dominated development economics during the 1960s and 70s. Institutional innovation was not high on their agenda, and in fact it was often assumed as a given in the package of resource endowments and policy inputs. The canons of the orthodox school rest on the efficiency of the market, free trade, and the belief that rational producers are most productive and innovative under conditions of minimal price distortions. Theorizing concerned the achievement of a competitive market equilibrium under conditions of free trade. In this Chicago-esque view, the state has a minimal role confined to maintaining a macro-economic equilibrium, providing basic rural infrastructure, and enforcing laws and contracts. The most critical obstacles to agricultural development are price distortions and other encumbrances to the market created by inappropriate policy interventions, or "government failure." Agricultural marketing boards, prevalent in many African countries, are a premier example (Bates 1981, Krueger 1991).

The structuralist school in contrast identifies its unit of analysis as the policy interventions that distort the terms of trade. The focus is not on the market per se but on the macro-economic and sectoral policies that distort prices and thereby induce resource transfers from agriculture to other sectors of the economy and from there and back. An example in Thailand is the state's rice export taxes instituted in the 1940s. The prevailing philosophy of this school is that agriculture "could and should be squeezed on behalf of the more dynamic sectors of the economy" (Timmer 1988:277). Agriculture is looked on as a pool of surplus resources, including food, labor, and capital. Successful industrialization involves the calibration of price distortions, usually through trade and exchange rate policies, so as to transfer these resources to the urban industrial sector.

Agricultural modernization, moreover, involves evolution through "stages" of development. It begins with the expropriation of resources from agriculture, moving to investments in technological change, and eventually to a shift in cross-sectoral resource transfers back to agriculture, once industrialization is achieved and the proportion of the farming population declines relative to other sectors (Timmer 1988:280-83, Lindert 1991). Whereas in the orthodox view structural transformation is an outcome of free trade and technological change, in the structuralist school the very promotion of structural shifts through distortions in the terms of trade is the impulse for development.

Many of the tenets of these schools remain relevant to Thai agriculture and agricultural policy, a point that will be made more pointedly with examples and policy recommendations below. By now Thailand has achieved a structural transformation of the economy away from reliance on agriculture, while many the policy distortions that helped induce that shift have been corrected. Tariffs on manufactured goods, which tend to discriminate against agriculture, have been reduced. But reforms are needed in the area of law enforcement and property rights adjudication. And improvements must be made in the public sector's capacities to stabilize crop prices and implement crop price supports.

Beyond these concerns, a third school of development economics has identified institutional innovations as the key to sustaining comparative advantage. By "institutions" we refer to both economic and political institutions. Economic institutions refer generally to the organizational basis of the economy, including property rights, product distribution networks, arrangements governing technological innovations (such as public research and patenting), the modern firm, credit arrangements, and capital markets. These are the core institutional bases of an agricultural market economy (Parsons 1974). Among political

institutions we refer to the legal system, the bureaucracy, the system of law enforcement, and the formal and informal constitutional order. In this third school of thought, agricultural development is a process in which institutions undergo substantial innovation and change. This school believes that the institutional basis of the economy provides incentives for different levels of productivity and technological innovation.

Markets cannot function without institutions, and the supply of institutions is a critical task confronting public and private actors. Supply will depend on factors such as the available stock of knowledge or ingenuity, the willingness of public and private actors to cooperate, and a flexible political system that is able to encourage an institutional supply response to shifts in resource endowments and market opportunities or constraints. Obstacles to institutional change, however, include high information or transaction costs (Stiglitz 1986, 1988). Information costs, for instance, have inhibited innovation in formal credit markets throughout rural Thailand (Siamwalla et.al. 1990). Formal lenders have failed to replace more expensive informal credit because informal lenders are able to resolve information dilemmas by providing a more diverse and flexible array of contractual relationships.

Whereas in the orthodox school, price distortions and technology are the driving forces, the institutionalist school focuses on designing appropriate institutions and incentives which would induce technological research and innovations.

Institutional Innovations Relevant to the Second Wave: These innovations can be divided into three categories, corresponding to arrangements governing product inputs, product exchange, and product upgrading (Christensen 1993:chapter 7). The first category involves institutional arrangements that secure factor inputs for production, namely land, labor, and capital. The second refers to arrangements that organize product exchange, including product distribution networks, the mode of price setting and transmission, and modes of product standardization. The third category concerns arrangements that facilitate product upgrading or technological innovation, acquisition, and adaptation. Upgrading, again, refers both to biotechnical and mechanical innovations related to production and processing. The organizational and biological challenges of the second wave of diversification make institutional and technological innovations the centerpiece of the second wave policy agenda. Innovations are implied in all three of these categories of economic institutions. A brief review of specific institutional arrangements will aid in identifying government and private sector roles (see also table 4).

Table 4 Institutional Arrangements in Agricultural Development

Product Inputs (land, labor, capital)	Product Exchange (linkages, pricing, standards)	Product Upgrading (research, innovation)
property rights in land	arms-length markets, sub-contracting	public research and extension apparatuses
the manor, patron-client ties, contract farming, plantation labor	border pricing, marketing boards, spot markets, futures markets	firms, associations public-private networks or resource pools
public/private credit institutions, equity markets, informal contracts	standardized measures through state coercion, private guilds, or associations	international centers (e.g. IRR)
insurance institutions		

Source: Christensen 1993: chapter 7.

Arrangements that secure factor inputs include property rights in land. Until the 1980s Thailand enjoyed a vast agricultural land surplus. Crop expansion into new upland areas characterized the first wave of diversification. Some 40 percent of the land area, however, is claimed by the Royal Forestry Department (RFD) as its legal domain. In these areas agriculturalists are not entitled to be issued regular land documents by the Department of Lands. As a result, formal credit institutions have not been developed in these areas. Lacking the right to collateralize their land, small farmers in the RFD's domain have forgone capital improvements (Feder et.al 1988). In fact a portion of this land sits idle each planting season, either because many farmers have little incentive to invest in crop production, or because state security forces, at the behest of the RFD, have driven agriculturalist out.

Officials have begun to address the knotty issue of how to manage these lands in a way that promotes agricultural productivity and sustainable forest management. Either of these tasks requires vast reform in existing patterns of land management and property rights adjudication. Thus far, officials have considered only two options in areas where

regular land documents do not apply -- either retain the RFD's direct control over these areas through the department's various forestry programs, or lease them to private tree firms to promote the 1985 policy of achieving a 25 percent "economic forest" cover. Community forestry has proven to be a viable alternative in countries like India where a similar exhaustion of the land surplus has occurred over the past two decades (Wade 1987). This option has been considered in Thailand, but land and forestry officials do not recognize community forestry institutions as juristic entities or as legitimate managers of land and forest resources. Another option is the granting of full title deeds to the cultivators who occupy public forest reserves, and to redraw the boundaries of those reserves altogether. That move would demand revision of contemporary forestry legislation, something the RFD has been extremely disinclined to do.

Rural property rights is perhaps the most visible and hotly-debated institutional issue in Thai agriculture today. But innovations in other arrangements are also needed. Again, regarding factor inputs, innovations in formal credit loom on the agenda. The Bank for Agriculture and Agricultural Cooperatives (BAAC) has not succeeded at displacing expensive informal credit in the countryside, and it may not succeed even within this decade. Nor have the central bank's agricultural lending requirements compelled the commercial banks to innovate credit arrangements for small and medium-size farms. In commodities where large firms are able to fulfill development functions, as in poultry, the limited infusion of commercial credit in the farm sector does not hinder innovation. But the staple crops demand innovations. One option may be to strengthen the role of cooperatives, though experience suggests that only when cooperatives are free of official control will they fulfill worthy development functions (Rabibhadana 1982). A final innovation regarding inputs and production involves the development of viable and equitable insurance arrangements. Policy makers are keen to point out "uncertainty" -- meaning price instability and weather -- as a dilemma for the small-scale farmer. A crop insurance program would be one step toward mitigating uncertainty, particularly in staple crops. The state may even consider subsidizing insurance costs for lower-income farmers.

Institutions relevant to product exchange in the second wave include a legal or regulatory framework for the enforcement of product standards and measures. Recently, rice mills and spot market landings have become more equipped with machinery that tests for paddy moisture content. Such standards create more transparency in transactions, and may even help to mitigate alleged cheating when traders or millers buy rice from farmers. To be functional, however, these arrangements require an effective legal framework,

something that eludes the countryside still today. Another arrangement which would help reduce uncertainty and spread risk in the agricultural economy is a futures exchange. As a leading food and grain exporter, it is a bewildering fact that Thailand has not developed this important market institution. Agricultural spot markets, however, have been thriving for some time throughout the countryside, primarily in rice and maize, but also recently in swine. Most of these markets have been set up by private entrepreneurs, but this should not discourage the state from considering a role for itself.

A final arrangement regarding exchange, which has gained popularity among officials, is contract farming. This arrangement tightens the marketing and distribution network between the producer and private firms. Many Agriculture Ministry officials are attracted to it because it allegedly eliminates the role of middlemen, who are traditionally viewed as agents who exploit farmers. Contract farming has worked best in the area of poultry, swine, and maize, primarily because in these commodities the use of hybrids makes a tight relationship between farmers and firms both logical and efficient. The arrangement also works in sugar, partly because the high investment in milling machinery creates the need for a tight forward delivery schedule for sugarcane (Siamwalla 1978), and partly because there is no viable market for farmers' sugarcane other than the mills. Moreover, in sugar so-called "commercial farms" and contract-farming arrangements have succeeded because the state has intervened to guarantee a high price for refined sugar, a cost that is passed on to the consumer and soft drink manufacturers. It is doubtful that similar cross-subsidies would work in other commodities. Exceptions are the import-competing crops, for example soybean, as their prices can be raised due to restricted domestic supply.

The third set of arrangements, those governing product upgrading, concern the organizational and legal framework for innovations in biotechnology research, extension, and mechanical innovations. One issue involves the actual management of R&D in agriculture. To restate the point, private firms will have the greatest incentive to invest in hybrid innovations, while R&D in open-pollinated crops attracts less private sector interest. In open-pollinated crops, private firms are most likely to participate in the production of seed varieties which are developed and introduced by the public research apparatus (see Setboonsarng, Wattanatchariya, and Phutigorn 1991).

Another issue involves intellectual property protection. The Patent Act of 1979 was recently revised to include inventions in food processing, agricultural machinery, and

biological inventions. But it is not certain whether patents or some other form of protection would be most appropriate. The most important avenue for innovation thus far has been licensing agreements or joint-ventures with foreign firms. Hybrid chicken technologies were imported through a joint venture between CP and an American firm in the early 1970s, for example. And processing technologies in the livestock sector have been imported through networks with foreign importers or similarly through joint ventures.

Furthermore, in the early and intermediate stages of agricultural development, patenting may discourage experimentation and innovation. In the case of agricultural mechanization, for example, Thailand has been innovating for over a century. In rice milling, innovation has occurred by way of "reverse engineering." This is an incremental process whereby foreign parts are imported, pried apart, and local foundries and mills adapt the new machineries to local conditions (Kaosa-ard 1986). Inventions are usually specific to particular regions. This "learning by doing" process has helped make Thailand's rice-milling industry one of the world's most efficient and competitive. Short of patents, legal shelters could be provided for firms that acquire new technologies from foreign sources. An example is parboiled rice. In this area, leading millers have been unwilling to disclose their technologies for fear of losing their market position. A form of protection which is less restrictive than patents may encourage firms to disseminate their innovations. It could also encourage more experimentation, if firms are guaranteed rewards for the development of new techniques.

The agenda for the second wave might thus be stated as follows. First, institutional innovations identified in theory by the third school and empirically above loom large as Thailand moves into more complex agro-processing and more sophisticated technologies. Organizational, legal, and public-private issues dominate this agenda. The primary concern here is the restructuring of incentives within which innovation and productivity would occur. The design of institutional arrangements should involve innovations in the mobilization of factor inputs, the pricing and distribution of goods, and the management of technological innovations. Neither the state nor private firms can plan agricultural productivity, yet both can provide resources for innovating institutional arrangements that may encourage it.

Second, at the same time public and private actors must not neglect needed corrections and reforms in issue-areas identified by the orthodox and structuralist schools. These include the need for improvement in the management of public goods such as

irrigation, the elimination of price distortions that inhibit productivity, and improvement in basic coordination and communication capacities in the public sector. For example, the irrigation system still requires more effective development and management of tertiary canal projects; the public research apparatus remains fragmented and it focuses primarily on short-term research; and property rights reform is unlikely to proceed so long as the RFD and the Land Department cannot be brought together and their legal mandates streamlined or even made uniform. Reforms in these areas are long overdue, and there is little in the promotion of agribusiness that will compensate. The delivery of investment privileges for private tree farms in absence of property rights reform, for example, has done nothing to improve the management of rural land resources and has even created conflict in the countryside and more damage to remaining forests.

4. POLICY ISSUES: PAST PERFORMANCE AND PRESENT CHALLENGES

At least three different kinds of policy tasks will confront policy makers, firms, and farmers over the coming decade. One involves the delineation of "appropriate" public and private roles. The second is the critical need for reform in the public sector's agricultural policy machinery. And the third concerns distribution and equity issues, particularly where independent farmers and staple crops are concerned.

4.1 Commodity Specific Public-Private Roles

For this agenda to proceed, it must be recognized that public-private roles will be specific to a given commodity. Development "functions" of the state and firms are commodity specific. Firms will be most anxious to invest in areas where they can capture the gains yielded from investments in new technologies. Where technological factors make the gains diffuse, the state must carefully evaluate the market viability and political feasibility of subsidies and third-party enforcement.

Promotions for agribusiness should be considered in light of whether the gains from private sector activities are capturable or create external economies. Third-party enforcement may be appropriate in commodities where gains can be internalized, but perhaps not where the gains are diffuse. The Ministry of Agriculture should take a serious look at the technology of poultry and hybrid maize and based on that evaluation assess the

viability of the contract-farming model in other commodities. There is a world of difference between the incentives facing firms in hybrid vegetable seeds, for example, and incentives in open-pollinated staple crops. In the latter the gains are diffuse. This type of benefit suggests the inappropriateness of forced contracts and highlights the need for effective public sector action.

Herein lies a policy dilemma. It was argued in section 3.1 that the burden of proof for advocates of agribusiness promotions is to show that promotions would create positive externalities. It is precisely in commodities where the gains are diffuse that firms will not have an incentive to innovate. Yet promotions in these areas, as the Chai Tai case has shown, can be inappropriate. Policy incentives must be designed in such a way as to guard against inappropriate roles and negative outcomes. In rice, it is inappropriate to promote contract farming and centralized management. But it may indeed be appropriate for the state to subsidize a firm's acquisition of new seed strains, provided criteria are built into these subsidies to ensure the benefits spill over to the farmer at large. In commodities where the gains are internalized, promotions can still be appropriate. But outcomes will depend on how promotions are designed. Again, the challenge for policy makers is to ensure that firms do not capture all returns and that there is a net social gain. It must be understood first, what kind of gains are yielded by the specific commodity in question, and second, what kinds of incentives and styles of policy enforcement will yield a net spill over of gains to the agricultural sector. The state has a critical role to play here and it must rethink its own policies and performance.

Furthermore, recent evidence has shown that even in the area of hybrids, high research costs may incline firms to wait for the public sector to invest first. In maize, for example, private seed companies spend most of their resources on open-pollinated maize while they wait for government research to yield new hybrid technologies which they would hope to purchase and produce for the market (Setboonsarng 1990). In dairy farming, too, *in vitro* embryo production offers a promising means to boost dairy yields. Private firms have expressed interest, but they also say that this area is not commercially viable. They prefer the public research program to invest in the R&D, or that the environment for public-private collaboration be improved (TDRI 1992: 95-96).⁴ The fragmentation of public research in both agriculture and manufacturing is oft cited as a

⁴ The author is also grateful to Johann Stuyt for insight into the dairy issue.

disincentive for firms to seek collaboration with the government (TDRI 1992, Doner and Siroros 1992).

Subsidies are one means to encourage R&D, but ideally they would be followed by disciplinary measures on the part of government to enforce stated policy objectives. The Thai state has always been weak in this regard, however, partly because the state lacks performance criteria, and partly because the state has little capacity or will to enforce stated policy goals, however vague they may be. In the Northeast Asian NICs, and in South Korea in particular, many large firms depended on the state for long-term financing, and that instrument became the stick which officials could use to enforce policy criteria on firms (Amsden 1989). Since most all financing in Thailand is private, given the dominant role of Bangkok's commercial banks, it is difficult to imagine how the government would muster the capacity to enforce any preconceived plan on private firms. Indeed, the performance of Thai sectoral policy in general suggests that of all policy enforcement capacities, the state is perhaps least equipped to enforce performance criteria (Christensen, Siamwalla, and Vichyanond 1992).

Some form of intellectual property protection would be another means, and maybe a more effective first step as it would not involve expenditure of resources through promotional privileges. In the area of mechanical innovations, private entrepreneurs historically perform quite well through experimentation and incremental adaptation (Binswager 1986). The government's role here would lie in intellectual property protection. A third and perhaps more promising avenue would be the creation of public-private research institutions in biotechnology. That move may require that agencies in the Ministry of Agriculture operate more in accordance with business or corporate practice, a task that would require significant bureaucratic reform (Setboonsarng, Wattanatchariya, and Puttigorn 1991). Currently, a substantial amount of research and extension work is geared to supply materials for public sector agricultural projects. In seed, for instance, private firms produce most all of what is consumed in the market.

It should be clear to policy makers that the reason many large firms have played a strong role in the so-called "winning" crops is that many of these commodities generate gains which can be internalized from investments in innovations, whether they be in research or in high-tech processing equipment. The argument that Thailand has "winning" and "losing" crops is therefore circular. Just because firms cannot capture the returns to innovations in the staple crops does not mean these crops are "losers." It means that the

state has a development function to fulfill in areas where firms have little incentive to innovate.

In rice, Thailand now has a solid comparative advantage. The rice milling industry is one of the most efficient and competitive in the world, and the quality of Thai rice surpasses that of most all other exported rice, save for special grades from the United States. A middle-ground solution may involve more public-private collaboration in the area of new rice strains. A number of rice mills have imported exotic rice strains -- for instance Basmati rice -- and introduced them to farmers. These efforts, rather than the centralized management of rice by huge conglomerates, make much more sense and are more appropriate from the point of view of feasibility and the allocation of gains. Unfortunately, many of the private firms active in these new strains are provincial millers who are not as familiar with senior bureaucrats at the Ministry of Agriculture than their urban agribusiness counterparts are.

These issues should not be phrased in terms of Thailand's overall comparative advantage. A more useful lens is to evaluate the challenges of the current decade in terms of the *comparative advantage of the government*, notably the state research, extension, policy enforcement, and law enforcement apparatuses. The institutional bases of public research and extension, rather than the agricultural sector per se, should be the object of reform. Private firms are likely to offer little in the way of a helping hand in the task of public sector reform, and the burden falls on government to reorganize its own institutions and practices.

4.2 The Need for Reform in the Public Sector

Specifically, what areas of public sector intervention in agriculture should be subject to scrutiny and/or reform? The need for institutional innovation does not apply only to economic institutions or private sector concerns. It also applies to the conduct of the public sector. Concern should focus on existing laws, policies, biases, institutional capacities, and civil service practices that inhibit the restructuring of incentives in agriculture. At least four areas of weakness currently require some degree of modification.

Information-gathering, data analysis, and inter-ministerial and departmental coordination: There are over 45,000 officials in the Ministry of Agriculture and

Cooperatives with an annual budget that well exceeds 20 billion baht. R&D, however, occupies a lowly status on the list of Ministry priorities. The budget of the Department of Agriculture, the primary research unit, ranks fifth among all departments in the ministry and constitutes, on average, some 6 percent of total ministry spending. There also exist problems in coordinating biotechnology research among government agencies and public universities in a number of fields. In some cases, private firms have been discouraged from seeking collaboration with the public sector in R&D because of these communication and coordination problems (TDRI 1992).

In addition to the low amount of funds spent on R&D, promotional standards in the civil service also inhibit innovation. The Civil Service Commission places the most emphasis on the quantity of research projects rather than the quality of research as a criterion for civil service promotions. A recent study on the Department of Agriculture found that the number of small, short-term projects has been boosted over the past two decades in order to ensure that Department researchers are provided satisfying promotions (Manirojana 1989). That emphasis has come at the cost, however, of high-quality, long-term research. Most biotechnology research is long-term and must be rolled over several years, and hence these projects are not encouraged by the present standards for civil service promotions.

Another bottleneck which limits the quality and effectiveness of public R&D in agriculture is fractious competition among agencies within the Ministry of Agriculture. A rather extreme example is the ruling that the Department of Agriculture (DOA) cannot employ or hire a trained economist to evaluate the market viability of biological innovations. Economic analysis is supposed to be the function of the Office of Agricultural Economics (OAE). The DOA is thus prevented from engaging in its own analysis of its research output because of competition from a rival agency within the same ministry. This practice reduces the ministry's capacity to introduce technologies that are viable in the marketplace.

A third example of a bottleneck is the Ministry of Agriculture's collective incapacity to engage in appropriate pricing and production data analysis. A classic illustration of the point is the ministry's involvement in soybean policy during the 1980s. Import quotas imposed on soymeal in 1984 were supported by the Ministry of Agriculture, which argued that the quotas would raise the domestic price of soybeans and thereby create

higher incomes for soybean farmers. But information and communication fallibilities prevented the ministry from realizing its objectives.

The first problem was that the ministry claimed it could calculate domestic costs of production. These costs, of course, vary from one province to the next, and even from one farm to the next. Part of the calculation involved an estimation of average provincial yields in soybean. For over 5 years, the OAE and the Department of Agricultural Extension competed with one another, each claiming it knew what the "real" average provincial yield in soybean was. The two agencies adhered to two different average yield figures, both based on their own field surveys (see table 5). The OAE was favored, in part because its director-general sat on the policy committee overseeing soymeal and other animal feed inputs.

Table 5 **Discrepancies in Provincial Soybean Yields Estimated by the Ministry of Agriculture**

(kilograms per rai)

	Chiang Mai		Chiang Rai		Pitsanuloke		Sukhothai	
	OAE	DAE	OAE	DAE	OAE	DAE	OAE	DAE
1983/84	209	196	148	182	179	199	194	253
1984/85	194	187	187	195	217	178	213	247

Source: Office of Agricultural Economics, National Statistics Office.

The fallibility of the yield estimates, which is suggested by the variance shown in table 5, led to policy failures. The Department of Internal Trade relied on the OAE's figure to estimate total domestic production and hence the volume of soymeal that needed to be imported. When the OAE's figures proved inaccurate, as inevitably they would, either too much or too little soymeal was imported under quota, creating unanticipated price fluctuations in the domestic soybean market (Christensen 1993: chapter 5). Many seasons saw a soymeal glut, which drove soybean prices down and thus undermined the Agriculture Ministry's policy of using the import quotas as a means to raise domestic

prices for farmers.⁵ In this case the problem facing the farmers was not market uncertainty, but clumsy communication and poor judgment on the part of OAE. One way to mitigate this specific problem is first, to do away with the myth that costs and yields can be calculated and their estimates used to manage production, and second, to reform the information-gathering and coordination capacities of the Ministry of Agriculture.

Procurement, Pricing, and Delivery Systems: These areas involve policies and programs engaged in the procurement, importing, exporting, transport, or subsidization of farm commodities. The government, namely the Ministries of Agriculture and Commerce, have been most active here in rice and fertilizers. They have been involved to a lesser extent in the import of other commodities such as unrefined palm oil and the subsidization of rubber production.

In these areas there is great need to create more efficiency, transparency, and accountability. The Thai government has been moving gradually toward price supports for rice, a trend consistent with the farm policies of other industrialized countries, though one that does not score points in international trade negotiations. To date, most producer support programs in rice -- which usually involve a complex array of forward purchases by the Commerce Ministry and subsidies to boost farmgate prices -- have failed to achieve the stated objective of raising producer incomes (Siamwalla and Setboonsarng 1990). The biggest challenge to the government is to design a price subsidy program which can prevent the benefits from being captured by the most influential traders, politicians, and bureaucrats involved with implementing the program. Researchers have found, for instance, that fertilizer allocations by the Marketing Organization for Farmers (MOF) over a four-year period resulted in a net transfer of income from farmers to the agency amounting to 132 million baht (Kaosa-ard and Manahong 1992). Similar instances of net income transfers from the tax payer to bureaucrats and traders have dominated earlier attempts to subsidize rice prices (Pintong 1984, World Bank 1985b).

The expansion of the role of the BAAC in subsidizing producers may constitute one step toward reform of these programs, so long as bureaucratic capacities are developed at the local level to ensure that state funds are delivered to the target beneficiaries, namely small-scale farmers (Lightfoot 1991). But other dubious practices remain intact. During

⁵ The OAE has claimed after these episodes that the cause of the faulty figures was weather or other factors beyond its control.

this past year a large rice deal was negotiated with the Soviet Federation, whereby the government agreed to subsidize a handful of wealthy rice exporters. The rationale offered for this subsidy was that the exporters deserved compensation for losses they incurred three years ago from a similar kind of government-induced procurement scheme. There is no evidence that these subsidized deals garner tangible benefits for the farmer, the alleged victim of price instability and uncertainty.

Another substantive step toward bureaucratic reform in these areas involves disclosing all accounts of the ministries, departments, and other agencies involved with these programs. Recently the Ministry of Commerce has taken strides in this direction, by announcing that all of its non-budgetary accounts would be made public. Ideally, a reorganization of these programs and a restructuring of the institutional incentives in the bureaucracy would follow. These reforms are critical to making existing policies more effective, promoting further innovations, and reducing the discretion of relevant agencies.

Policy Enforcement Capacities: This area has been mentioned throughout the discussion above. A more regularized application of the law and more transparent procedures are necessary ingredients for more effective policies. Changes in the legal framework are needed to reduce the haphazard application of bureaucratic discretion and to make laws more consistent. Reform in these areas will enhance the application of patent laws, the enforcement of commodity standards, and the application of property rights laws.

Institutional Arrangements Governing Factor Inputs (namely land and water resources): Natural resource constraints make more effective management of land and water inputs a most critical aspect of any policy reform package. Simply building more dams and promoting private firms to plant trees will not address these challenges in a constructive, much less equitable, manner. In water, the Irrigation Department needs seriously to work at projects that will promote more effective water management at the farm level. The swift development of tertiary canal systems and local mechanisms of water level control are needed to promote the regular application of fertilizers and new seed varieties in irrigated areas. Regarding both water and land, a conservative policy package may include issuing title deeds to all agriculturalists, and digging tertiary irrigation canals while introducing a comprehensive water pricing program. A more progressive package may include "legalizing" community forest management, and turning water ownership over to independent farmers' organizations and allowing them to sell water to urban industrialists. Any of these options, however, would require serious improvements

in the information and enforcement capacities of the agriculture bureaucracy, particularly at the local level. They may even require, or need to be a part of, an overall decentralization of the central government administration.

4.3 Distribution, Equity, and Risk-Sharing

If policy reforms in agriculture are meant to raise farmer incomes as well as to sustain Thailand's comparative advantage in agriculture, then distribution and equity issues must inform the debate. In commodities where firms are likely to have a strong role, measures must be enacted to ensure that benefits are guaranteed also for the farmer. Thus far, a number of contract-farming projects in livestock have converted landless farmers into credit-worthy livestock breeders, a fact which is worthy of applaud. If this model is proven to be feasible in other commodities, an appropriate role for the government is to ensure that technologies and higher incomes do indeed accrue to the farmer. Again, this depends on the state's comparative advantage in law enforcement and the existence of an effective legal framework for contracts. Few serious public sector studies have been conducted thus far into equity issues regarding contract-farming agreements. Nor have any independent criteria been forged that could be used to evaluate the distributional and equity implications of contract-farming.

In commodities where the state finds it appropriate to subsidize innovation or enforce excludability, a legal framework must be designed that would guard against farmers having to bear excessive risk. In the Chia Thai example cited above, it would have been clearly inappropriate, given conditions specific to rice, for contract terms to be enforced as originally designed. In that case, farmers who made profits above what the contracts allowed had to share them with the firm. In event of a natural disaster, however, the firm would bear no risk at all. An independent set of criteria to evaluate risk and equity issues might have led officials to understand the inappropriateness of "forcing contracts" in rice. One alternative for future consideration would be a comprehensive crop insurance program which could shoulder risk for the farmer. Firms might even be asked to manage the delivery of insurance, just as they manage commercial credit, or even subsidize insurance for the farmer.

Perhaps the finest example of how *not* to spread risk and remove uncertainty, from the farmers' point of view, is to institute the proposed National Agricultural Council. It is

unreasonable, if based only on the experiences of other developing countries, to try and plan the agricultural sector. The NAC threatens to enforce contract-farming obligations very harshly, despite the fact that independent criteria for judging the worthiness of these contracts eludes the regulatory framework. As the framework stands now, farmers would bear excessive risk and their choices would be severely limited. There has been scarce consideration of the plausible disastrous impacts such planning and coercion would have on agricultural productivity should farmer choice be strangled. Individual farmer choice has been a pillar of Thailand's success in agriculture thus far, and there is no justifiable reason why it should be done away with now. Furthermore, it is quite dubious to attempt the actual planning of agriculture when the basic information and policy enforcement apparatus is not up to the task, as the case stands today. Given the proven inability of the Ministry of Agriculture to perform well in the production of basic data, due to coordination deficiencies in the ministry and the inherent fallibilities involved with calculating costs in a national bureaucracy, it is not at all difficult to imagine the many troubles a national planning council would confront in attempting to regulate agricultural production.

5. CONCLUSIONS

Four summary statements can be made regarding the roles of agribusiness and government in promoting productivity throughout the second wave of agricultural diversification.

First, the agenda for the second wave centers on institutional innovation, supported by corrections in price distortions and by improved performance in the provision of rural public goods. Agribusiness is not a panacea to innovation, it is a partner in what should be a transparent, public-private alliance which should include independent farmers as well.

Second, in second wave commodities, officials need to scrutinize which commodities will afford an "appropriate" role for agribusiness, based on whether benefits are diffuse or internalized, and also on the economic and political costs of guaranteeing excludability where third-party enforcement is implied. While in very simple terms there can be a line drawn between open-pollinated and hybrid crops, that line is becoming increasingly blurred. The roles of public and private agents will probably not be so cut-and-dry, and there will be considerable overlap and exchange of resources and information. It is likely that successive research programs will involve extensive cooperation among

firms, public agencies, and other research institutions, including universities. The fragmentation of the public research apparatus has thus far worked to discourage public-private collaboration, however.

A third point is that the notion of a lost comparative advantage in first wave commodities is a dangerous one. These commodities presently employ the bulk of agricultural labor, and it is unreasonable to expect that these laborers will be shed entirely to urban factories, even by the year 2010. Thailand is not losing its comparative advantage. Rather it is facing resource constraints. *Institutional innovations* in areas such as property rights, credit, price supports, risk-sharing, and the overall regulatory framework managed by the Agriculture Ministry and the law enforcement apparatus would provide incentives for firms *and independent farmers* to cope with these constraints.

Finally, the public sector must get its own house in order to support this third challenge and create positive incentives for firms to invest in commodities which afford them an appropriate role. This inevitably implies serious institutional reforms at the Ministry of Agriculture and Cooperatives, and also changes in some of the practices of the Ministry of Commerce. Moreover, more constructive linkages between these sectoral agencies and macro-economic agencies, such as the Ministry of Finance and the Bank of Thailand, would permit more coordination in the innovation of public credit arrangements and the delivery of goods such as price supports, should a government in power concede these are necessary.

Institutional innovation in the public sector should top the list of priorities for overall promotion of institutional change in agriculture during the second wave. For agribusiness to become a functional partner for both farmers and the state, it must have an effective, coherent, and competent state with which it can coordinate its contribution to agricultural development over the next decade.

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