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Addressing policy issues and constraints in agricultural diversification: the potential contribution of the fruits and vegetables subsector

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Fruits and vegetables comprise a large and dynamic subsector within Philippine agriculture. Many of the vaunted “high value crops” are fruits and vegetables. By other measures, however, fruits and vegetables are a minor component of agriculture. They account for only one-tenth of total agricultural area and command less attention in terms of national programs and policies compared to traditional crops. Assessments specific to the subsector are also relatively sparse.

Economic development entails growth of per capita income, which is typically accompanied by structural change such as the diversification of output composition from agriculture

to industry and services. Within agriculture itself, the process of development is also accompanied by diversification as noted by Rosegrant and Hazell (2000), at least for Asia (p. 57):

As economies grow, there is a gradual movement out of subsistence food-crop production (mostly of basic staple crops) to a diversified market-oriented production system. The process of diversification out of staple food production is triggered by rapid technological change in agricultural production, by improved rural infrastructure, and by diversification in food demand patterns. The slowdown

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in income-induced demand growth for staple foods is accompanied by a shift of diets to higher-value foods such as meats, fish, fruits, and vegetables.

In general, under perfectly functioning markets with no transaction costs, there should be a smooth transition from traditional to diversified agriculture. However, in reality, the transition is constrained by many factors, including: low investments in and diffusion of new technology; inadequate rural infrastructure leading to market fragmentation; insecure property rights, including faulty contract enforcement; and government interventions such as restrictions on marketing and foreign trade, ostensibly to promote self-sufficiency and food security (Rosegrant and Hazell 2000). Environmental shocks and other factors likewise introduce considerable risk in

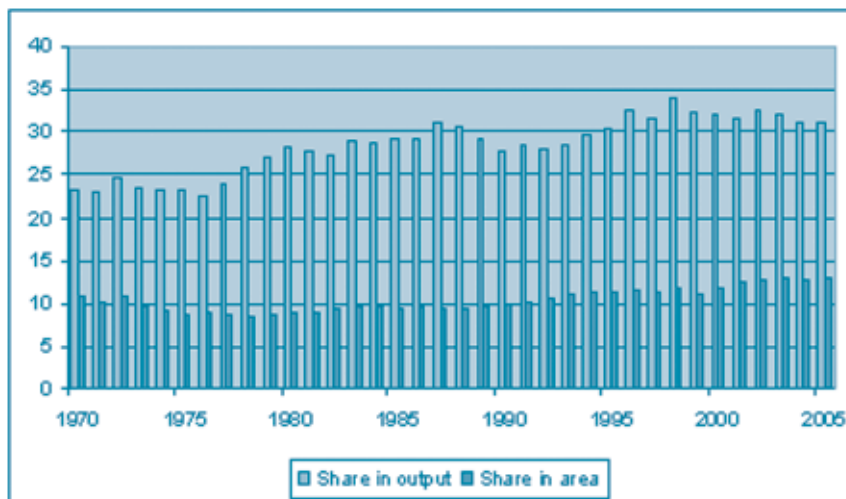
fruit and vegetable production which may constrain diversification. Finally, scale economies may lead to a low-level equilibrium for a particular village or crop, in which insufficient market size constrains investments in marketing; this simultaneously represses supply because of the absence of marketing services (Emran and Shilpi 2002).

This *Policy Notes* discusses in more detail some of these constraints and points out the various policy issues dealing with the fruits and vegetables subsector development.

Fruits and vegetables subsector in the Philippines

Since the 1970s, the share of fruits and vegetables in agricultural output has been increasing, albeit fairly slowly and erratically, from 23 to 31 percent. Its share in total area though has been fairly stable over the same period (Figure 1).

Figure 1. Shares of the fruit and vegetable subsector in agricultural output and area, 1970–2005 (in percent)



Source: Food and Agriculture Organization Statistics

As shown in Table 1, some of the major fruits and vegetables deserve their reputation as high value crops both in terms of yield and net return per hectare. Nonetheless, despite these, about three-quarters of the country's agricultural area continue to be planted to the main traditional crops, namely, rice, corn, coconut, and sugarcane. Contrary to what would be expected under competitive markets, land does not in fact move from low-return to high-return crops.

This inertia may explain the lack of robustness in the growth of the agricultural sector (World Bank 2007). Inertia may be attributed in part to entry barriers in the high value sector such as high working capital requirement (i.e., cash cost) combined with an imperfect credit market. In general, total and cash costs are much higher for fruits and vegetables compared to cereals; similarly, fertilizer, pesticide, and hired labor account for larger shares in total cost.

For those able to overcome market entry barriers, financial rewards can be large since many of the country's fruit and vegetable products are internationally competitive and command relatively high prices in global markets (Figure 2). The subsector accounts for a large share of total agricultural exports, far out of proportion to its area and output shares. Being only a minor component of agricultural imports, the subsector is therefore a significant net earner of foreign exchange.

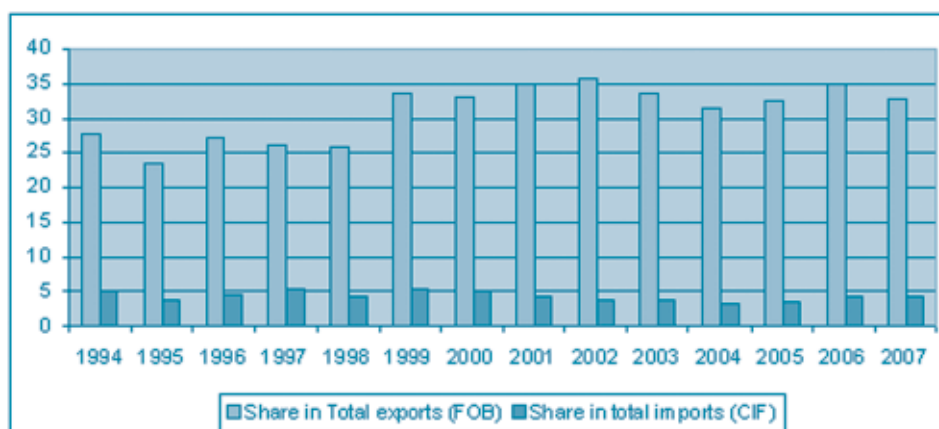
Unfortunately, many vegetable farmers remain resource-poor; they tend to supply only to the traditional wholesale and retail wet markets. Those with resources and management know-how are able to realize higher returns from

Table 1. Cost and returns indicators per cycle, major fruits and vegetables, 2004

	Yield (kg/ha)	Net returns (P/ha)	Profit/cost ratio	Cash cost
Pineapple	36,842	120,529	2.25	41,020
Mango	6,087	77,523	1.71	27,423
Yellow corn	2,302	10,055	0.56	10,972
Onion	10,121	56,100	0.56	74,113
Tomato	9,744	28,258	0.42	49,463
Palay, irrigated	3,919	9,635	0.35	11,925
Cabbage	12,042	23,362	0.29	482,528
Palay, rainfed	2,664	4,900	0.24	7,651
White corn	1,426	1,282	0.11	4,787

Source: Bureau of Agricultural Statistics

Figure 2. Shares of the major fruits and vegetables in total agricultural exports and imports by value, Philippines, 1994–2007 (in percent)



Source: Bureau of Agricultural Statistics

engaging in more sophisticated supply chains but their farm sizes place them in the small-holder category. The same characterization may hold for fruit farmers (e.g., Intal and Ranit 2004) but a crucial difference is that large-scale integrated production and processing may be observed in major fruits such as bananas and pineapples (Pabuayon 2000).

This includes long supply chains that link independent producers, processors, and traders.

Policy issues and development constraints

Given the potentials for the fruits and vegetables subsector, what prevents its full development and its contribution to the diversification of the agriculture sector?

Basically, the set of policy issues affecting agriculture as a whole, as identified by Balisacan et al. (2007), is the same set of factors that are at work within the fruits and vegetables subsector. These include:

Resource degradation. Briones (2006) identifies a set of environmental problems associated with agricultural practices and farming systems, particularly intensive cultivation in the lowlands, and encroachment of annual crop cultivation in the uplands wherein vegetable farming is implicated to the extent that it is widely practiced in the uplands (in the case of temperate crops) and in the lowlands (for tropical crops). These problems include: soil erosion, loss of biodiversity,

sedimentation, water pollution, and worsening pest and disease problems, and impose serious negative externalities off-site (e.g., diminishing irrigation coverage) as well as threaten long term on-site productivity (e.g., from topsoil loss).

Property rights. Property rights reform remains a problem in private lands, despite decades of agrarian reform. Protracted implementation undermines farm investments, particularly in permanent land improvements (Briones 2004). In the case of permanent crops such as fruit trees, land reform may be implicated in the absence of new planting by traditional landowners (World Bank 1998). Moreover, most awarded land (72%) is covered by collective rather than individual land title (Asia Pacific Policy Center 2007), undermining investment incentives for agrarian reform beneficiaries. Finally, land reform brings with it an array of formal restrictions on the transfer, sale, conveyance, and rental of agricultural land, imposing grave distortions on rural land markets (Ballesteros and Cortez 2007).

Market price policy. With the country's accession to the World Trade Organization (WTO) in the 1990s, the pattern of protection shifted in favor of agriculture unlike in previous decades when agriculture was the penalized sector (David 2003). In the course of tariffication, the Philippines (like many developing countries) negotiated for high ceiling rates. Based on the nominal rate of

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assistance, the major import-competing products now receive strong market price support, with the highest rates observed for sugar, corn, chicken, and rice (Table 2).

Domestic protection is implemented through both tariff and nontariff policies. The country's food security policy has skewed its public spending priorities and deprived funding for worthy initiatives such as investment in agricultural diversification toward high-value crops.

Rural finance. In general, smallholder agriculture has been largely bypassed by the formal credit system. Expansion of the rural financial sector has been hindered by inconsistent policies such as credit subsidies, directed sector loans, and loan targeting (Balisacan et al. 2007). The tree crops sector faces an even more acute problem owing to the absence of long-term finance.

Marketing infrastructure. Given the country's archipelagic layout, the distribution of goods from agricultural areas to population centers requires long transport links over land and sea. However, the country's distribution system is costly and inefficient. Farm-to-market roads are insufficient, depreciated, and of poor quality. Sea and air transport facilities (outside a few urban enclaves) are small and antiquated (Digal 2001). Transport cost forms the bulk of distribution cost. Inadequate infrastructure raises transport costs, with vehicle operating cost becoming 50 percent higher on poor roads and 100

Table 2. Nominal rates of assistance by agricultural commodity, in percent

	1980–84	1985–89	1990–94	1995–99	2000–04
Coconut	-27.1	-20.6	-15.3	-7.8	-14.1
Banana	-4.0	-0.8	0.0	0.0	0.0
Rice	-16.3	14.5	20.9	52.7	50.7
Maize	20.1	59.8	62.6	78.5	54.5
Sugar	59.5	123.2	49.3	97.2	79.3
Beef	5.0	17.0	28.0	28.0	10.0
Pigs	35.8	51.0	25.1	20.6	-8.3
Chicken	38.4	42.9	56.5	42.2	52.1

Source: David, Intal, and Balisacan (2007)

percent higher on very bad roads (Intal and Ranit 2004).

An even greater concern is shipping. Domestic port operations are inefficient, making service costs the highest in the region. In the North Harbor, servicing time is very long, accounting for 50–70 percent of domestic liner vessels' operating time. Port inefficiency is linked to the regulatory environment. The Philippine Ports Authority (PPA) is designated as the regulator of private port operations and is in charge of issuing operating permits. However, it also owns and operates many of the country's major ports, leading to a conflict of interest (Llanto, Basilio, and Basilio 2005).

Technological change. Adoption and impact assessment studies in the Philippines, as summarized in Balisacan et al. (see e.g., Mangabat et al. 2002), identify several adoption constraints such as bureaucratic barriers; shortage of essential facilities,

equipment and/or expertise; limited field trials and demonstrations; competition from cheaper alternatives; time lags in research and commercialization; and the absence of markets or poor infrastructure to support industry development.

These findings are also shared by other studies. According to a review by Gapasin (2006), while some types of R&D investment posted high rates of return, these returns are realized for only a few cases and commodities. In general, adoption rates are low (about 25%), indicating a gap due to incompatibility of the technology to farm-level conditions, weak extension, inadequate support services including credit, and low market demand. For instance, commercialization of new varieties for papaya and duck were hindered by a lack of planting materials and animal stocks.

Poor quality of technology may be due to the traditional commodity orientation of research, involving the generation, verification, and promotion of productivity-enhancing technologies. Furthermore, the organization of the public agricultural R&D system has evolved into a complex, sprawling set of institutions that are rigid, difficult to coordinate, and resistant to more demand-driven approaches to R&D. A similar set of problems plague the extension system; there are too many autonomous extension units in a dispersed system, with tenuous links to R&D and private sector institutions. There is no M&E system or mechanism to ensure accountability. There is

clearly a need for a sustained, high-quality training program as well as continuing equipment upgrade.

Concluding remarks

In conclusion, to accelerate technological change, particularly among smallholders, investment and policy reform should aim at integrating markets and removing policy distortions. The national agricultural research and extension system must also be synchronized with the wide-ranging and fast-changing requirements of agribusiness enterprises along the value chain. Addressing these policy and governance issues would have a far-reaching impact on the fruits and vegetables subsector, in particular, and on the agricultural sector as a whole through the dynamic benefits to be realized from diversification and transformation within agriculture.



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