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Middlemen and peasants in rice marketing in the Philippines

Y. Hayami[a,*], M. Kikuchi[b], E.B. Marciano[c]

[a]*School of International Politics, Economics and Business, Aoyama-Gakuin University, 4-4-35 Shibuya, Shibuya-ku, Tokyo 150-8366, Japan*
[b]*Faculty of Horticulture, Chiba University, Matsudo, Chiba 271-8510, Japan*
[c]*Social Sciences Division, International Rice Research Institute, P.O. Box 933, Manila, Philippines*

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Abstract

This paper reports the results of a field survey covering all links in the channel of rice marketing from farmers to consumers in Laguna Province, Philippines. The survey revealed a highly competitive nature of rice marketing in this area where the countless number of middlemen compete in the procurement of paddy from farmers for rice mills, leaving little room for monopoly/monopsony exercises. Intense competition was also found in wholesaling by mills to retailers as well as retailing to consumers.

Keywords: Peasants; Middlemen; Contestable market

1. Introduction

Rice is the basic food staple for people in monsoon Asia as well as the major source of income for farmers in the region. In the Philippines, for example, as much as 40 percent of total calorie intake and about one-third of total crop output value in 1995–1996 were derived from rice (National Statistical Coordination Board, 1997, pp. 3–4). In the long past a major portion of rice was consumed in producers' households. However, the share of marketable surplus has progressively increased for recent years. Hence, efficiency in rice marketing has become a more important determinant of both consumers' living cost and producers' income. Yet, rice marketing has received much less than sufficient scrutiny, compared with rice farming. Scanty empirical evidence available (Ruttan, 1969; Mears, 1974, 1981) is powerless relative to the deep-rooted popular belief that middlemen exploit peasants and poor consumers by means of monopoly pricing and usury. Such a belief based on shaky empirical ground has often been used as justification for strengthening government interventions into market, which contradict the interests of both farmers and consumers (Hayami, 1996).

In order to close the critical information gap, we undertook a field study on rice-marketing systems in the province of Laguna, one of the most productive rice areas in the Philippines. Our present study was of a small scale, aimed at serving as a reconnaissance into the complicated network of rice marketing involving elusive trade practices and contracts. It intended to generate hypotheses for more formal testing in the future rather than to draw definitive conclusions.

*Corresponding author. Tel.: +81-3-3409-8111; fax: +81-3-5485-0782; e-mail: hayami@sipeb.aoyama.ac.jp

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2. Approach

A part of the reason why less than sufficient research has yet been done on rice marketing than on rice farming is much greater difficulty of collecting information from traders than from farmers. Information is a source of success in trading business, which traders are understandably hesitant to disclose. Also, they are suspicious about outsiders' interrogation about such items as marketing margins and costs which impinge on tax and government regulations. This condition defies an approach based on a large sample survey over a wide area with standardized questionnaires. The investigation must rely on informal contacts and discussions with traders, possibly through introduction by someone whom they trust, as well as checking their data and explanations with several informed people in the same community.

Such an approach made it inevitable to limit our study into a relatively narrow locality along the southeast coast of Laguna de Bay, consisted of three municipalities (Pila, Victoria and Calauan) and San Pablo City (Fig. 1). This area was chosen because we could obtain a reliable data set for one village in the area about farmers' marketing outlets of paddy produced. This village, henceforth called 'East Laguna Village,' was one of 13 *barangays* in the municipality of Pila, for which recurrent surveys were organized by IRRI's Social Sciences Division for the past two decades (Hayami et al., 1978; Hayami and Kikuchi, 1981, chap. 5; Hayami et al., 1990).

Through long-standing trust relationship with farmers in East Laguna Village, we were able to collect reliable data on marketing of their products. After identifying how much of their paddy was sold and to whom, we tried to trace the marketing chain through a sequence of marketing agents up to end-users, noting prices, transportation and processing costs, trade practices and contracts. When inconsistency was found in data and explanations among transacting parties, we visited them again for verification. This 'pedestrian approach' based on our own observations and hearings gathered through walking around rural villages and towns proved to be effective for grasping the elusive behaviors and organizations of informal marketing agents in developing economies (Hayami and Kwagoe, 1993).

A reconnaissance to the marketing system in Laguna was attempted in August 1995. The first-round farmer survey was conducted in July 1996, collecting data from all farmers in East Laguna Village about their paddy output and disposition including sales by buyer for 1995 wet and 1995–1996 dry seasons. Utilizing the farmer survey data as a benchmark, the marketing survey in March 1997 traced the marketing channel from farmers up to retailers. In July 1997, the second-round farmer survey was conducted for 1996 wet and 1996–1997 dry seasons.

3. Sales of rice from farmers

Table 1 shows how paddy outputs in East Laguna Village were disposed in 1995 and 1996. In this village nearly 100% of paddy fields were double-cropped for both dry and wet seasons. Average yield per hectare and, hence, total output were significantly higher for dry than for wet season. For the both seasons the share of payment in kind for land rent, harvesters' labor wage (*hunus*) and loan repayment in total paddy output was about the same for the average of all farmers. However, the share of market sale in dry season (47%) was higher than in wet season (42%), reflecting seasonal yield differences. As expected, larger farmers with larger output per household had higher marketable surplus ratios than small farmers. However, the difference in the ratio of sale to output between large and small farmers was reduced by much larger home consumption by large than small farmers, mainly due to larger grants of paddy from large farmers to children and relatives, which are classified into home consumption in Table 1.

Market sales by farmers followed the seasonal pattern of paddy harvest. As shown in Fig. 2, as much as 60–90% of harvested crop was sold in the 2 months of peak harvest, October and April in wet and dry seasons, respectively. One would expect that the price of paddy declines at the harvesting months and rises in the lean months. However, the price in east Laguna Village bottomed in November and May instead of October and April. This was presumably due to a delay of harvesting peaks in the larger rice-producing area of Central Luzon for about a month behind Laguna. Increases in paddy prices by about two pesos per kg both from the wet season trough in November

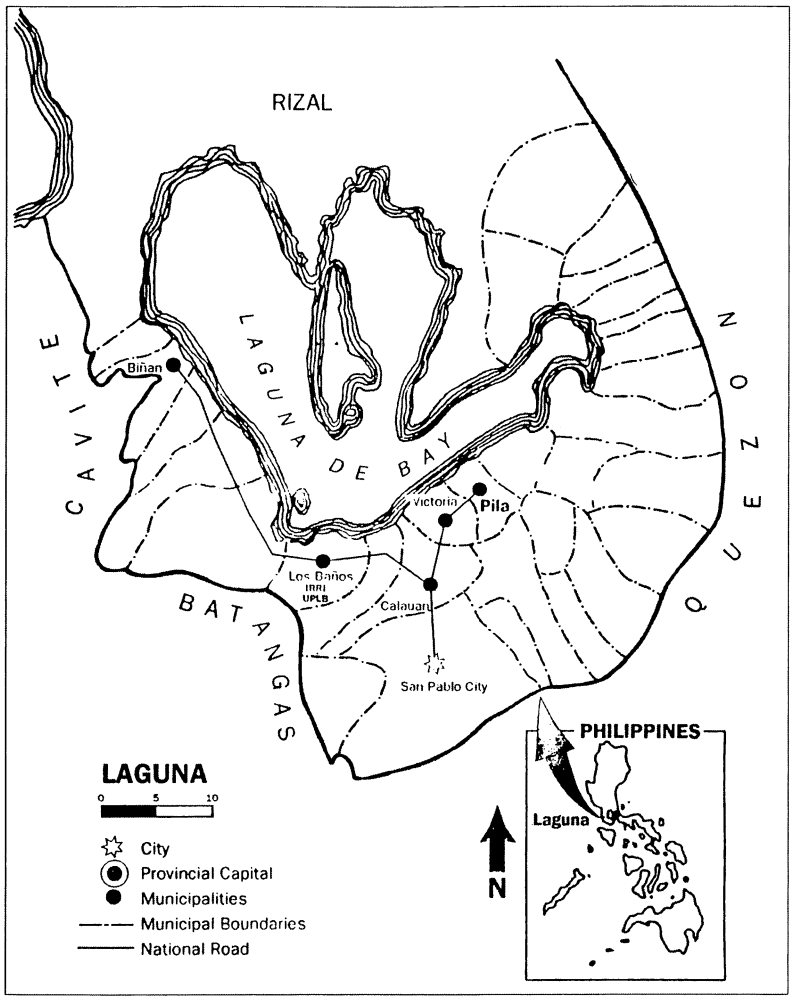

Fig. 1. Map of the province of Laguna, Philippines.

to the peak in February–March and from the dry season trough of May to the peak of July–August were a relatively normal pattern.

To whom did farmers sell their marketable surplus of paddy? A part was shipped directly to rice mills, and the rest was assembled by small traders called 'collectors' for procurement by rice mills. Typically, a collector is a wife of a farmer or a landless laborer who engages in paddy collection within her village and nearby villages. Two types of collectors can be distinguished. One type is what we call a 'commission agent' who identifies farmers willing to sell paddy, makes contract of sale with them at a price approved by the miller, and then let the miller make the hauling of paddy and the payment to farmers. For this task she receives a certain commission. Another type is an 'independent trader' who purchases paddy by her own risk and finance, and assemble them into a bulk for shipment for sale to the mill. Though these two transaction modes are categorically different, they are often practiced by a same collector.

Table 2 shows that 75% of paddy procured from farmers in East Laguna Village was assembled by collectors, of which about two-thirds were handled by those of the independent trader-type. It is amazing to find that as many as 37 buyers, including 24 collectors (12 commission agents and 12 independent traders) and 13 mills, operated for procurement of paddy

Table 1
Average output and disposal of paddy per farmer in East Laguna Village, 1995–1996 average

	Large farmer 2 ha and above		Small farmer below 2 ha		All	
	(kg/farm)	(%)	(kg/farm)	(%)	(kg/farm)	(%)
Wet season						
Number of farmers planted[a]	14 (2)		27 (8)		41 (9)	
Output	11417	(100)	3646	(100)	6332	(100)
Payment in kind[b]	4267	(37)	1403	(38)	2357	(37)
Home consumption[c]	2201	(19)	830	(23)	1340	(21)
Sale	4948	(43)	1414	(39)	2635	(42)
Dry season						
Number of farmers planted (No. of farmers with no sale	15 (1)		29 (2)		44 (3)	
Output	15716	(100)	4680	(100)	8359	(100)
Payment in kind[a]	5653	(36)	1711	(37)	3048	(36)
Home consumption[b]	2193	(14)	963	(21)	1350	(16)
Sale	7870	(50)	2005	(42)	3960	(47)
Year total						
Number of farmers planted[a]	16 (0)		29 (0)		45 (0)	
Output	27133	(100)	8327	(100)	14691	(100)
Payment in kind[b]	9920	(37)	3114	(37)	5405	(37)
Home consumption[c]	4395	(16)	1794	(22)	2690	(18)
Sale	12818	(47)	3419	(41)	6595	(45)

[a]Numbers of farmers with no sale are shown in parentheses.
[b]Include not only rice production costs paid in kind such as land rent and harvesting labor wage but other payments such as consumption loan repayment.
[c]Include grant.

Table 2
Marketing outlets of paddy produced by farmers in East Laguna Village, 1995–1996 average

	Collector				Rice mill		Total	
	Commission agent		Independent trader					
Wet season								
Number of buyers	8	(36)[a]	8	(36)	6	(27)	22	(100)
Number of sales by farmers	7	(19)	21	(58)	8	(22)	36	(100)
Total quantity sold (kg)	16340	(18)	54438	(60)	19845	(22)	90623	(100)
Average quantity per sale (kg)	2334		2592		2481		2517	
Dry season								
Number of buyers	6	(21)	12	(41)	11	(38)	29	(100)
Number of sales by farmers	6	(11)	32	(62)	14	(27)	51	(100)
Total quantity sold (kg)	13674	(9)	88795	(59)	48225	(32)	150694	(100)
Average quantity per sale (kg)	2486		2819		3445		2955	
Year total								
Number of buyers	12	(32)	12	(32)	13	(35)	37	(100)
Number of sales by farmers	13	(14)	53	(60)	22	(25)	87	(100)
Total quantity sold (kg)	30014	(12)	143233	(59)	68069	(28)	241316	(100)
Average quantity per sale (kg)	2401		2728		3094		2774	

[a]Percentages of total are shown in parentheses.

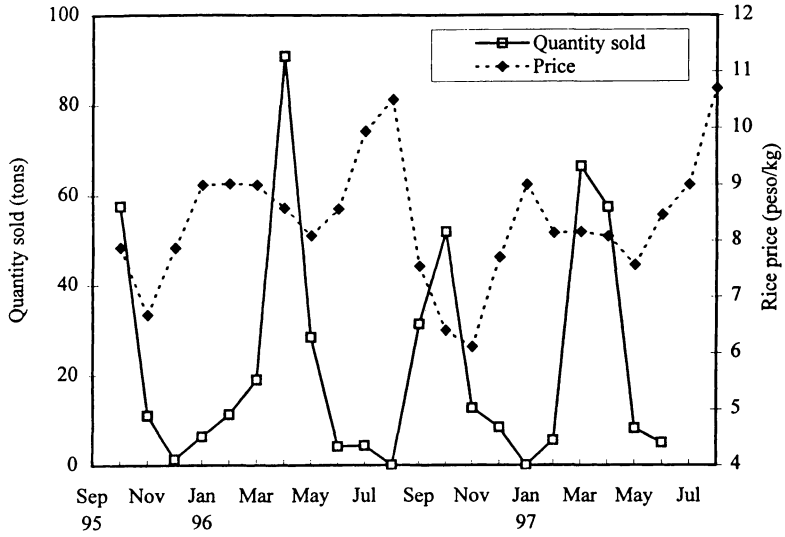

Fig. 2. Monthly average price of rough rice and quantity sold, October 1995–August 1997.

produced from only 45 farmers holding an average farm size of 1.9 ha, whose average marketable surplus was less than 3.5 tons per farm per season. All of them were private dealers. Although eight farmers in East Laguna Village belonged to an agricultural cooperative organized at a nearby village, none sold their rice to the coop., despite the announced coop policy of collective product marketing by members. None of the private dealers had a disproportionately large share. As we shall explain later, their incomes and profits are largely proportional to the volumes of paddy they procure. Therefore, they are bound to compete each other strongly, leaving little room for any buyer to impose on farmers lower prices than prevailed market prices. In a small village where so many middlemen are operating, it should not be difficult for a farmer to find out if a price offered by a buyer for his product, is appropriate, by checking with his neighbors dealing with other middlemen.

A stereo-typed view assumes that a middleman advances credits to peasants at a crop-establishment stage and bind their supply in harvest to him at reduced prices implying exorbitant rates of interest. However, in the case of our study village at least, middlemen's paddy procurements in 1996 involving advanced credits were less than 20% and those involving production loans for longer than 3 months were less than 10% (Table 3). Transactions in cash were the most common (48%), followed by delayed payment by middlemen to farmers (34%). The incidence of delayed payment almost twice higher than that of credit advance seems to imply that farmers were net lenders to middlemen rather than borrowers.

Another stereo-type is to assume double squeeze of peasants by a middleman engaging in both monopsony purchases of farm product at low prices and monopoly sales of farm inputs at high prices. However, in our study village case it was only one out of so many rice buyers who sold fertilizers and chemicals to farmers (Table 4). Only three farmers purchased fertilizers from this middleman (who was an independent trader) and only five purchased chemicals during 1996, though all the cases involved production loans longer than 1 month. Thus, the cases of double squeeze by middlemen should have been limited if ever existed. All the other farmers purchased fertilizers and chemicals from specialized agricultural input suppliers (as many as 15 suppliers) also on credit. All the farmers in our study village purchased the inputs from private dealers, though a few agricultural cooperatives nearby also engaged in the input supply. Distribution of subsidized credits and inputs was undertaken by government in 1970s as major means to promote the 'Green Revolution' but it has largely been terminated since 1980s.

Table 3
Modes of transaction in the sale of paddy by farmers, 1996 total

	Collector		Rice mill	Total
	Commision agent	Independent trader		
Total number of sales by farmer	14 (100)[a]	46 (100)	24 (100)	84 (100)
Cash	11 (79)	16 (35)	13 (54)	40 (48)
Delayed payment				
Shorter than 1 week	2 (14)	15 (33)	2 (8)	19 (22)
1 week–1 month	1 (7)	4 (9)	4 (17)	9 (11)
Longer than 1 month			1 (4)	1 (1)
Total	3 (21)	19 (41)	7 (29)	29 (34)
Credit advance				
Shorter than 1 week		3 (7)	1 (4)	4 (5)
1 week–2 month		2 (4)		2 (2)
Longer than 3 month		4 (9)	3 (13)	7 (8)
Unknown		2 (4)		2 (2)
Total		11 (24)	4 (17)	15 (18)

[a]Percentages of total are shown in parentheses.

Table 4
Purchase of fertilizers and chemicals by farmers, 1996

	Fertilizer			Chemical		
	Agricultural supply store	Rice trader	Total	Agericultural supply store	Rice trader	Total
Number of sellers	13	1	14	16	1	17
Number of farmers purchased	35	5	40	39	3	42
Average purchase per farmer						
Quantity (kg)	593	555	588			
Value (peso)	4302	4262	4297	1663	468	1578
Payment mode (no. of farmers)						
Cash	13	1	14	17	0	17
Credit[a]						
Shorter than 1 month	0	0	0	0	0	0
1–3 months	6	3	9	4	3	7
Longer than 3 months	22	2	24	19	0	19
Total	28	5	33	23	3	26

[a]Some farmers get credit from more than one source.

4. Organization of marketing

A local flow of rice from producers to consumers is illustrated in Fig. 3. Paddy retained for home consumption by farmers is milled at small *kiskisan* (steel huller) mills within their village or its neighborhood with payment in kind, often in the form of rice bran. Some large mills typically located in the suburbs of cities or along highways also engage in custom milling with the charge of 35–40 pesos per 50 kg bag of white rice. Relatively small-scale, old mills in local towns still use the so-called *cono* system equipped with iron disc-sheller and cone polisher. Larger and more modern ones use rubber roller instead of iron disc (Timmer, 1973; Barker et al., 1985, pp. 174–177). Most rice mills were privately owned and operated. Out of 31 mills officially licensed by the National Food Authority (NFA) within the study area, only

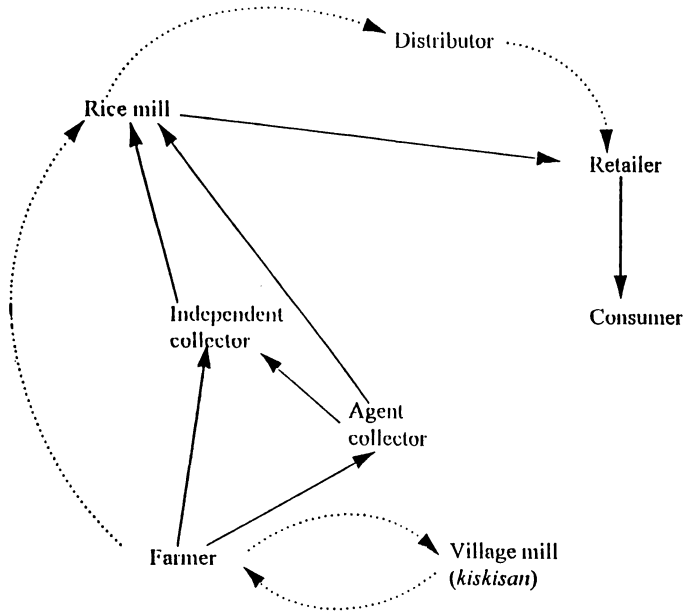

Fig. 3. Channels of local rice marketing in Laguna, Philipines.

three were operated by agricultural cooperatives and all the rest were private enterprises. Considering a significant portion of paddy produced in this area was procured and processed by large private mills in the vicinity of Metro Manila, the share of rice marketed through coops should have been a very small fraction.

Paddy sold by farmers reaches consumers after being milled at large commercial mills. These mills bear the function of not only processing paddy into rice but also wholesaling in the collection of paddy and the distribution of milled rice to retailers. As inferred from the data in Table 2, a relatively small portion of paddy processed by the mills was purchased directly from farmers and the majority was assembled through collectors. Not only one collector intermediates between a farmer and a mill, it is common that a collector of the independent trader-type employs several commission agents for her operation. There are even cases in which a commission agent operating in a relatively large-scale receives assistance on a commission basis from unexperienced village wives for developing contact with their neighbor farmers. The commission to this subcontractor is slightly lower than the commission to the primary contractor, for example, three pesos per cavan (bag) of paddy goes to the subcontractor out of five pesos which the primary contractor receives from the mill.

Usually, independent traders are the operation of husband and wife working together. Fixed capital requirement is large for an independent trader as its operation requires the purchase of a truck. Although the truck can be chartered, it is much more convenient to own it for timely operation, such as hauling wet paddy from farmers' fields immediately to a mill before being spoiled. Also, considerable experience is necessary to develop a needed skill in judging qualities of paddy to procure. Since the sale price to mills varies for different varieties and moisture contents, miscalculation on the quality of paddy in offering prices to farmers can result in a major loss. On the other hand, working capital requirement is not so high because the independent collectors usually pay to farmers after receiving payments from mills upon the delivery of their collected paddy (Table 3). They say, however, the endowment of extra working capital help keeping their words to farmers in the event of miscalculation of paddy qualities or market conditions.

In contrast, the operation of commission agent is entirely free from such trade risk. Capital requirement is low because it is the miller's truck that hauls paddy from farmers. Therefore, if villagers enter the collec-

tion business, they usually start as commission agents and try to ascend to independent traders.

The hierarchy of traders in paddy collection from commission agents to independent traders and further up to rice mills is a common form of marketing organization for farm products in peasant agriculture (Hayami and Kwagoe, 1993). It stems from the very fact that each small producer sells only a small amount, which tends to increase the transaction cost per unit of product collected by middlemen. For an independent trader who is anxious to increase the volume of collection for the sake of increasing the rate of utilization of her truck and trade skill, it is more economical to let poorer village wives having lower time opportunity cost search for and make contract with their neighbor farmers than to do the job by herself.

This condition applies more severely to the operators of large rice mills. For the sake of increasing the utilization rate of large fixed capital consisting of milling and drying facilities together with a fleet of trucks, they must endeavor to maximize the procurement of paddy. In order to keep a mill running over the months beyond the local harvesting season, it is necessary to procure paddy from different areas with different harvesting seasons. Assemblage of a large amount from small producers over a wide territory makes it inevitable for the mill to rely its supply on the collectors in various localities. Such a system observed in our study site is likely to be representative of rice marketing systems not only in the Philippines but also all over Asia, because rice is a typical peasant crop almost exclusively grown in small family farms (Hayami, 1994).

For its critical importance of maintaining assured supply of paddy, rice millers make various efforts to develop long-term trade relationships with large suppliers. Credit tying is one method used for this purpose. Application of this practice is rather limited, however, as observed in Table 3. It applies only to some large farmers who continue to sell large amounts directly to the mills. The direct sales entail a higher price to the farmers by the margin of commission to collection agents. Where a regular customer relation is established, the mill is said to advance production loan at the interest rate of 8 percent for 3 months or so which is deducted from the proceeds of paddy they supplied. This rate of about 2.5 percent per month or 35 percent per year is significantly higher than banks' lending rates of 20–25% for collateral loans but is much lower than the rates for informal credits that are usually higher than 50%.

Credit tying is also practiced by independent traders. They sometimes advance credits to not only large but also small farmers with interest rates ranging from 2% to 5% per month depending on credit worthiness of borrowers with a mode of 3%. 3% per month is a common rate applied to farmers' purchase of fertilizers and chemicals on credit from agricultural supply stores. The interest rate of 5% per month (80% per year) sounds exorbitant but is still lower than a typical rate of 7% per month (125% per year) charged to non-collateral consumption loan for poor rural people from informal moneylenders.

An interesting remark by a commission agent is that, once she introduces a farmer seller to a mill, she will continue to receive a commission of two pesos per cavan bag even if the farmer will sell his paddy directly to the mill. This must be an incentive payment to the agent for enhancing her effort to find large-volume suppliers with low transaction costs for the mill.

Usually one collector has transactions with several mills. Yet, it appears to be common that a patron–client relationship is established between a certain collector and a certain mill. In that case, the mill provides interest-free trade credit from which the collector advances payment up to 10 days before harvest to farmers with whom the collector has a regular customer relationship (*suki*). This cash advance is also applicable to the operation of commission agent, in which the advance is distributed through the agent but is deducted from the payments that farmers will received directly from the mill at the time of hauling paddy.

In the local context of Laguna under the focus of our present investigation, rice mills usually act as wholesalers for distribution of their milled rice directly to retail stores. However, large mills located in the vicinity of Metro Manila, such as Biñan (to which delivery of paddy from East Laguna Village was recorded), a large part of rice milled is distributed through specialized wholesale agents to a large number of retailers in metropolis.

In our local setting, stable flow of demand from retailers is of vital importance for rice-milling busi-

ness. Therefore, each miller makes major efforts to attract demand of retailers. One such effort is to advance interest-free loan to regular customer retailers in the form of sale on credit with delayed payment for 2–4 weeks. This credit operation is said to be risky, because relatively small credits to typically small retail stores in local town markets are difficult to recover by legal means. They say it is more difficult to establish mutual trust relationship with town retailers than with farmers and village-based collectors, presumably because it is easier for the former to shift the source of supply.

A significant skill seems to be required for the effective operation of such trade practices to attract demand of retailers. A manager of a cooperative owning a rice mill remarked that the coop-milling operation is often interrupted by shortage of demand. This remark might reflect the institutional rigidity as well as the lack of incentive mechanism in the coop system to skilfully practice such risky trade practices vis-a-vis local retail stores. As appointed by the board of trustees, coop managers are employed for fixed salaries. Also, they are supposed to receive some bonuses for good business performance. However, strong egalitarianism characteristic of coop organization usually defies the possibility of their receiving a disproportionate share of residual profit. Correspondingly, incentives for their taking risk for high profit is weak. Naturally they hesitate to engage in informal credit transactions with private traders, which are not included in their official mandate. It appears that coop managers allocate more of their efforts for obtaining subsidies from government and foreign aid agencies than for winning market competition with private traders.

5. Prices and marketing margins

The March 1997 survey attempted to collect information on marketing margins and profits of paddy collectors, rice mills and retail stores. Because the number of our observations was small and the questionnaires involved sensitive issues to respondents, rough calculations shown in this section and the next are based on highly simplified and conjectural assumptions. They should be taken as illustrative (or even anecdotal) examples.

Before proceeding to the calculation of margin and profit, the underlying assumptions must be made explicit. In the present calculation we will try to estimate prices per kg in milled rice terms at different points of the marketing channel from farmers to consumers, so that margins can be calculated for various segments of marketing. In this calculation, a vital factor is the conversion rate from paddy to milled rice. The commonly used rate in the Philippines is 0.65 but it applies to dry paddy. However, most paddy hauled to mills is wet, for which the conversion factor of 0.58 should be assumed. Another important factor is contents per cavan (bag). One cavan is often assumed to contain 45 kg of paddy but, according to our observations, its content varies from 40 to 45 kg with a mode of 42 kg. Thus, we assume that one cavan of wet paddy, which is hauled from farmers to millers, contains 25 kg of milled rice equivalent. One bag of milled rice distributed from mills to retailers commonly contain 50 kg.

The prices of rice and paddy vary widely for different qualities. For the sake of simplification our calculation is limited to the case of ordinary rice which was sold at the retail price of 20 pesos per kg. The modal prices we observed at various points of the rice-marketing channel in March 1997 were as summarized in Table 5. For the grade of rice commanding the price of 20 pesos per kg at retail stores, millers' wholesale price was typically 18 pesos. The margin of two pesos for retailers was attested by both retailers and millers.

To produce this grade of rice, mills paid to collectors at the prices from 350 to 360 pesos of wet paddy per cavan with a modal price of about 8.5 pesos per kg. The corresponding price at the farm gate procured by collectors was typically eight pesos per kg implying the collector margin of 0.5 peso per kg of wet paddy or approximately one peso per milled rice equivalent. Note that this margin is applied to independent traders, and that the commission for agents of five pesos per cavan of paddy implies only about 0.2 pesos per kg of milled rice equivalent. The five times higher margin for independent collectors than the commission rate corresponds to trade risk and capital costs shouldered by the independent traders.

If an independent trader employs commission agents for paddy collection, her margin declines by 0.2 pesos per milled rice equivalent. On the other

Table 5
Model prices and margins at various segments of the rice marketing channel in Laguna obseved in March 1997

	Wet paddy P/kg	Milled rice equivalent P/kg	Milled rice equivalent % of retail price
Price			
Farmers to collector[a]	8.0	14	70
Collecor to mill	8.5	15	75
Mill to retailer		18	90
Retailer to consumer		20	100
Margin			
Collector[a]	0.5	1	5
Mill		3	15
Retailar		2	10
Total		6	30

[a]Collector of the independent trader-type.

hand, if a miller hauls paddy directly from farmers through the contact of commission agents, his margin is higher by 0.8 pesos than the margin of three pesos per kg of milled rice under the assumption of paddy supply through independent traders, as illustrated in Table 5. This increase in millers' margin from shifting the source of supply to commission agents from independent traders is, to some extent, compensated by the cost of paddy hauling from farmers that he has to shoulder.

The calculation in Table 5 illustrates that out of 20 pesos per kg of rice paid by consumers at retail stores 70% goes to farmers, and 30% comprises the marketing margin of which 5% goes to collectors, 15% to rice mills and 10% to retailers. This share of gross marketing margin in consumers' peso is modest, partly because it pertains to a short trade loop within the province of Laguna. The marketing margin should be much larger for long-distance trades, such as between Metro Manila and remote provinces, corresponding to larger transportation costs and higher risk involved.

Also, this calculation pertains to the case in which paddy procured in March 1997 was processed and distributed to retail stores within the same month without involving storage operations. As observed in Fig. 2, March is a lean month for which farmers' paddy harvest is small and its price is high. The price received by farmers in the previous peak harvest period (October–November 1996) is said to have ranged from five to seven pesos with a mode of six pesos per kg of paddy or a little above 10 pesos per kg per milled rice equivalent, which is consistent with the observations in Fig. 2.

The difference of about two pesos per kg of paddy (or 3.5 pesos per kg of rice equivalent) should have been captured by marketing agents who stored the paddy from the harvesting to the lean months. If this sum is added to the marketing margin, farmers' share of consumers' peso decreases to about 50% and marketing margin's share rises to about 50%. The average share of total marketing margin over a season should be somewhere between 30% and 50% because farmers sold paddy not only in harvesting months but also in lean months.

This inventory carryover is operated mainly by rice mills. However, some large independent traders also engage in storage operation. The storage charge of paddy was typically five pesos per cavan per month. Thus, if we assume the interest rate of 2.5% per month, the total cost of 3-month storage from harvesting to lean months including both storage and interest charges amounts to about 1 peso per kg. Therefore, net profit obtained by deducting this 1-peso cost from the 2-peso margin is estimated to be 1 peso per kg of paddy stored. Much of this profit is considered a reward to millers' or traders' risk-taking. The storage operation is indeed risky. Those who stored paddy from the harvest of 1994–1995 dry season gained much more than the 1-peso profit because of rice price appreciation in the so-called 'Rice Crisis' period. On the other hand, they incurred loss in the next wet season because the price dropped in lean months due to major rice import from abroad by National Food Authority (NFA). Procurement of domestic rice at a floor and discharge of it at a ceiling price, though officially mandated to NFA, did not operate in any significant extent during our study period. NFA's price stabilization operation relied mainly on the control of import by means of state trading. However, it is a legitimate question to ask if liberal trades with tariffication along the WTO rule might be more effective for domestic price stabilization than discretionary imports by NFA.

It is often complained that the retail market price of rice does not decline in harvesting months at the same rate as the farm-gate price. They say that in the past couple of years the retail price of rice declined seldom

below 18 pesos per kg from the seasonal peak of 20 pesos, implying the rate of decline by only 10%. In contrast, the rate of decline in the farm-gate price of paddy from eight to six pesos was 25%. This relative fixity of the retail price reflects the fixity of marketing margin, which was argued by Vernon Ruttan (1969) as the evidence for proximity to perfect competition in rice market instead of monopoly/monopsony of millers and traders.

6. Incomes and profits

How much income and profits are generated from marketing activities? 'Income' is defined here as value added including returns to operator's labor, which can be calculated by subtracting paid-out costs from marketing margin. 'Profit' is obtained by subtracting the imputed value of operator's labor from the income, which supposedly includes returns to operators' owned capital and entrepreneurship (or human capital). In small-scale business operation heavily based on family labor, income and profit are significantly different. However, the difference is negligible for large enterprises (such as large commercial rice mills) mainly based on hired labor.

Because of the small sample size as well as the sensitive nature of information needed, our data are much less than sufficient to estimate the incomes and profits of various marketing agents. The following calculations are highly conjectural and anecdotal by nature.

6.1. Commission agent

Estimation of commission agents' income is simple and straightforward. Their commissions at the rate of five pesos per cavan of wet paddy (about equivalent to 0.1 peso per kg of paddy and 0.2 peso per kg of milled rice equivalent) are considered to consist entirely of their labor's income. Thus, the larger the collection an agent arranges, the higher is her income. In general, the scale of collection by collectors acting as agents of rice mills is larger than the scale of those acting as agents of independent trader collectors. The former ranges mostly from 100 cavans to 500 cavans per crop season, implying that their income from this business ranges from 1000 to 5000 pesos per year involving two crop seasons. This income range is equivalent to about 7–35 days' farm labor wage.

The collection by commission agents working for independent collectors seldom exceeds 100 cavans. They collect paddy in small lots not only from small farmers but also from landless agricultural laborers who worked in harvesting and received a share of harvested paddy as wage. Thus, their income is likely below 1000 pesos per year.

These commission agents' activities can hardly be a major source of household income. It is a small sideline revenue from the use of house wives' spare time commanding a very low opportunity cost.

6.2. Independent trader

The scale of independent traders' collection is considerably larger, often more than 10 times larger than that of commission agents. A wife of a *kiskisan* mill owner in East Laguna Village used to collect about 300 cavans per season when she was a commission agent before 1996. In 1996, she and her husband purchased a truck and began to undertake paddy collection as an independent trader. Their procurement for the 1996 wet season was about 2000 cavans.

Assuming they are able to collect the same amount for dry season and applying 0.5-peso margin per kg of paddy for independent collection (Table 5), their total margin per year would amount to 84 000 pesos. It is difficult to estimate their operation cost. However, if we assume the capital and operating cost of their truck is equivalent to a typical transport charge of five pesos per cavan of paddy, 0.1 pesos per kg of paddy can be assumed. In addition, if they employ commission agents for searching for supply (in fact, they employed one in the 1996 wet season), the same charge should be assumed.

Under these assumptions, their net income per kg of paddy is estimated as 0.3 peso, implying that their income from paddy trading amounts to 60% of gross margin or about 50 000 pesos per year. This is a respectable income in this village, about equivalent to the income of a middle-sized full-time rice farmer cultivating about 1.5 ha of irrigated double-crop paddyfield under the leasehold tenure with a low rent controlled by land reform laws.

The independent trader's income increases parallel with the size of paddy collection. A case was observed

in a local town adjacent to Pila in which a couple owing a truck and a jeepney collects 4000 cavans in wet season and 5000 cavans in dry season employing seven commission agents in various villages. If we apply the same calculation as before, their income from paddy collection amounts to about 110 000 pesos per year.

Moreover, they also engage in storage operation, holding about 700 cavans for about 3 months from harvesting to lean months within each crop season. (Inter-crop season storage is seldom practiced because price spreads across seasons are usually not sufficiently large relative to high risk and storage costs.) If the profit of 1 peso per kg of stored paddy can be assumed they obtain an additional income of nearly 60 000 pesos from this operation in two seasons. Their total income thus amounts to nearly 170 000 pesos per year. This much income is about equivalent to the farm income from the cultivation of 5 ha of irrigated paddy fields (normally about 35 000 pesos per ha).

6.3. Rice mill

Rice mills' margin is calculated as three pesos per kg of milled rice in Table 5. This calculation counts only the sale of rice in the revenue side. In fact, they receive additional revenue from the sale of bran and germ produced in the milling process. Assuming 8 kg of the byproduct is produced for 1 bag (50 kg) of milled rice and its price is five pesos per kg, the by-product value per kg of milled rice amounts to 0.8 peso. By adding this value, to the revenue side the total margin per kg of rice milled increases to 3.8 pesos.

The costs involved in millers' operation after purchasing rice from collector (independent trader) are of drying, milling, and distributing to retailers. The operational cost of drying is commonly said to be 1 peso per kg of milled rice. Assuming that the cost of milling is equivalent to the custom-service milling fee, it is estimated to be 0.8 peso per kg of milled rice; this might be an overestimate of the current operational expense since the custom service charge is likely to cover the capital cost also. Note that this estimate of milling cost turns out to be the same as the value of by-product that is commonly used as payment in kind to custom services by *kiskisan* mills, indicating that a single market integrate both small village mills and large commercial mills.

Distribution to retailers involves the costs of shipment and of interest for sales on credit to retailers for 2–4 weeks (with possible loss from defaulting), which we would estimate about 1 peso per kg. These costs add up to 2.8 pesos in total. The total margin of 3.8 pesos including the value of by product minus this total cost results in an estimate of millers' profit of 1 peso per kg of milled rice.

What will be the magnitudes of total profit and the rate of profit relative to the amount of capital used in rice mills? Illustrative calculations are attempted for two mills with very different characteristics.

The first calculation pertains to a large mill in San Pablo City, equipped with a modern milling machine using rubber roller, three dryers and three trucks. Its total capital including fixed and working capital would amount to 10 million pesos according to our rough estimations. Its milling capacity is 300 bags or 15 000 kg of rice per day. It runs for 6 days per week for 10 months. In order to maintain utilization of the milling facility at this rate, paddy is hauled not only from Laguna but also from outside the province as far as Northern Luzon, Bicol, and Mindoro. Also, it stores paddy procured in harvesting months for milling in lean months. Still it is forced to operate below capacity as paddy supply decreases in lean months and shut down altogether for about two months. Assuming the 10-month operation for 25 days per month producing 200 bags of milled rice per day, the total amount of rice produced and sold would amount to 2500 tons per year, implying the profit in the order of 2.5 million pesos. This estimate is based on the assumption of the miller's profit being 1 peso per kg, which pertains to milling of paddy procured in previous harvesting months in March 1997. In fact, however, a considerable amount of paddy milled in this month was procured at lower prices. Assuming that this mill stores 5000 cavans of paddy for 3 months per season or 10 000 cavans per year and that price appreciation exceeds storage cost by 1 peso per kg of paddy (as calculated in the previous section), the profit from the storage operation comes close to a half million pesos per year.

Thus, the total profit of this mill including that from storage operation would amount to about 3 million pesos per year. If the total capital being used is indeed 10 million pesos, the rate of return to capital is in the order of 30 percent per year. This rate, when compared

with bank's lending rates of 20–25%, suggests that the operator of this mill was able to produce a respectable return to his entrepreneurship and managerial ability.

The second case of our illustrative calculation pertains to a relatively small mill in the poblacion of Pila. It is an old *cono* mill purchased by the father of the present owner some 40 years ago. Its milling capacity is said to be 120 bags of milled rice per day. However, it operates for only 6 months, presumably milling 100 bags or less per day on the average. Since this mill owns no truck, its paddy is hauled by jeepney from nearby villages. Also, it does not engage in storage operation in any significant extent.

Assuming that this mill operates for 150 days per year with the daily milled rice output of 80 bags and that the profit margin is 1 peso per kg, its total profit would amount to only about 60 000 pesos or so. The mill owner, however, claimed that his mill including machines, buildings and land lot can command the price of 6 million pesos if sold now. If he is correct, the rate of return to capital is only about 10%, equivalent to bank's time deposit rate.

In this case, the mill owner may be content of such a low rate of return, presumably because his machines and buildings have long past depreciation periods, while he can continue to enjoy rapid appreciation of land value in the Pila Poblacion along a highway from Manila to Sta. Cruz. His case appears to be more typical of many mills in Laguna, including as many as 9 mills within Pila alone.

6.4. Retailers

The major route of rice retailing in Laguna as well as in the Philippines is specialized rice stores usually operating inside local town markets, although small grocery stores (*sari–sari*) also sell rice to consumers. The retail margin of the rice stores in markets was commonly two pesos per kg at the time of our March 1997 survey. However, it is difficult to estimate their operational costs. Their modes differ widely for different scales of operation ranging from less than 100 kg to more than 1000 kg of rice sale per day. In addition to store rent, utility charge and helpers' wage, implicit interest for sale on credit to customers appears to be a significant cost component.

An old lady who operated a relatively large store in the Pila market selling from 400 to 700 kg per day seemed to imply that she assumed her income being 1.5 pesos out of the margin of two pesos per kg sold. Her calculation does not seem to include the implicit interests incurred. It is likely that her income after deducting the interests and defaults comes close to 1 peso per kg. Thus, if she is able to sell 500 kg for 300 days, her income amounts to 150 000 pesos. This level of income is comparable to that of a large rice farmer cultivating around 4 ha and, also, of a large independent paddy collector. It was our impression, however, that a modal scale of operation and income of retailers could well be half of this case. Obviously, the major risk involved in retail rice trade is customers' default to their purchase on credit. It is not uncommon that retail stores are forced to close down because of accumulating defaults.

7. Conclusions

Our reconnaissance survey to the Laguna rice belt, despite its major limitations, revealed a highly competitive nature of local rice marketing in this area. Indeed, the countless number of middlemen compete in the procurement of paddy from farmers, as illustrated by nearly 37 buyers operated in a small village with only 45 rice farmers with an average farm size of 1.9 ha. Entry to paddy collection business is open virtually to any villagers.

Not only small village-based collectors but also rice mills compete intensely for procurement of paddy so as to ensure sufficient paddy supply for maximizing the utilization of their capital. Not only mills in Laguna are large in number but they have to contest with mills in other provinces and regions for procuring paddy at different harvesting seasons in order to even out paddy supply over time; this rules out the possibility of any large mill to exercise local monopoly power.

Intense competition also applies to wholesaling of rice by mills to retailers as well as retailing to consumers. The fact that as many as 9 mills operate in one municipality of Pila alone and many others in neighboring municipalities within short distance makes it difficult for any one mill or several in collusion to exercise private monopoly measures. The possibility is even smaller for retailers whose number is indeed countless including not only specialized rice stores but also small grocery stores.

Long-term continuous trade relationships are commonly observed between farmers and collectors, collectors and rice mills, rice mills and retailers, and retailers and consumers. The long-term relationships are often re-inforced by credit tying. Such relationships do not seem to motivate in seeking monopoly or monopsony profits in any side of transactions. Rather it stems from the motive to save transaction costs arising from possible moral hazard and opportunism under the asymmetry of information as well as to reduce risk. The quality of rice is relatively easy to ascertain. This product characteristic plus the high degree of competition among traders limits the scope of their exercising opportunism. Yet, within the narrow scope numerous possibilities exist for rice traders to cheat marginally both farmers and consumers (as well as other traders) on market prices relative to product qualities, including the notorious practice of manipulating scales and measures. Opportunism based on information asymmetry is, of course, more serious when the trade involves credit transactions. The long-term continuous trade relationship is expected to work as an effective brake on the exercise of such opportunism as the Folk Theorem in the theory of game dictates (Hayami, 1997, pp. 244–246). In our study site, farmers, middlemen and consumers continue to maintain the long-term trade relationship so long as it is beneficial for them, but it is very easy to switch their trade partners if their present relationship is found unsatisfactory. Thus, the market is highly 'contestable' if not perfectly competitive. According to the memories of veteran farmers, traders and mill operators, this structure of rice marketing has remained essentially unchanged despite major changes in transportation and communication systems as well as rice production technology.

Our crude estimation shows that farmers receive about 70% of consumers' peso spent for rice at retail stores and the rest 30% comprises the total marketing margin under the assumption that paddy hauled to farmers to rice mill via collectors is processed and sold to consumers within a period involving no significant price change. Of this total margin, less than half is the income of all the agents involved in the marketing chain. The share of income for each marketing agent (collector, miller and retailer) is estimated to be about 5% or less of the retail price.

If paddy is stored by mills or traders for about 3 months from harvesting to lean months, the share of total marketing margin typically increases to 50% of the retail price. This operation involves, however, significant costs for holding stock. The profit from this storage operation is estimated to be about 5% of one peso spent by consumers. Is this rate of profit 'exorbitant' considering high market risk involved in stock carryover over several months?

In general, the marketing margin stays largely constant with the result that the retail price fluctuates percentage-wise much less than the farm gate price. This fixity of marketing margin seems to indicate that strong market competition leaves little room for middlemen to manipulate prices and, hence, prevent their margins from deviating significantly above the sum of marketing cost and normal profit.

Although the shares of marketing margin and profit in consumers' peso appear rather modest, middlemen, especially large paddy traders and rice mills, can earn large total incomes and profits if they are able to collect large amounts of paddy and achieve sufficiently high utilization rates of their fixed capital and entrepreneurship. They thus compete one another strongly for hauling and processing as much paddy and sell as much rice as possible with thin margins.

The highly competitive nature of rice marketing in the Philippines found in this paper is largely consistent with the results of our own research on the marketing of upland crops in Indonesia (Hayami and Kwagoe, 1993) as well as many other studies including Hirsch (1961) on sugar in India, Bauer (1964) on export cash crops in Africa, Ruttan (1969) on rice and corn in the Philippines, Lele (1971) on food grains in India, Jones (1972) on food grains in Africa, Mears (1974) on rice in the Philippines, Mears (1981) on rice in Indonesia and Scott (1985) on potato in Peru. Such results imply that governments should "foster easy entry into trading by improving rural infrastructure, providing marketing information as widely as possible, developing reliable and appropriate property right, and contract mechanisms with grades and standards, and by staying out of the business themselves" (Timmer, 1993, p. xi).

However, it must be recognized that the picture of rice-marketing organization in the Philippines as sketched out here is highly provisional. Our information about farmers and paddy collectors at the village level is relatively solid, but it becomes progressively

thin as we move to rice mills and retailers as the number of observations is smaller and hearings are less intense. A much larger and more intensive survey is necessary for those segments of the rice-marketing chain in order to verify our crude estimates on marketing margins and profits. For developing a nation-wide perspective, the survey must be replicated in several different sites, including those outside Luzon Island, with different ecological and socio-economic conditions.

Considering the major role played by rice mills in rice marketing in the Philippines, indepth investigation is necessary in their management as well as milling technology used. Comparative analysis of milling efficiency across different scales of operation and technologies used is critically important for building our knowledge on rice marketing on a more solid ground.

According to our limited observation, the impacts of NFA's operation were not very visible except for rice importation from abroad. For broadening our perspective, a careful investigation is needed on NFA's own marketing activities as well as its regulations on private enterprises. This effort must be paralleled with the analysis of micro survey data in close reference with official market information on domestic outputs, imports and prices across seasons for periods pertaining our past and future surveys.

It is also important to fully grasp the institutional structure and the operational mode of agricultural cooperatives. Despite continued supports by government for so long, the viable coops that can withstand market competition have remained to be sheer exceptions. Underlying incentive incompatibility among coop managers, members and customers must be identified, based on the positive research that is not constrained by ideological preconceptions.

It is hoped that this pilot study will stimulate further research in those fronts not only in the Philippines but also in other developing economies, so that a proper perspective will be established on the roles of market and middlemen vis-a-vis farmers and consumers.

References

Barker, R., Herdt, R.W., Rose, B., 1985. The Rice Economy of Asia, Resources for the Future, Washington, DC.

Bauer, P.T., 1964. West African Trade: A Study of Competition, Oligopoly, and Monopoly in a Changing Economy, Cambridge University Press, Cambridge, UK.

Hayami, Y., association with Kikuchi, M., Moya, P., Bambo, L., Marciano E., 1978. Anatomy of peasant economy: A rice village in the Philippines, International Rice Research Institute, Los Baños, Philippines.

Hayami, Y., Kikuchi, M., 1981. Asian Village Economy at the Crossroads, University of Tokyo Press, Tokyo and John Hopkins University Press, Baltimore.

Hayami, Y., Kikuchi, M., Bambo, L., Marciano, E., 1990. Transformation of a Laguna Village in the two decades of Green Revolution. IRRI Research Paper Series, No. 142. International Rice Research Institute, Los Baños, Philippines.

Hayami, Y., 1994. Peasant and plantation in Asia, In: Meier, G.M. (Ed.), From Classical Economics to Development Economics, St. Martin's Press, New York, pp. 121–34.

Hayami, Y., 1996. The peasant in economic modernization. Am. J. Agric. Econom. 78, 1157–1167.

Hayami, Y., 1997. Development Economics: From the Poverty to the Wealth of Nations, Oxford University Press, Oxford.

Hayami, Y., Kwagoe, T., 1993. The Agrarian Origins of Commerce and Industry: A Study of Peasant Marketing in Indonesia, St Martin's Press, New York.

Hirsch, L., 1961. Marketing in Underdeveloped Economy: The North Indian Sugar Industry, Prentice Hall, Englewood Cliffs, NJ.

Jones, W.O., 1972. Marketing Staple Food Crops in Tropical Africa, Cornell University Press, Ithaca, MI, USA.

Lele, U.J., 1971. Food Grain Marketing in India, Cornell University Press, Ithaca, MI, USA.

Mears, L.A., 1974. Rice Economy of the Philippines, University of the Philippines Press, Quezon City, Philippines.

Mears, L.A., 1981. The New Rice Economy of Indonesia, Gadjah Mada University Press, Yogyakarta, Indonesia.

National Statistical Coordination Board, 1997. Philippine Statistical Yearbook (1997), Makati, Metro Manila, Philippines.

Scott, G.J., 1985. Markets, Myths and Middlemen: A Study of Potato Marketing in Central Peru, International Potato Center, Lima, Peru.

Timmer, C.P., 1973. Choice of technique on rice milling in java. Bull. Indo. Econ. Studies 9, 57–76.

Timmer, C.P., 1993. Foreword, In: Hayami, Y., Kwagoe, T., 1993.

Ruttan, V.W., 1969. Agricultural product and factor market in southeast Asia. Economic Development and Cultural Change 17, 501–519.