



# **Marketing Innovation for Vegetables: Conditions of Diversification in Upland Farming**

**Yujiro Hayami, Toshihiko Kawagoe,  
Shigeki Yokoyama, Al Sri Bagyo, and  
Amar Kadar Zakaria**

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In co-operation with ESCAP member countries, the Centre will initiate and promote research, training and dissemination of information on socio-economic and related aspects of CGPRT crops in Asia and the Pacific. In its activities, the Centre aims to serve the needs of institutions concerned with planning, research, extension and development in relation to CGPRT crop production, marketing and use.

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## Foreword

The Regional Co-ordination Centre for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops (CGPRT Crops) in the Humid Tropics of Asia and the Pacific (CGPRT Centre) is one of the regional institutes of the United Nations Economic and Social Commission for Asia and the Pacific (UN/ESCAP). The Centre aims at initiating and promoting co-operation for research and development on CGPRT crops in the region.

Diversification of agriculture has increasingly been seen as one of the strategies to adjust agricultural production in responding to increases and changes in demand, at the same time leading to an increase of farmers' income in rural areas. CGPRT crops are regarded as the main thrust of diversification, particularly where self-sufficiency of rice has been achieved.

Crop diversification however, cannot be limited to CGPRT crop production. In fact CGPRT crop-based farmers, in an effort to diversify, have been introducing other activities. Through the involvement in marketing and processing of CGPRT crops, farmers can earn greater incomes. This aspect of CGPRT crop development was the subject of two of the Center's monograph series (Nos 8 and 19) as referred to in the summary of this publication. These dealt with the effects of vertical diversification on farmers' incomes and rural employment generation in the marketing and processing of CGPRT crops. The Centre is currently pursuing research and development activities in this area as one of its priorities.

This study investigates the marketing system for perishable commodities recently introduced in CGPRT crop-based farms in a rainfed area in Java - its organization, functioning, benefits to farmers and policy implications. The study finds that the system is organized in the rural informal sector both for local and distant markets and generally functions efficiently. Rural women play distinctive roles particularly in local marketing.

I trust this study provides useful insights into diversification issues related to traditional CGPRT crop-based farmers and valuable implications for policy makers.

The study was conducted in the summer of 1990 by Dr Yujiro Hayami (Team Leader), Professor of Aoyama Gakuin University, Japan; Dr Toshihiko Kawagoe, Associate Professor of Seikei University, Japan, formerly a CGPRT staff-member; Mr Shigeki Yokoyama, a staff-member of the Centre, and Mr Al Sri Bagyo and Mr Amar Kadar Zakaria, both at the 'Bogor Research Institute for Food Crops, Bogor.

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Seiji Shindo  
Director CGPRT  
Centre

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The study team

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## Summary

This study was conducted in 1990 as a case study in the District of Majalengka, West Java. It attempted to make an in-depth investigation into the marketing of vegetables at the local level in comparison with other crops. It is intended to be a comparative study to two previous marketing studies for CGPRT crops in West Java and Sumatra (*Agricultural Marketing and Processing in Upland Java*, CGPRT No. 8, 1987; and *Agricultural Marketing in a Transmigration Area in Sumatra*, CGPRT No. 19, 1989). The main purpose of this study is to examine whether the marketing system within the informal sector is able to deliver perishable commodities such as vegetables, efficiently, not only to local markets but also to distant markets such as Jakarta. This in turn indicates if the marketing system can support commercial production of vegetables newly introduced to rainfed areas where CGPRT crops have traditionally been grown.

The local marketing structure for vegetables in this area is similar to that used for CGPRT crops, as revealed in previous studies. In both cases a division of labor is observed between small middlemen who live in the villages and collect farm produce from neighboring farmers, and larger traders who ship these commodities to distant markets.

A unique aspect of vegetable marketing is that a channel for local consumption is clearly separated from a channel for transshipment to metropolitan markets, whereas various middlemen engage in both local retail trade and interregional wholesale trade in the case of CGPRT crops such as soybean. This characteristic is considered to have stemmed from the high perishability of vegetables, which require speedy marketing.

In the channel for local consumption, village women play the dominant role. Producers and consumers are linked by the wives of farmers in the villages, who carry village products to town markets for retail sale in the open air market at a low cost with minimum spoilage. Their efficiency is based on the low-opportunity costs of their labor as well as the easy access they have to town markets in densely populated Java. In this way, not only women's labor but also their entrepreneurial ability are adequately tapped, making a significant contribution to the incomes of rural households.

For transshipment of vegetables to distant markets, the relations among middlemen as well as between farmers and middlemen are more tightly organized than for non-perishable products. This effects a better co-ordination of harvesting and collection of small lots at the village level, for bulk shipment to the metropolis. Thus, it is common for the large traders to ensure a continued supply from the farmers by advancing credits in kind through the village-level middlemen. No interest is usually charged in this credit-tying contract. The unpaid interest is considered by large traders as a cost for better co-ordination of harvesting and collection of vegetables for their transshipping business. This credit cost is significantly lowered by their access to institutional credits as well as their capacity to purchase in-kind credits such as fertilizers and chemicals in large lots at lower prices.

Despite the common practice of credit tying, there is little sign of monopoly/monopsony on the side of middlemen. Although a farmer may be obliged to sell his

products to a middleman for the duration of their credit contract, he can easily shift next season to another middleman. The same applies to the relationship between large and small middlemen. Since competition is intense among middlemen, the scope is severely limited for anyone to set arbitrarily low prices for the farmers' produce. Vegetables assembled through this system reach the Jakarta market at a relatively modest cost, including commodity loss due to spoilage.

Thus, the present marketing system seems to be effectively supporting commercial vegetable production newly introduced to this rainfed area. The marketing activities increase farm income and employment, especially for the women whose alternative employment opportunities are limited. These findings imply that government intervention in this market through regulation of trade practices or control of prices, if attempted, will likely result in a loss of social economic efficiency. Efficiency of the present system can be improved through investment in public infrastructure, such as information services, communication networks and transportation systems, but not from direct intervention into private market activities.

## Introduction

In Indonesia as well as monsoon Asia in general, rice is grown in lowland areas and coarse grains, pulses, roots and tuber crops (CGPRT crops) are commonly grown in upland areas as a source of meagre subsistence. In relation to the irrigated lowland rice areas, upland as well as rainfed lowland areas have been largely bypassed by major development currents.

In order to increase employment and income of these relatively neglected people in marginal areas, it is critically important to strengthen agricultural research and technical extension for CGPRT crops, which have lagged behind those for principal food crops, such as rice and wheat, as well as plantation crops. In addition, two strategies can be envisaged: (a) to develop processing and marketing of CGPRT crops for increasing the value added to farm-produced materials; and (b) to combine production of CGPRT crops with high value commercial commodities such as livestock and horticultural products. These two strategies are highly interrelated. Commercial livestock and poultry production must be supported by development of the processing/marketing network to convert CGPRT crops into feeds for animal and poultry growers as well as to transship their products to urban markets. Concomitant with the incorporation of horticultural production on a commercial scale into farming systems in marginal upland areas, is the development of an efficient system of marketing for vegetables and fruits. This requires an even better co-ordination than for the marketing of CGPRT crops due to the former's perishable nature.

In two previous studies (Hayami, et al. 1987; 1989), we attempted to assess the potential of the first strategy through investigations into local marketing and processing of CGPRT crops in an old settled area of West Java and a transmigration area of Central Lampung, Sumatra. This study of vegetable marketing in West Java is intended as an initial investigation into the second strategy. We chose a village with upland and rainfed lowland areas, in which CGPRT crops were traditionally grown in the lowlands as well as its uplands during the dry season. Commercial vegetable production has been introduced since the mid-1970s. Through a comparison of production and marketing between vegetables and traditional CGPRT crops, we try to assess the magnitude of a possible increase in employment and income from the introduction of new commercial crops. We also try to identify characteristics of the marketing system that support the commercial production of vegetables.

### **Objectives of this Study**

This study focuses on the following three major issues:

Firstly, we attempt to clarify the organization and the working mechanism of local marketing of vegetables as an example of the rural informal sector in developing economies. Previous studies on the informal sector have largely concentrated on cities (Moir 1978; Shaefer 1976; Breman 1980; Sethuraman 1981). Little is known about the

rural informal sector, which consists of petty manufacturers, traders, moneylenders and transporters, in the local towns and villages. A major question is how the marketing network of these small informal agents is organized to link the peasant producers with urban consumers, and how efficiently the system operates.

Secondly, the informal sector is known to have a high labor-absorptive capacity and its potential contribution to the alleviation of unemployment/underemployment in developing economies has been emphasized (ILO 1972; 1974). This study focuses on the capacity of the rural informal sector engaged in vegetable marketing, to generate employment and income relative to farm production itself.

Thirdly, vegetable marketing at a local level is carried out predominantly by women. It is our major concern to measure the contributions of vegetable marketing to income and employment of women in rural communities.

Our specific objectives in this study are:

1. to identify the complete network for vegetable marketing at the local level and its connection with metropolitan markets;
2. to identify the trade practices and contracts used to organize relationships among middlemen and between middlemen and producers to examine elements that may promote market imperfections;
3. to identify characteristics of marketing organization and trade practices for vegetables by a comparison with soybean and rice;
4. to gauge prices, marketing margins and costs at various levels of vegetable marketing in order to examine whether the market is competitive or efficient; and
5. to estimate income and employment generated from vegetable production and marketing for the rural population as a whole as well as for women, relative to those of soybean and rice. This enables us to assess the contributions of a new commercial crop, to growth and equity in marginal rainfed areas.

## **Methodology and Scope**

For the purpose of identifying the characteristics of vegetable marketing in a rainfed area in West Java, this study used the same methodology as used for the two previous studies on marketing of soybean and related commodities (Hayami, et al. 1987; 1989). First, we conducted a sample survey of farmers in one village in order to identify to whom their products were sold in the latest crop season. We then traced the marketing chain through the middlemen up to end-users, noting prices, transportation costs, trade practices and contracts. This methodology has the advantage of facilitating a check of consistencies in the data provided by the two parties in each transaction. We also tried to check their data with other informed people such as village headmen.

Because our investigation was limited to one small site, regional representativeness of the results is by no means guaranteed. Yet, to our knowledge, there is no other way to obtain relevant and reliable information on the local marketing and processing of agricultural products that are carried out mainly within the informal sector. By nature, informal-sector organizations and activities are highly elusive and characterized by infinite variations. Moreover, middlemen are suspicious of and resistant to investigations by outsiders. These conditions defy an approach based on an extensive survey over a wide area using standardized questionnaires, even though we do not deny the usefulness of interregional price comparisons based on an extensive survey for examining the degree of market integration and efficiency. The investigations must rely

on careful personal observations and intensive contacts, not only with the marketing agents to be investigated, but also with a large number of people in the same community, as done in this study.

One village in the Majalengka District was chosen as the study site for our initial farm survey, primarily because it was endowed with the above relevant conditions. In addition, general information on population, households and landholdings in this village, had been accumulated previously in a baseline survey conducted for a project of the CGPRT Centre entitled; "Rural Employment and Income Generation from Production, Marketing and Processing of CGPRT Crops in a Rainfed Area in Indonesia". The baseline survey was conducted twice to cover all households in the study village. (For the baseline survey questionnaire relevant to this study, see Appendix C-1). The first round survey was made in April and May 1989 and covered 62 households. The second round survey was carried out in November and December 1989, covering 78 households. In addition, with the Employment Structure Survey Form (Appendix C-3), a comprehensive survey was conducted of sample farmers, inquiring about input-output relations by crop and by plot.

The field work for this marketing study was conducted in 1990 in the following steps:

1. In February 1990, a preliminary farmer survey was conducted using Farmer Survey Form (Appendix C-2) for 37 sample farmers who grow CGPRT crops, rice and vegetables. At the same time, a quick preparatory survey was done on a small number of middlemen, rice mills and village co-operatives. Through this survey, a tentative mapping of marketing channels was prepared.
2. In July 1990, the first survey was conducted on women who engage in trading in the study village, using *Pasar* Vendor Survey Form 1 (Appendix C-4). Through this survey, 18 *pasar* vendors, 3 pedlars and 2 stall keepers were interviewed to assess quantitative aspects of their marketing activities. The middlemen to whom sample farmers sold vegetables were interviewed, and their sales to other middlemen were traced and the successive buyers were interviewed, up to the metropolitan market level in Jakarta.
3. In August 1990, successive interviews of middlemen were carried out. The middlemen whom we were able to trace included those operating in the study village and also in neighboring villages as well as those operating in town markets in Kadipaten and Majalengka, and the metropolitan markets in Jakarta (*Pasar* Induk) and Bekasi (*Pasar* Cibitung). Interviews were also done with banks, money lenders and village co-operatives, which may provide credit to farmers and middlemen. At the same time, the second survey of *pasar* vendors was conducted in the village with *Pasar* Vendor Survey Form 2 for 15 *pasar* vendors, inquiring about qualitative aspects of their activities, such as perish ability of commodities and price information (Appendix C-5). In addition, a supplementary farmer survey was conducted of sample farmers, to assess their share of the marketing outlet of vegetables for local consumption.

Most middlemen, except those residing in the study village, were not receptive to a formal interview. In many cases, therefore, we had to listen without taking notes and

to fill in the questionnaires later from memory. Also, in some cases the information they gave us was considered false and was therefore discarded. The middlemen and processors whom we interviewed are listed in Table I. I. There are many inconsistencies in these survey results, however. Therefore, we based our analysis on the consistency of the data (selected and/or adjusted) we gathered.

**Table I.1 Number of respondents from survey interview, by professional category.**

Category	No. of respondents	Category	No. of respondents
All household:		Processor:	
Baseline survey 1	62	Rice mill	3
Baseline survey 2	78		
Total	140'		
Farmer:		Creditor:	
Farmer survey	37	Bank	2
Supplementary farmer survey	38	Saving and Loan Association	2
Employment structure survey	20	Village co-operative	3
		Total	7
Middleman:			
<i>Pasar</i> vendor	18		
Stall ( <i>Kios</i> )	6		
Pedlar	3		
Village collector	10		
Inter-village collector	3		
Consignee	7		
<i>Pasar</i> resaler	4		
Fertilizer dealer	2		
Total	53		

## Plan of the Volume

Chapter 2 summarizes the characteristics of the study site, including socio-economic aspects, farming systems and the position of this site within both local and interregional trade systems. Chapter 3 classifies various marketing agents and examines how they are integrated into a complete trade network for vegetables in comparison with other farm commodities. Chapter 4 investigates the marketing of vegetables, from the peasant producers to metropolitan markets and discusses why certain contracts and trade practices are being used between farmers and middlemen as well as among various types of middlemen. Chapter 5 investigates the organization of vegetable marketing for local markets, in which village women play a dominant role. Chapter 6 gauges marketing margins and costs at various levels of marketing, in order to examine whether the market is competitive and efficient. Chapter 7 estimates how much income is generated for villagers - especially women - from vegetable production and marketing, in comparison to soybean and rice. Chapter 8 summarizes major findings and policy implications.

## The Study Site

This chapter gives readers background information on the general characteristics of the study site. Farming conditions and cropping systems in the study village and its vicinity are explained, as well as the geographical relation of this village to markets in towns. The explanations focus on changes in farming systems corresponding to the introduction of commercial vegetable production in this village. An assessment is made on the position of this area in regional production and market supply of vegetables.

### Location and Environment

The site at which our farmer survey was conducted, is one of three hamlets (*kampung*) in a village (*desa*) within the subdistrict (*kecamatan*) of Dawuan, which is located in the central part of the district (*kabupaten*) of Majalengka. Its geographical location is shown in Figure 2.1. We will henceforth call this hamlet the “study village”.

The study village is located on a moderately hilly plateau, 70 to 100 metres above sea level. The area consists mainly of sloping upland fields and terraced rainfed ricefields. Of the area owned by villagers, 53 percent of the total farmland is upland fields, and the rest is rainfed lowland ricefields (Table 2.1). Considering that 75 percent of the total farmland in the *desa* to which this *kampung* belongs is lowland, the study village represents an unfavourable or marginal area for traditional farming. This is an old long-settled village, although until recently, the area under cultivation had expanded gradually. Villagers say that the opening of new land ended in the early 1980s with the conversion of a common grazing field into arable land.

Table 2.1 Farmland areas by type, owned and operated by villagers in the study village, 1989.

	Owned area		Operated area	
	ha	%	ha	%
Upland	14.6	53	17.8	42
Lowland:				
Rainfed	13.1	47	17.7	41
Irrigated <sup>a</sup>	0	0	7.1	17
Total	27.7	100	42.6	100

<sup>a</sup> Leased from neighbouring village for the third season crop

Source: Baseline surveys 1 and 2.

Almost all inhabitants are Sundanese and practising Moslems. The total population in 1989 was 515 persons comprising 140 households, with 256 males and 259 females.

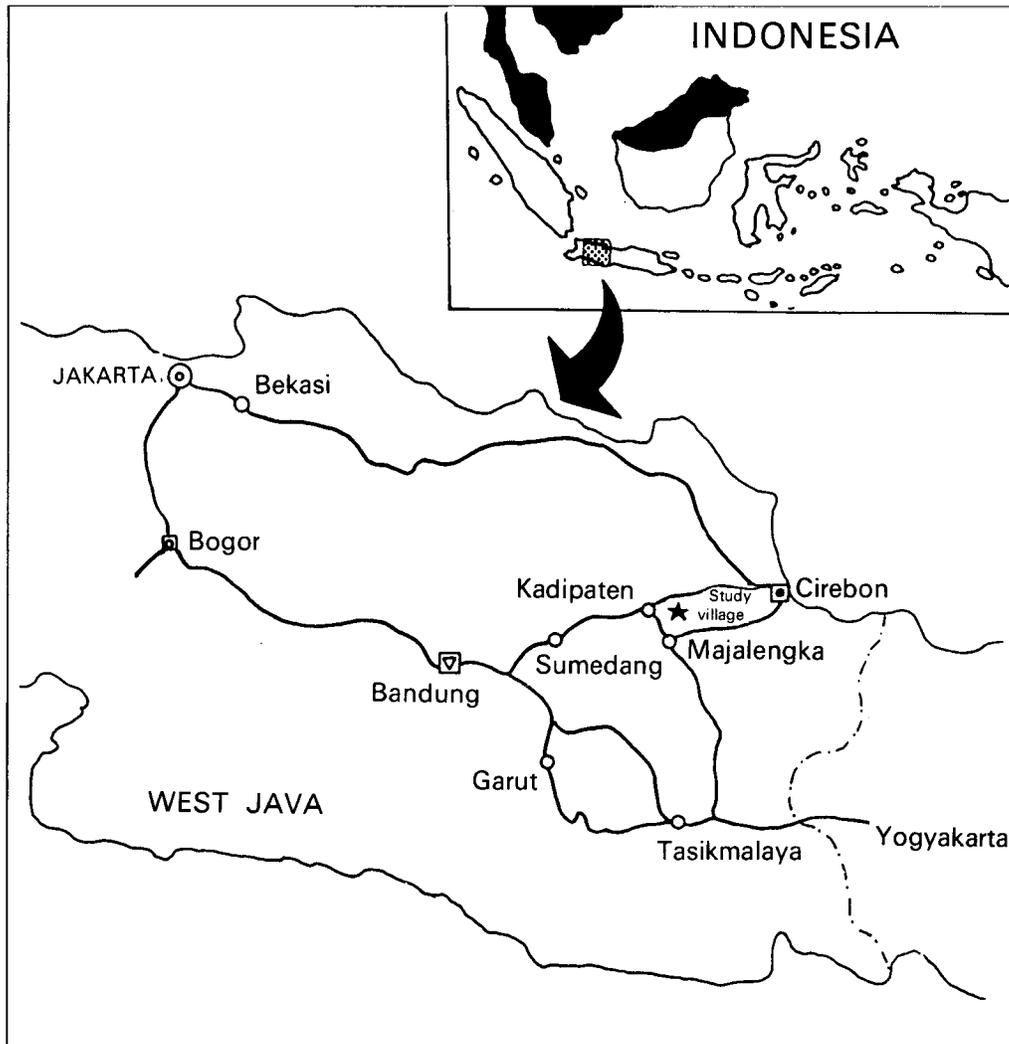


Figure 2.1 Location of the study village relative to market centers.

### Agrarian Structure

Farming is the dominant economic activity. More than 80 percent of household heads are engaged in farming (Table 2.2). No manufacturing industry is located in the village, although several brick and roof tile factories operate in neighboring villages providing a few jobs to villagers. Full-time farming occupies 54 percent of farmers and the rest engage part-time in other economic activities such as construction and petty trades. Out of 140 households, 23 householders make a non farm living as pedlars, construction workers etc.. Besides these non farm households, there are 4 households of which the heads are agricultural laborers who have no farmland but earn a living as hired farm workers.

**Table 2.2 Occupations of 140 household heads in the study village, 1990.**

	Number	%
Farm household:		
Owner cultivator	43	31
Owner cultivator/tenant	55	39
Tenant	15	11
Total farm	113	81
Agricultural laborer	4	3
Non-farm household:		
Pedlar	9	6
Construction worker	4	3
Factory worker	2	1
Official <sup>a</sup>	2	1
Others <sup>b</sup>	4	3
Retired	2	1
Total non-farm	23	16
Total	140	100

<sup>a</sup> A village official and a teacher.

<sup>b</sup> A massager, a bicycle repairman, a minibus conductor and a driver. Source: Baseline surveys 1 and 2.

While landless agricultural laborers are rather exceptional in this village, there are many tenant farmers. Out of 113 farmers, 15 are tenant farmers and 55 cultivate their own and rented lands. A tenancy arrangement commonly practiced for the upland plots is a fixed rent in cash, paid in advance of the contract period (usually for a crop season). The other hand, rent for lowland rice fields is often paid in kind (rice). The rent is either a fixed sum in kind or a share of output. In the latter case both output and cost for fertilizers and chemicals are shared equally between landlord and tenant (*maro*).

Through the practice of these tenancy arrangements, inequality in farm-size distribution in terms of operational holdings is reduced relative to that of land-ownership distribution (Table 2.3). While 27 percent of villagers own no farmland and 43 percent own less than 0.2 hectare, those holding no operational area and holding less than 0.2 hectare are 19 and 28 percent, respectively. The Gini coefficient of the operational-holding distribution (0.48) is significantly smaller than that of the ownership distribution (0.57).

Another important role of land tenancy is that it enables villagers to expand their farm operations. The endowment of farmland in this village is very small, with a total area of only 28 hectares and a per-farm average of 0.22 hectare. Villagers also rent lands from surrounding villages. This has expanded their total operational area to 42 hectares giving an average of 0.38 per farm. The incidence of land leased from other villages seems to have increased significantly since this village began commercial vegetable production. The leasing of irrigated lowlands for the third crop season of rice (June-September), during which vegetables can not be grown in rainfed conditions, has become increasingly common.

Table 2.3 Size distribution of land ownership and operational holdings by villagers in the study village, 1990

Area (ha)	Ownership holdings		Operational holdings	
	(No.)		(No.)	
0	38	27	27	19
0.01-0.20	60	43	39	28
0.21-0.50	30	21	48	34
0.51-100	9	6	22	16
1.01-	3	2	4	3
Total	140	100	140	100
Gini coefficient	0.57		0.48	
Total Area (ha)	27.7		42.4	
Average of all households (ha)	0.20		0.30	
Average of farm households (ha)	0.22		0.38	

Source: Baseline surveys I and 2

### Farming Systems

Farming systems under rainfed conditions are primarily determined by the seasonal distribution of rainfall. As shown in Figure 2.2, the wet season in this area extends from October to May with the rainfall peak in December-February.

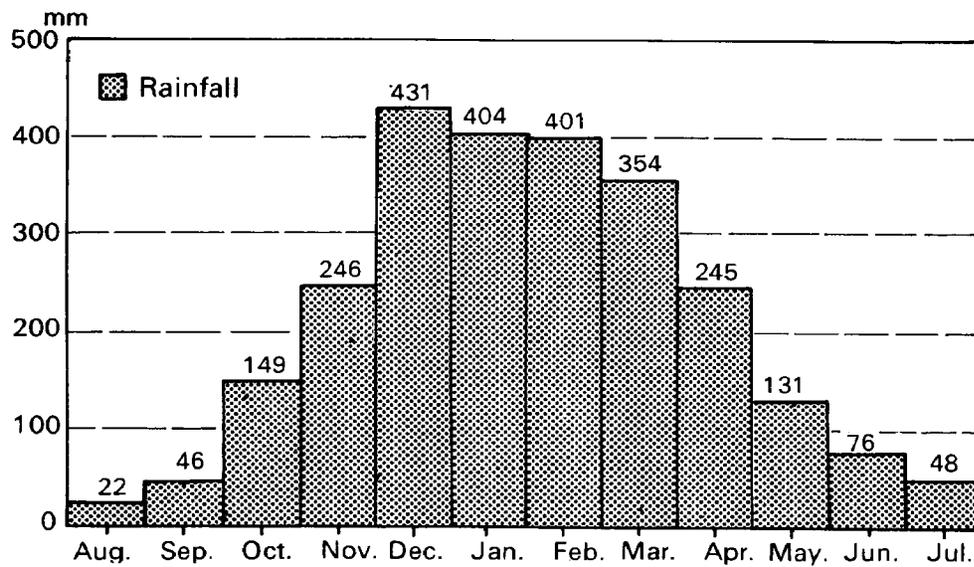


Figure 2.2 Average monthly rainfall in majalengka for 1979-1988

Traditional farming systems before the introduction of commercial vegetable production are shown in Figure 2.3. Note that actual farming systems are characterized by infinite variations in crop combinations and sequences and that those shown in figures 2.2 and 2.3 are simplified representations. The typical systems traditionally used in the village are: (a) a mixed cropping of CGPRT crops in upland fields, and (b) a sequence of rice followed by soybean in rainfed lowland fields. The first system intercroops maize and upland rice for the first crop season (October-January), followed by soybean for the second crop season (February-May), while cassava is grown along the edge of farm plots. The third system (c), the practice of rice double cropping in irrigated lowlands, is not found in the study village as irrigated fields are nonexistent.

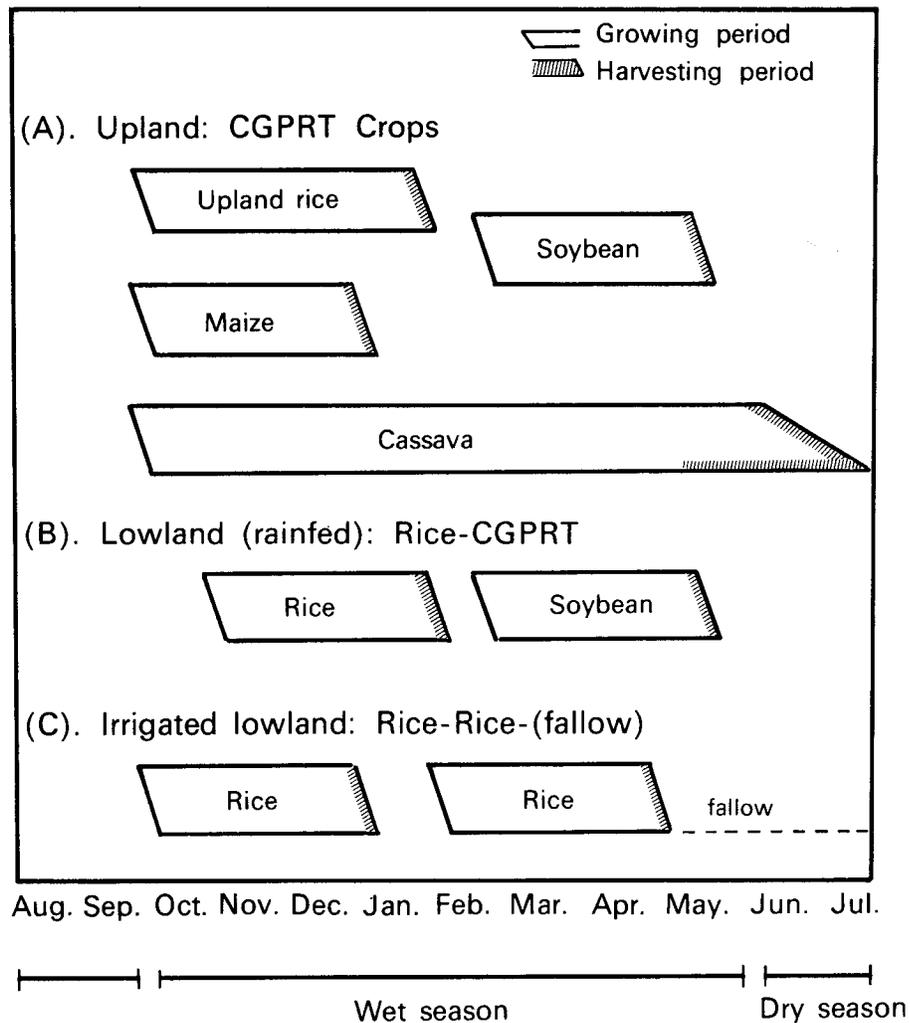


Figure 2.3 Traditional farming systems

Farming systems in this village have undergone major changes since the introduction of commercial vegetable production in the mid-1970s, which was initiated by a villager who used to be a vendor of kitchen utensils. On his travels he observed commercial vegetable growing and consequently taught neighbours how to grow them. At Majalengka, he himself tried to grow vegetables with introduced seeds, and at the camp time acted as a middleman to market them.

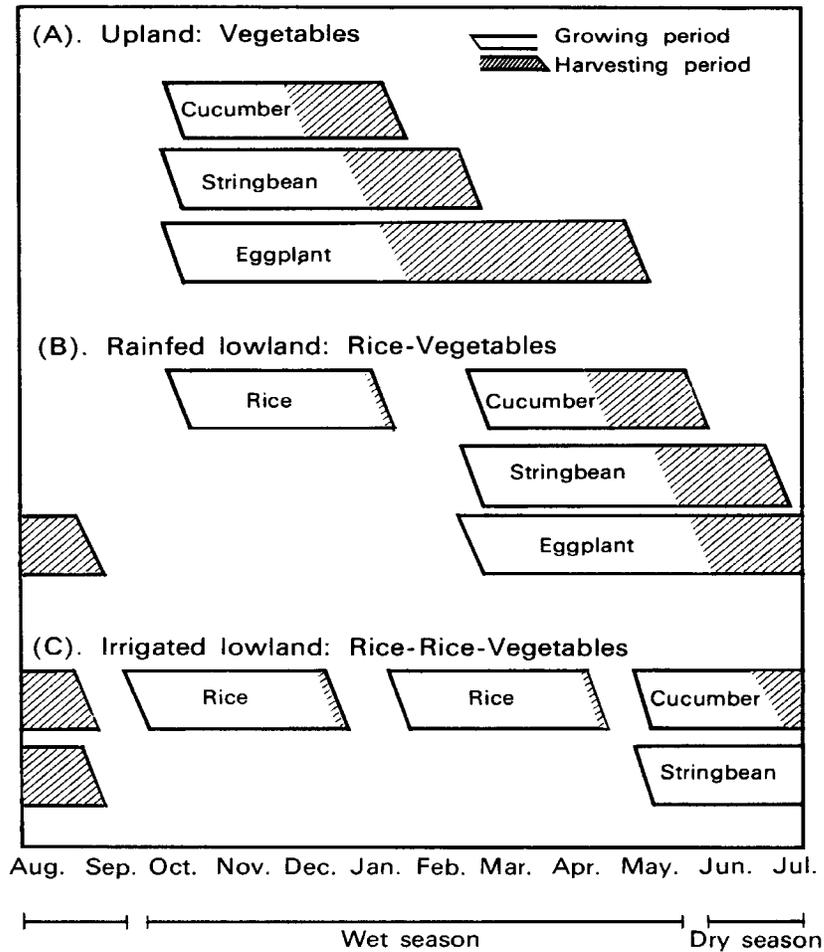


Figure 2.4 New cropping systems

New farming systems that have become increasingly popular are shown in Figure 2.4. In upland fields, the mixed cropping of upland rice and CGPRT crops (system (a))

has been replaced by the combination of various vegetables (system A). In addition to cucumber, eggplant and string beans shown in the figure, many other vegetables such as bitter melon and chilli are also produced (see Appendix B). They are grown in various combinations. For example, cucumber, string beans and chilli are often intercropped. In many cases, CGPRT crops such as maize and cassava are also planted after vegetables so that they reach full height after harvesting of the vegetables.

In rainfed lowlands, the rotation of rice and soybean (system b) has been replaced by the rotation of rice and vegetables (system B).

A remarkable development is that some lowland rice fields, which used to be left for fallow or extensively planted with a CGPRT crop during the third rice-crop season (June to September) because of insufficient water supply, have been leased by vegetable growers only for the dry season. A significant area of irrigated lowlands is leased from other villages to vegetable growers in this rainfed village, as shown in Table 2.1. Thus, through this seasonal leasing of irrigated rice fields for vegetable production, system (c) in lowland villages surrounding the study village has been replaced by system C.

Farmland areas under different cropping systems and operated by villagers in the 1988/89 crop year, are shown in Table 2.4. It reveals that the new system based on vegetables has mostly replaced the traditional CGPRT system in upland fields, while the traditional rice-CGPRT system is still dominant in rainfed lowlands. It also indicates that vegetable production - mainly based on the third-season lease of irrigated rice fields - is now a significant component of the villagers' farming practices, occupying nearly one third of the area under the new vegetable-based systems.

**Table 2.4 Farmland areas under different cropping systems operated by villagers in the study village, 1988/1989.**

	ha	%
Upland:		
(a) CGPRT	3.1	7
(A) Vegetable	14.7	35
Rainfed Lowland:		
(b) Rice-CGPRT	13.7	32
(B) Rice-Vegetable	4.0	9
Irrigated lowland:		
(C) Rice-Rice-Vegetable	7.1	17
Total traditional system (a + b)	16.8	39
Total new system (A + B + C)	25.8	61
Total	42.6	100

Source: Baseline surveys 1 and 2.

### Linkage with Markets

The study village is situated just in-between two local marketing centers, Kadipaten and Majalengka (Figure 2.5). The town of Majalengka is the capital of this district and has a permanent *pasar* in which commodities, including locally-produced

farm products, are traded at both the wholesale and the retail levels. As a trading post, the town of Kadipaten, which is located at the junction of a highway to Majalengka and the major highway between Bandung and Cirebon, is more important and its *pasar* is somewhat larger than the Majalengka *pasar*. These two marketing centres are about 10 kilometers apart and can be easily reached by minibus (*angkutan desa*) within 30 minutes.

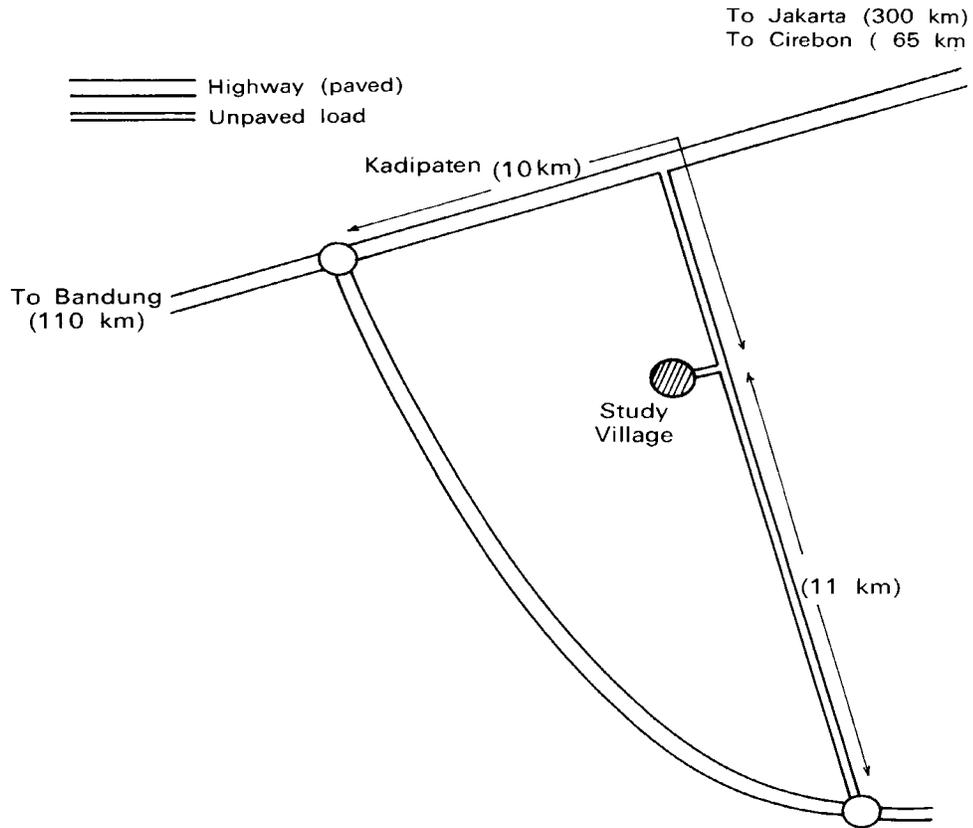


Figure 2.5 Access to local towns from the study village.

The extent to which farm production in the study village is integrated into the market, may be assessed by the ratios of sale and home consumption of farm-produced commodities to their outputs (Table 2.5). The rates of commercialization as measured by these ratios vary widely among commodities. Rice is a typical subsistence crop with more than 70 percent of its output consumed in the producer households and, also, a

significant portion used for payments in kind for leasing land and hiring labour. Next to rice, maize and cassava are also characterized by relatively high ratios of home consumption, while most of the soybean is sold for local processing into *tahu* and *tempe* before being consumed in the rural households.

In contrast, vegetables are characterized by very high market-sale ratios. These can average as high as 99 percent. There is no doubt that shifts from the traditional to the new farming systems, due to the introduction of commercial vegetable production, have greatly strengthened integration of this village with the outside market. It must be pointed out that while vegetables produced in this village and surroundings are consumed locally, the major portion is shipped to metropolitan cities such as Jakarta and Bandung.

**Table 2.5 Production and disposition of the crops produced in the study village, average of all 113 farms, 1988/1989<sup>s</sup>**

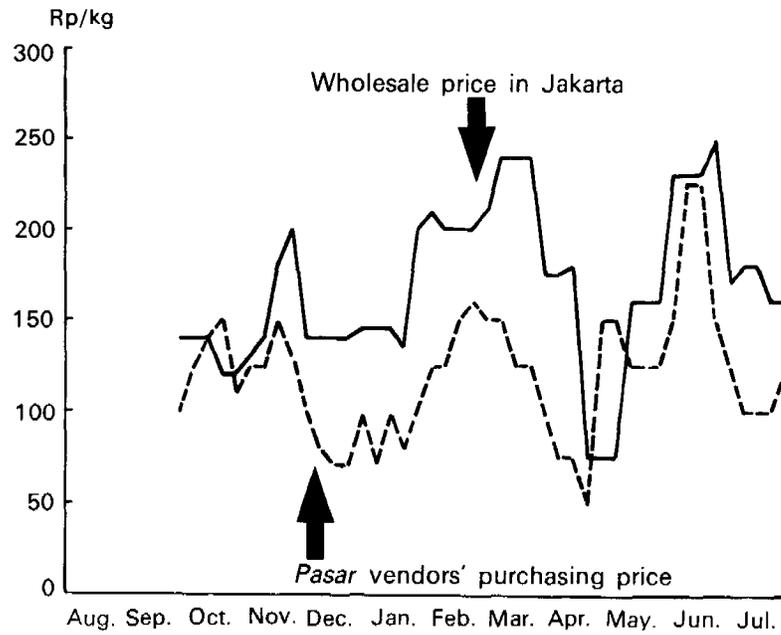
	Output	Sale	Paid in kind as		Home use	
			land rent	wage	Consumption	Seed
kg						
(%)						
Rice	642 (100)	54 (8)	37 (6)	70 (11)	474 (74)	7 (1)
CGPRT crops:						
Soybean	46 (100)	44 (96)	- (-)	0 (0)	1 (2)	1 (2)
Maize	14 (100)	6 (43)	- (-)	0 (0)	8 (57)	0 (0)
Cassava	23 (100)	16 (70)	- (-)	- (-)	7 (30)	- (-)
Vegetables:						
Cucumber	2,413 (100)	2,383 (99)	- (-)	1 (0)	16 (1)	12 (0)
Eggplant	933 (100)	922 (99)	- (-)	- (-)	8 (1)	3 (0)
String bean	470 (100)	457 (97)	- (-)	0 (0)	6 (1)	7 (2)
Others <sup>b</sup>	861 (100)	849 (99)	- (-)	- (-)	7 (1)	5 (0)
Total	4,677 (100)	4,611 (99)	- (-)	1 (0)	37 (1)	27 (0)

<sup>s</sup> Since surveys were conducted twice on April-May and November-December 1989, recorded periods are March 1988 to February 1989 for 54 farms and September 1988 to August 1989 for 59 farms.

<sup>b</sup> Angled lufah, *Leunca* and Chilli.

Source: Baseline surveys 1 and 2.

- (a) Seasonal fluctuations in cucumber prices at the Jakarta market and at the study village, 1 October 1989 to 29 July 1990.



- b) Harvest peaks of cucumber in different regions in West Java

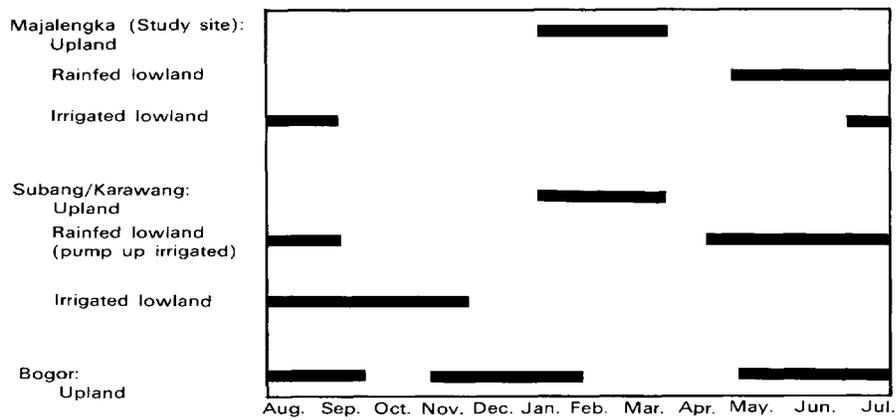


Figure 2.6 Seasonal fluctuation of cucumber price, and harvest season of cucumber, 1989/1990.

The high integration of vegetable production between the study area and the regional or national market is indicated by the high association in seasonal movements of cucumber prices between Jakarta and this area (Figure 2.6). The price of cucumber in this area is represented by the price purchased by *pasar* vendors who buy from farmers in the study village during the harvest season and from a wholesale market in Kadipaten during the lean season. It is interesting to note that price movements in this area are not associated with local production movements. In fact, vendors' purchase prices are not low but high during January-March when the village production reaches the peak of harvesting. This anomaly is partly explained by the higher quality of vegetables at the peak of harvesting. Another explanation is that, although a major portion of vegetables is produced in upland conditions in the study area with its harvesting peak determined by rainfall, vegetables are also produced in other areas under irrigated conditions or under different rainfall distributions with different harvest seasons. Market prices in Jakarta are determined by total supply from these different areas, which are transmitted to the prices in the study area.

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## Channels of Marketing

This chapter identifies marketing channels through which vegetables and other farm products grown in the study site move from producers to consumers and/or processors within the local district, or are exported to metropolitan areas. It aims to determine how distinct the marketing channels are for vegetables, as compared with those of traditional commodities such as rice and soybean.

To understand how the commodities move through various channels, it is necessary to identify the roles of the various market places and marketing agents involved. These agents, whose business is usually small-scale and unincorporated with few permanent employees, are connected with each other through informal contracts and tacit agreements. They form an intricate marketing network linking villages with local towns and extend to the metropolitan cities. As is typical of the informal sector, there exists a nearly infinite variety of agents and channels. To explain how the system works, we classify these agents and channels into a few distinct categories. In reality, however, these categories are not mutually exclusive.

The definitions of “village”, “town” and “metropolis” used in the study, must be clearly understood. Village here refers to a rural area where farming is the dominant activity.

This definition does not exactly coincide with the administrative concept of *desa*. Town refers to an urban area, typically the capital of a district (*kabupaten*) or sub-district (*kecamatan*). An important qualification in our definition of town is that it has a permanent *pasar* that functions as a local marketing centre. For the sake of expository simplification, we abstract out a periodic *pasar* to be held in a smaller town or a village for certain days (usually twice) a week. In the following descriptions, the town is represented by Kadipaten rather than Majalengka because the Kadipaten *pasar* is more dominant as a local marketing centre. Metropolis refers to major cities such as Jakarta and Bandung. In this report the metropolis is represented by Jakarta because the major share of vegetables produced in this area is sent to the Jakarta market.

### Marketing Channels for Vegetables at the Local Level

Marketing channels for vegetable are drawn in Figure 3.1. First, we try to trace the marketing channels at the local level up to local consumers in town, or to the point of shipment to the metropolis.

Dewey (1962) vividly describes local trading activities in Java, which are centred around the *pasar*. This is a market place set up in a space usually provided by a municipal government. Those who sell commodities in the *pasar* are required to pay certain fees to the municipal authority for the use of *pasar* facilities. A large number of middlemen, farmers and consumers carry out transactions in the *pasar*. They are generally highly competitive, as many buyers and sellers get together in one forum, even though information is less than perfect, especially on product quality.

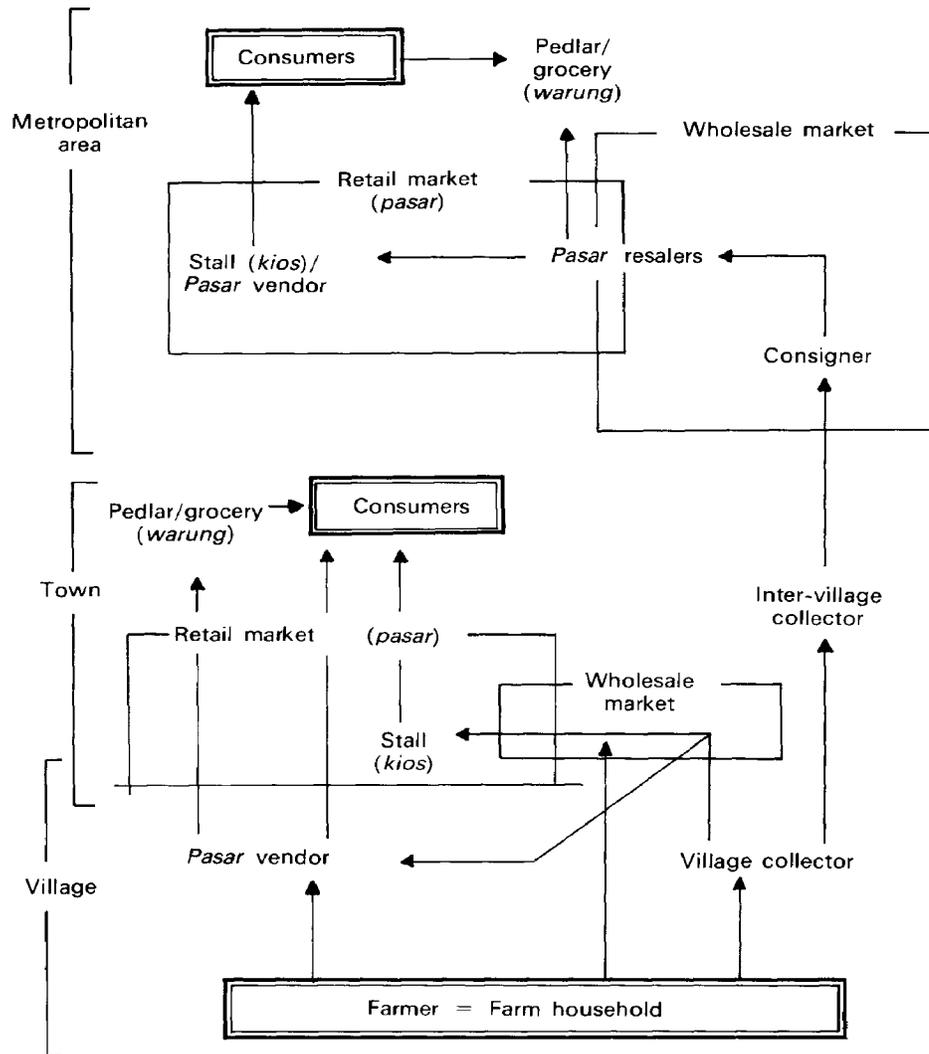


Figure 3.1 Marketing channels for vegetables

The *pasar* functions on both the retail and the wholesale level. Traders in the *pasar* play an important role for CGPRT crops, not only in local wholesaling but also in transshipment to other regions (Hayami et al. 1987; 1989). In contrast, the role of the *pasar* is largely limited to retail trade in the case of vegetable marketing

The most important agent in marketing vegetables from farmers to local town consumers is what we call "*pasar vendors*" (*pedagang kaki lima*). *Pasar vendors* in villages are mostly women, who collect vegetables in quantities of about 100 to 200 Kg from farmers in their villages or surroundings and bring the cargos by minibus to *pasar* for sale in the open space. Buyers from the *pasar vendors* are housewives as well as pedlars and keepers of small grocery stores (*Harung*) in town.

Retailing of vegetables in the *pasar* is also carried out in greengroceries with roofed stalls (*kios*). These stall shops buy their supply from an informal wholesale market. In the case of the Kadipaten *pasar*, the wholesale market for vegetables operates in a street blocks about 200 meters away from the *pasar*. (This market is called "*Pasar Ampera*" after the name of this street). This is a purely informal with no government authorization. Every morning many vegetable wholesalers - both farmers and village collectors bring a few bags of vegetables by bicycle, motorcycle, and sometimes small truck. Buyers are retailers in the *pasar* as well as small wholesalers who transship the purchase to other local markets including the Majalengka *pasar*. In the lean season of vegetable production in the home village, *pasar vendors* also obtain their supply from this wholesale market.

*Pasar Ampera* is the only wholesale market for vegetables in the Majalengka District that is open daily, but similar markets operate on certain days of the week either within or nearby the *pasar* in many other local towns.

The "village collector" (*penampung* or *pengepak*) is defined here as a middleman who usually lives in a village and collects farm produce in his village and surroundings delivery to markets. Those village collectors who deliver collected commodities to local markets such as *Pasar Ampera* are relatively small collectors (*pengepit*) whose daily collections can be transported by bicycle or motorcycle. Village collectors who assemble much larger amounts of vegetables usually sell their collections to "inter-village collectors".

The inter-village collector usually lives in a village, but collects a much larger amount from several village collectors as well as directly from farmers, for bulk shipment to the metropolis. As a typical example, an inter-village collector charters a truck and sends it around to village collectors and farmers houses to collect a full load vegetables. The truck then proceeds directly to the wholesale markets in Jakarta. This transshipment of vegetables to the metropolis through inter-village collectors appears to be much larger than local consumption through the town *pasar*.

According to estimations by village collectors, about 70 percent of vegetables produced in this village are assembled by them for inter-village collectors, 10 percent are sent to *Pasar Ampera* by small collectors, and 20 percent carried by *pasar vendors* in local towns. In other words 30 percent is for local consumption and 70 percent for metropolis.

## Marketing Channels for Soybean and Rice

In the marketing of vegetables, the channels for local consumption through the town *pasar* and for transshipment to the metropolis through inter-village collectors are clearly separated. Specialization of inter-village collectors in interregional trade and of *pasar* traders in local retailing exists only in the case of vegetables, when compared with the marketing channels for other commodities.

Figure 3.2 draws the marketing channels for soybean as representative of CGPRT crops. Soybean, too, is marketed through both the *pasar* and inter-village collectors. However, both inter-village collectors and *pasar* traders (*kios* and *toko*) engage in interregional trade and local retailing to soybean processors who supply *tempe* and *tahu* to local consumers (Hayami, et al. 1987).

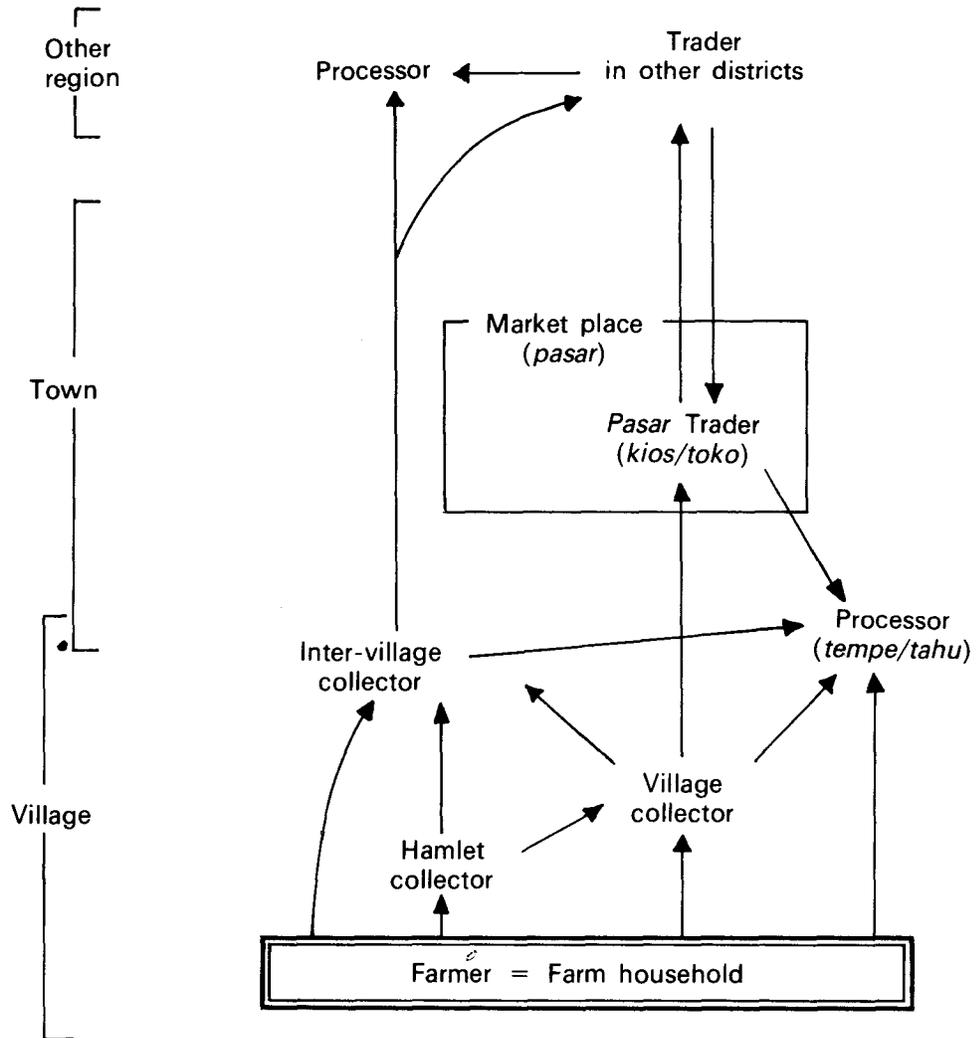


Figure 3.2 Marketing channels for soybean

Marketing channels for rice, as drawn in Figure 3.3, are also different from those for vegetables. In the local marketing of rice, the rice mill plays a central role. It mills the paddy (unhusked rice) supplied by village collectors and directly by farmers, and produces milled rice for local consumption via *pasar* traders as well as for

transshipment to other regions. Rice marketing is similar to vegetable marketing in that *pasar* traders specialize largely in retailing to local consumers. It is different in that no agent, like the inter-village collectors of vegetables, specializes in interregional trade.

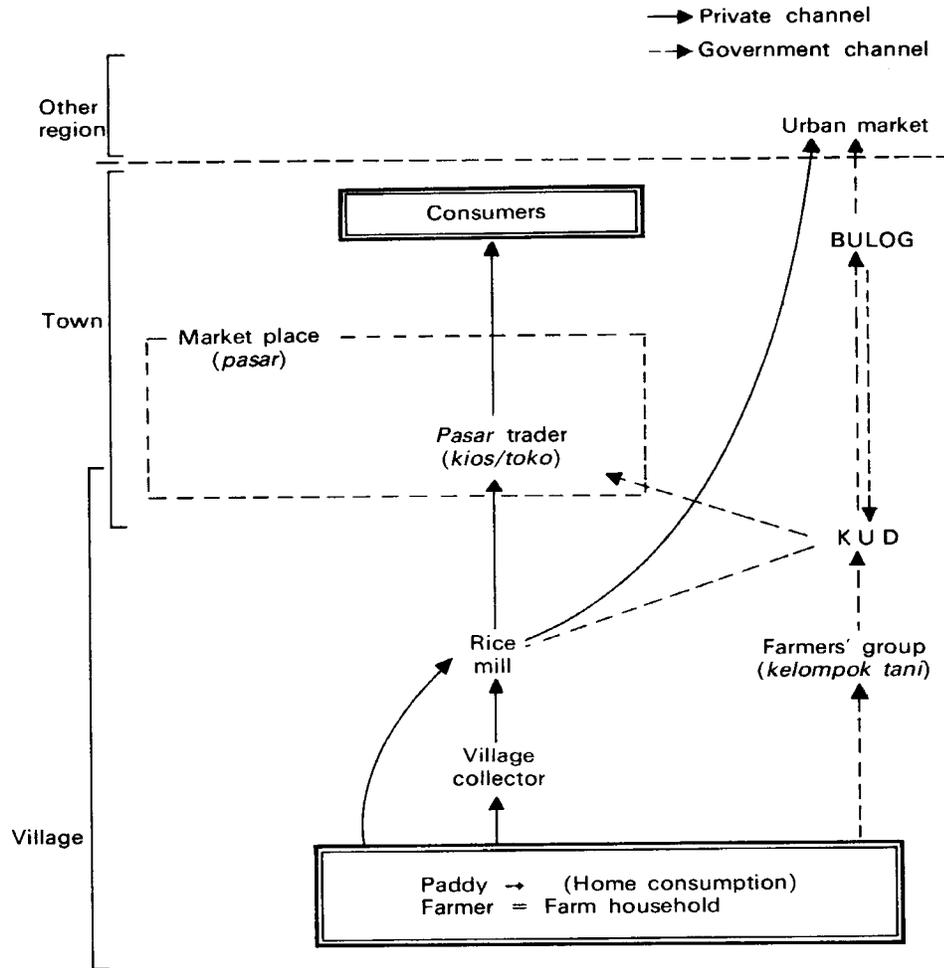


Figure 3.3 Marketing channels for rice

In addition to these private marketing channels, government channels have been established for rice. When market prices go below government support prices, rice mills sell their produce to the KUD (Village Unit Co-operative). This is collected at the local depots of BULOG (Food Logistic Board). Also, farmers are encouraged to sell their paddy to the KUD through the farmers' group (*kelompok tani*), though this channel is

not active. According to the official statistics of the Majalengka district, the percentage of rice marketed through the government channel in 1989 was only 3.8 percent of total output in this district. This figure is almost the same as that in the national level data, which showed 4.2% for 1987. In principle, when market prices are high, BULOG is supposed to discharge its stock kept in the depots to local markets via KUD. However, such operations are very rarely practiced.

In terms of government market intervention, rice has the strongest and vegetables the weakest, among agricultural commodities. While the marketing of locally-produced soybean is largely unregulated, the distribution of imported soybean is controlled by BULOG and KOPTI (Co-operative of *Tempe* and *Tahu* producers) (Hayami, et al. 1987). Marketing of vegetables is unique as it is carried out exclusively by the private sector with virtually no government regulation whatsoever.

### Wholesale Vegetables Market in the Metropolis

This study concentrates on marketing activities at the local level. However, since a major portion of the vegetables produced in the study area is transshipped to the metropolis, understanding of local marketing activities can not be complete without knowing the structure and function of metropolitan wholesale markets to which locally-produced vegetables are shipped by inter-village collectors. For this reason, we investigated two principal wholesale markets for vegetables in Jakarta. One market is called *Pasar Induk* (Kramat Jati), located in the southern part of Jakarta, and another is called *Pasar Cibitung* in the town of Bekasi located on the eastern outskirts of the Jakarta metropolitan area. Both markets receive trucks of vegetables and fruits from all over the nation. The functions of these two markets, however, are somewhat different. *Pasar Induk* is geared mainly for distribution to retailers in the city such as groceries (*warung*), street vendors and pedlars. A retail market operates in a block within *Pasar Induk*. On the other hand, *Pasar Cibitung* is more of a redistribution base, to supply vegetables for other retail markets. Therefore, buyers in *Pasar Cibitung* are predominantly wholesalers who purchase vegetables from this wholesale market for distribution to retailers in retail markets. Unlike *Pasar Induk*, no retail block is attached to *Pasar Cibitung*.

Despite these differences, the system of wholesale distribution, as depicted in the upper portion of Figure 3.1, is common between *Pasar Induk* and *Pasar Cibitung*. Cargoes of vegetables in trucks sent from the inter-village collector in the producing regions, are first received by a consignee. By contract (which continues for a long period), the consignee unloads the cargoes and sells them in bags (typically weighing 50 kg) to wholesalers. No formal auction is made, but since many buyers compete with each other at the same place, the procedure is *de facto* bidding. For this operation the consignee receives a certain commission customarily agreed on and gives the rest of the proceeds to an agent of the inter-village collector, who rides with the cargoes on the truck.

Some wholesalers who buy bags of vegetables from the consignee are based within the same wholesale market. In the stalls or open space, they take out vegetables from the bags and sort them into various grades for sale to retailers in smaller lots. Other wholesalers bring the purchased cargoes back to the *pasar* at their home base and make similar resale operations there. These wholesalers may be called "*pasar* resalers" (*centeng* or *tukang tembak*).

Thus, vegetables produced by small peasant producers, which have been bulked into larger lots for interregional transport through a hierarchy of village to inter-village collectors, are debulked into smaller lots from consignees to *pasar* resalers and further still to retailers, before reaching urban consumers

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## Marketing Organization for Interregional Trade

The previous chapter identified two major channels of vegetable marketing: (a) a channel for consumption through *pasar* vendors; and (b) a channel for transshipment to the metropolis through village and inter-village collectors. This chapter examines the second channel with a focus on relations between farmers and collectors as well as village and inter-village collectors. Major questions addressed concern the use of specific practices and contracts and whether these reflect any major imperfection or inefficiency in the market.

### Conditions of Vegetable Marketing

The previous chapter identified both common and unique aspects of vegetable marketing when compared to marketing of soybean and rice. A common aspect of agricultural marketing in Indonesia, as well as developing economies in general, is a hierarchy of local middlemen such as village and inter-village collectors, who are often tied together by trade credits from large to small middlemen.

In the previous study for soybean and other CGPRT crops (Hayami et al. 1987), this hierarchy in local marketing is explained by: (i) scale economies in transportation; (ii) differential endowments of human capital; and (iii) differential capital costs between large and small middlemen. Farm commodities produced on a small scale must be bulked into a large lot to exploit scale economies in transportation, especially for long-distance trade among regions. For a large trader engaging in interregional trade, time costs are high for his entrepreneurial and managerial ability. It is more economical for him to assign smaller and poorer middlemen living in the villages to collect marketable surpluses from peasant producers, than to do this himself. In order to organize small middlemen for bulking any surpluses, it is instrumental for the large trader to tie them by trade credits since the credit cost is much lower for the large trader who typically owns land and other assets to be used as collateral. These conditions apply the same to vegetable marketing under our present investigation.

A unique aspect of vegetable marketing is the separation of the channel for local consumption from that of interregional trade. This characteristic seems to be explained by the high perishability of vegetables. A vital consideration is how to shorten the time for marketing so as to deliver vegetables to consumers while still fresh. This requirement seems to explain the dominance of the *pasar* vendor (usually female) in vegetable marketing for local consumption, who links producers in her home village directly with consumers in a nearby town. The low wages of village women whose alternative employment opportunity is as hired farm workers, as well as a relatively easy access to the market from the village, should also explain the *pasar* vendor's domination.

This short circuit is not effective, however, for delivering fresh vegetables to consumers in the metropolis. The cost for a vendor to travel nearly 300 kilometers to Jakarta is prohibitive relative to the value of a few bags of vegetables she can carry on a bus. In order to exploit strong scale economies inherent in long-distance shipment of bulk commodities, one full-truck load of vegetables must be collected and shipped out within a day of harvest.

However, an occasional collection and shipment of one truck load is not a viable operation. In the case of non-perishable commodities like soybean, a local trader typically brings his cargo by truck to a metropolitan market centre where he identifies the best buyer after several enquiries and some bargaining. The metropolitan wholesaler who accumulates his stock in this manner sells it in small lots to retailers over an extended period. In the case of vegetables, the cargo must be debulked immediately when it arrives at the market. The trader cannot afford to waste time making enquiries and bargaining. The system of vegetable distribution in the Jakarta wholesale markets, which consists of consignees and resellers as described in the previous chapter, is considered an institution consistent with this need. A key to the working of this system is the conscientious efforts of the consignee to handle the cargo. The consignee is not a large formal agent. He receives cargos from only a few consignors (only one in some cases) and sells them in the open air market or in a roofed section leased from the *pasar* office. Entry into and exit from the business are free. In the absence of an official contract with the consignee as well as a lack of formal rules of auctioning, the consignee's conscientious efforts can only be secured by mutual trust to be established through long-term continuous transactions. Therefore, a local trader must send his truck load regularly to a consignee in one wholesale market.

Furthermore, more than one truck load is needed for the trader to reduce risk. As is common to perishable commodities, the price of vegetables in one wholesale market fluctuates widely corresponding to variations in the amount which has arrived. Even in Jakarta, prices differ day by day between *Pasar Induk* and *Pasar Cibitung*. Therefore, in order to reduce risk, it is necessary for the trader to diversify destinations of his cargoes between the two wholesale markets of Jakarta as well as between Jakarta and other metropolitan cities.

Because of both high risk and transaction costs associated with the marketing of perishable commodities, together with scale economies in transportation, the optimum size of vegetable collection and shipment becomes large, and must be done regularly within the day of harvest. For this purpose, harvesting, collection and shipment must be very tightly co-ordinate. Specialization of inter-village collectors in interregional trades for vegetables is considered as a response to the strong demand for entrepreneurial and managerial ability to perform this co-ordinating role.

An example of such an entrepreneur is a large inter-village collector who, during the peak harvesting season, collects as much as 60 tons or 12 truck loads of vegetables from all over the Majalengka District through some 20 village collectors. He ships these cargos to both: *Pasar Induk* and *Pasar Cibitung* as well as other cities such as Semarang and Yogyakarta. He, as well as his competitors, is a native Sundanese living in a village and solidly rooted in the village community. His consignees in the metropolis are native Indonesians. Unlike an implication of Geertz's study in East Java and Bali, this vegetable marketing case in West Java demonstrates that entrepreneurship for large business activities in Indonesia is not limited to the population of "extra-

village status" but can also emerge from "the immediate purview of village social structure" (Geertz 1963, pp. 148-9).

### **Credit Tying**

A device used by the inter-village collector to promote more exact scheduling and co-ordination for assembling vegetables into a large bulk for shipment to the metropolis, is to tie village collectors by advancing credits in return for their assurance to deliver their cargos exclusively to him. This credit tying of lower-ranking middlemen by upper-ranking middlemen is common for assembling farm commodities from a large number of small producers. In previous studies (Hayami, et al. 1987; 1989) as well as in this study, it was observed that inter-village collectors advance short-term credits to village or hamlet collectors for payments to farm producers for the purchase of storable commodities such as soybean. However, no case of credit tying of farmers by middlemen was found for those commodities.

A unique aspect of vegetable marketing is that the credit tying is practiced between collectors and farmers as a device for the former to secure delivery of products from the latter. Typically, a village or inter-village collector advances vegetable growers credits in kind, in the form of fertilizers and chemicals in the planting season, with the guarantee that their harvest will be delivered to him. A common clause in this contract is that Rp 10 per kg will be charged to the growers if their products are sold to other middlemen. Farmers' repayments for the credits are deducted from proceeds of vegetables delivered to the collector over the harvest season. The repayment schedule is flexible, but on the average, farmers are supposed to pay back the credits in about two months or earlier. The tying of farmers for vegetable collection, which is not practiced for other commodities, reflects the need for better co-ordination and more exact scheduling in the marketing of perishable commodities. Indeed, credit tying is not observed for tobacco, although farmers' credit need for fertilizers and chemicals is equally as high as for vegetables (Hayami, et al. 1987).

While farmers are tied by village collectors, these collectors are also tied by credits from inter-village collectors. In order to finance credits in kind to farmers, village collectors usually receive cash credits from an inter-village collector under the same terms as for the contract that they have with farmers.

For both collectors' credits to farmers and inter-village collectors' credits to village collectors, interest are not explicitly charged. The trade credits from inter-village to village collectors for the purchase of storable commodities such as soybean are very short-term, only a day or two, so that interest charges are not significant (Hayami, et al. 1987). It is an anomaly, however, if interest is not charged for the production credits extended for as long as two months in the economies characterized by severe capital scarcity and high interest rates.

One possible device for middlemen to charge interest is to pay lower prices to credit-receiving farmers than to non-credit receivers. In our particular case in regards to vegetables, this price difference occurs very rarely, only a few days in a season, when supply is especially short relative to demand, so that inter-village collectors need to offer higher prices for marginal purchase, from non-contracting farmers and village collectors for filling up trucks.

A more significant device is the use of differential prices of fertilizer and chemicals between farmers and middlemen. Collectors can purchase these inputs in a large lot for

advancing their credits in kind. Their purchase prices is lower than the farmers' purchase price for a small lot. For example, collectors buy urea from fertilizer dealers in town at the cost at Rp 185 per kg including transportation costs, and charge farmers Rp 200, which is the price that farmers have to pay if they are to buy at village grocery stores (*warung*). As estimated in Table 4.1, the average cost per farm of current inputs advanced as credit in kind would total Rp 70,500 if they themselves would buy in cash, whereas the same inputs could be purchased by collectors at the cost the Rp 65,550. In the credit tying operation, collectors charge the farmers Rp 70,750 for these inputs. If this credit is paid back in two months, collectors earn, in effect, interest at the rate of 3.9 percent per month.

While this is a lucrative credit operation for collectors, it is also advantageous for farmers. The input cost in farmers' own cash purchase (Rp 70,500), compared with their payment to collectors' for credit in kind (Rp 70,750), implies that the effective interest rate for farmers is as low as 0.2 percent per month. This rate is much lower than the interest rates that they should pay if they purchased the inputs on credit from fertilizer dealers (1.9 percent) or if they purchased them based on institutional loans from a government bank (3.8 percent). The official interest rate of collateral loans from a bank is said to be as low as 1.5 percent per month or 19.6 percent per year. High transaction costs however, including the costs of paper work and travel to town for credit application raise the effective rate for farmers to as high as 56.3 percent per year (see Appendix A).

**Table 4.1 Credit cost for vegetable producers under alternative credit arrangements, Majalengka, 1990.**

	Input cost per farm <sup>a</sup>	Effective interest rate for	
		Farmer	collector
	Rp	..... %/month <sup>b</sup>	.....
Cash purchase:			
Farmer (in small lot)	70,500		
Collector (in large lot)	65,550		
Credit purchase:			
Collectors' trade credit	70,750	0.2 (2.2)	3.9 (58.1)
Fertilizer dealers' sale on credit	73,250	1.9 (25.8)	
Bank loan	75,950	3.8 (56.3)	

Cost for 150 kg of urea, 50 kg of triple superphosphate (TSP), 100 kg of ammonium sulfate, and one litre of *Azodrin* per 125 *bata* (0.18 ha)

<sup>b</sup> Interest rates per year are shown in parentheses

Of course, the lucrative credit operation of village collector to farmers is not really lucrative unless he can receive an interest-free loan from the inter-village collector. If he would have to mobilize the funds himself for credit-tying contracts with farmers, his credit costs may well exceed his interest earnings. The fact is that much less than one

half of credit advanced from village collectors to farmers is financed from inter-village collectors.

How then, are interests charged on credits advanced from inter-village collectors to village collectors? The credit cost for inter-village collectors is much lower than that for village collectors, partly because inter-village collectors have better collateral and partly because the size of their loan is larger so that the unit transaction cost is much lower. Further, credit terms are, in effect, shorter for inter-village collectors than for village collectors. Usually one inter-village collector has the credit-tying contracts with many village collectors in areas with different environmental conditions, for which planting and harvesting seasons differ widely. Therefore, the inter-village collector can continuously recoup credits from village collectors in various areas, one by one, as he deducts credit repayments from the proceeds of vegetable cargos delivered to him over various seasons of the year. From the credit repayment that he recoups from one village collector in an area during the harvesting season, he can finance credit to another village collector in an area during the planting season. In this way, long-term credits can be transformed into short-term revolving credits with a significant saving of interests.

**Table 4.2 Trade practice of farmers and number of middlemen in the study village, 1989/1990.**

Number of middlemen	1	2	> 3	Total
1) Distribution of sample farmers by the number of middlemen that the farmers contacted before selling their products.	16	3	1	25
2) Distribution of sample farmers by the number of middlemen that the farmers consider they can possibly sell their products to.	1	0	24	

Source: Farmer survey.

Even though the credit cost is thus reduced for inter-village collectors, it should still be positive and significant. It appears that they would shoulder this cost for the sake of better co-ordination between production and marketing of the perishable commodities for distant markets.

It is common for a vegetable farmer to sell his product at a price offered by a collector with whom he has the credit-tying contract. This does not mean, however, the existence of monopolistic power on the side of the middleman. If the offered prices are low relative to market prices, the farmer can easily shift to another collector in the next season. To our questionnaire, farmers in the study village replied that they can potentially sell to more than 3 middlemen who operate in the village (Table 4.2). Also, more than 70 percent of our respondents replied that they can sell their produce directly to neighboring town markets. They are well aware of prevailing market prices through informal communications with neighbors and friends. In such a situation it is difficult for a middleman to exercise monopolistic pricing. In fact, a collector who once operated in the study village was cut out from supply by the farmers when he developed a reputation for paying "unfair" prices.

### Mode of Payment, Price Setting, and Risk Sharing

While production credits flow from inter-village collectors, via village collectors, down to farmers, short-term trade credits seem to flow in the opposite direction. It is common for a village collector to pay in cash to farmers who bring their fresh harvests to his house (which farmers call the "depot") in the morning. Then, an inter-village collector sends around his chartered truck with an agent and a couple of coolies to these depots to load the vegetables. The inter-village collector has been informed the night before as to how many vegetables he can expect. As soon as the truck is fully loaded, it immediately proceeds to a wholesale market in the metropolis so as to reach there by late afternoon of the same day.

Payments to the village collectors are usually deferred until the next morning when the inter-village collector's agent brings back the proceeds of sales from the metropolitan markets. Sometimes, though not so often, the payments are deferred for several days. In effect, short-term trade credits flow from village to inter-village collectors. However, net flows of credits are hard to ascertain, since village collectors' credit repayments through deductions from the proceeds of sale to inter-village collectors, are often postponed upon the request of village collectors. No fixed schedule of repayments is specified in advance, although a broad schedule is customarily determined.

As explained in the previous chapter, cargos brought to a metropolitan wholesale market are sold immediately by a consignee in *de facto* auctioning. The cargos are sold out within 1 to 5 hours. Normally, the consignee's commission is Rp 20 per kg for ordinary vegetables (except high valued ones such as small chilli), but the commission increases (or decreases) step-wise as the sale price increases (or decreases), with the effect that his commission remains approximately 15 percent of the auction sale price. To the extent that the commission is a percentage of the market price, the consignee shares a part of the risk in market price fluctuations. Compared with the consignees, *pasar* resale's who redistribute the auctioned cargos to urban retailers bear a much higher risk, as they pay in cash for the auction purchase before their sale prices and timing are determined. As a result, both price risk and "commodity risk" (loss due to spoilage in the process of marketing) are high for the resellers.

The prices that inter-village collectors pay to village collectors next morning seem to be determined essentially by the wholesale prices in Jakarta. This relation is illustrated by weekly cucumber prices recorded by an inter-village collector in the Majalengka district as plotted in Figure 4.1. The correlation coefficient is as high as 0.906 between the Jakarta wholesale price received by this trader and his payment to village collectors. A tendency is indicated that the inter-village collector's trade margin increases as the Jakarta price increases with the correlation coefficient of 0.651. No significant correlation is observed between the Jakarta price and ratio of absolute margin to the Jakarta price which has a correlation coefficient of -0.08. These statistics are consistent with the hypothesis that, as with his consignee in the Jakarta market, the inter-village collector shares price risk to the limit of a fixed percentage (or a fixed range of percentage) of market price fluctuations.

However, the ways by which the inter-village collector passes on price fluctuations in Jakarta to the local market in Majalengka are asymmetrical, in the sense that the passing of price changes in Jakarta prices to the local market is fast when the prices are falling, whereas the prices are transmitted with a significant time lag when the

prices are rising. This relation is indicated by the following regression:

$$M = 5.22 + 0.286 P + 0.296 PI - 0.140 PD, (5.12)$$

(1.71)                      (-0.87)

$$R^2 = 0.43, \quad DW = 2.99$$

Where

- M** is the inter-village collector's trade margin;
- P** is the wholesale price in Jakarta in the current week;
- PI** is the rate of change in the Jakarta price from the previous to the current week when the price rises, but it is zero when the price does not rise;
- PD** is the rate of change in the Jakarta price when the price decreases, but it is zero when the price does not decrease;
- is Student-t ratio in brackets;
- DW** is Durbin-Watson statistics; and
- R<sup>2</sup>** is the coefficient of determination adjusted for the degree of freedom.

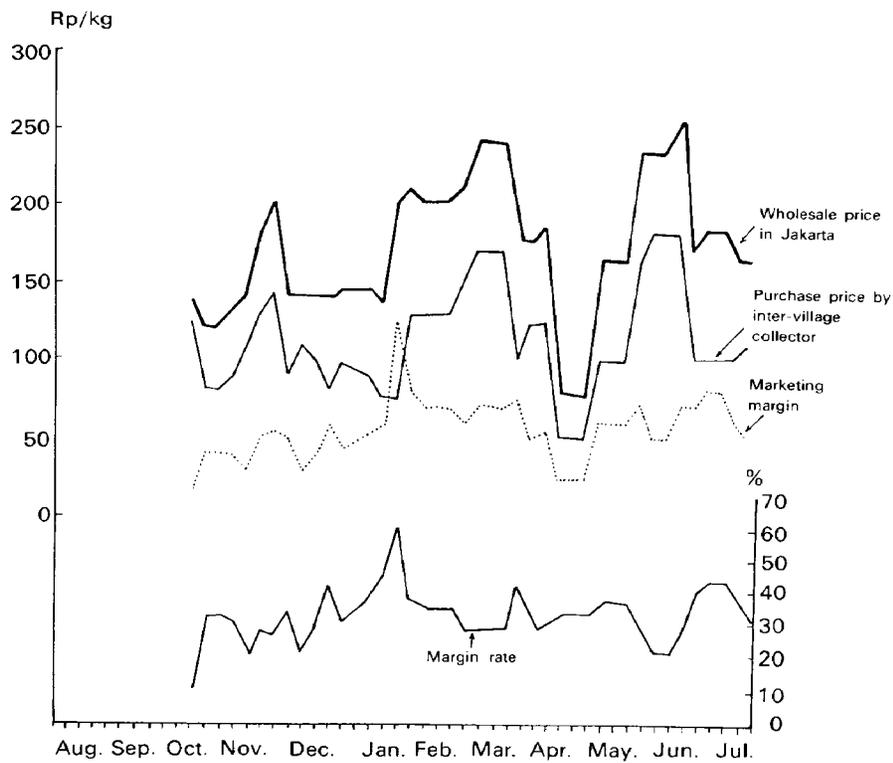


Figure 4.1 Seasonal fluctuations of cucumber prices and marketing margin for inter-village collector.

The regression is estimated by the ordinary least-squares method based on 42 weekly observations from 16 Oct. 1989 to 6 Aug. 1990. The coefficients of P and PI are positive and significant at the 1 and 5 percent levels, respectively, whereas the coefficient of PD is not statistically significant at conventional levels. This result implies that while the trade margin is largely proportional to the Jakarta price, it increases when the price is rising but does not change when the price is falling. These results seem to indicate that the inter-village collector increases his margin by delaying the transfer of a price rise in the metropolis to the local market, while he maintains his margin through the immediate transfer of a price fall. Such behavior by middlemen is consistent with a finding of Alexander (1987) with respect to chilli marketing

This practice seems to reflect a monopolistic power in the hand of the inter-village collector due to his faster access to price information in the metropolitan market. With this power he can pass a large portion of price risk to village collectors. But, this monopolistic power is transitory and will be lost quickly as information on the price change will be made available to the local market through competition among inter village collectors. Yet, it is likely that the high risk associated with the long-distance trade of perishable commodities is reduced, to a significant extent, by the inter-village collectors' faster access to price information in the national market centre

## Marketing Organization for Local Consumption

The previous chapter examined the channel for marketing vegetables in the metropolis. This chapter investigates the other channel for local consumption. It is focused on the role of women in local retail trades within the villages.

### Women in Local Marketing

Separation of vegetable marketing for local consumption from interregional trade, coincides with gender division of labour. In the interregional trade, both local collectors and consignee/resalers in the metropolitan markets are men, whereas those engaging in the marketing channel for local consumption, including *pasar* vendors, pedlars and keepers of grocery stores (*warung*), are predominantly women. Within the channel for local consumption, small village collectors who transport vegetables to the local wholesale market (*Pasar Ampera*), as well as resalers of those cargos to retailers in the market, are males. Therefore, to be exact, the gender division is established between the wholesale and retail trades.

While this division of labour must be based on cultural tradition which is beyond the scope of our investigation, there is a clear economic reason why women, especially those from villages, are dominant in the local retail trade of vegetables. As mentioned in the previous chapter, *pasar* vendors who play the major role in vegetable marketing for local consumption have the advantage of short-circuiting delivery of the perishable commodities from producers in home villages to consumers in local towns. Low opportunity cost of labour for women whose farm wage rates are typically one half of the male wage rates, adds to the advantage of the *pasar*-vendor operations. Further, relatively easy access to local markets from villages in densely populated rural Java reduces the advantage of bulk transportation. For example, the cost for a *pasar* vendor to carry three bags of vegetables (about 150 kg in total) by minibus from the study village to the Kadipaten *Pasar*, is about Rp 7 per kg. This is not so different from the cost of about Rp 6 per kg for sending the load of 1.5 tons by small truck including loading/unloading cost.

The high economic efficiency of the *pasar* vendor is illustrated in Table 5.1 which compares her marketing margin and costs with those of retailing at a greengrocery store (*kios*) operated in the town *pasar*. In this comparison, the purchase price of cucumber by a *pasar* vendor in the home village is assumed to be lower by Rp 25 per kg than the purchase price by a storekeeper in the wholesale market in town, but unit transportation cost is higher for the vendor by Rp 5. On the other hand, the imputed labour cost is lower for the vendor by Rp 7 per kg than for the stall, that is assumed to be operated by the husband and wife. Consequently, if their commodities are sold at the same price levels, the vendor's margin and profit are much higher than those of the stall. In fact, the stall is usually able to sell at a higher price because the vendors must sell out quickly in the morning, sometimes at reduced prices, before strong sun shuns away their customers and spoils their commodities, while the stall under a roof can continue business.

In our illustration of Table 5.1, the retail price at the stall is assumed to be higher by Rp 25 with the result that the net profits are about even between vendor and stall.

**Table 5.1 Comparison of marketing margin and profit of pasar vendors and stalls, the case of cucumber, Majalengka, 1990**

	Pasar vendor	Stall (kios)
	Rp/Kg	
Purchase price (a)	125	150
Sale price	175	200
Marketing margin	50	50
Cost:		
Transportation cost	14 (b)	9 (c)
Imputed labor cost	10 (d)	17 (e)
Commodity loss (f)	12	12
Total	36	38
Net profit	14	12

- a. *Pasar* vendors purchase from farmers in the village and stall holders purchase from resaler at the wholesale market.
- b. Round trip by mini-bus (Rp 1,050) between the village and the market with 150 kg of load, plus cost for lapping materials (Rp 750) and the market tax (Rp 250).
- c. Portorage by pedicab (*becak*) from the wholesale market to a stall (Rp 2/kg), plus cost for lapping materials and the market tax (Rp 7/kg).
- d. Assumes 9 hours work and female wage rate for farm works (Rp 170/hr) is used for imputation.
- e. A husband and a wife work 12 hours respectively. Farm wage rates, Rp 360/hr for male and Rp 170/hr for female, are used for imputation.
- f. 14% of cucumber is assumed to have deteriorated and sold at a 50% discounted price. Source: *Pasar* vendor surveys 1 and 2.

Thus, vendor and stall can coexist in the same pasar by meeting different demands of consumers. The vendor supplies goods at minimum cost by short-circuiting the marketing chain from producers to consumers with the use of low opportunity-cost resources, whereas the stall meets the demand of consumers for flexible shopping time at somewhat higher prices.

### Profile of *Pasar* Vendor

The high economic efficiency of the *pasar* vendor is based on their intensive labour, as they work hard and long. Vendors usually visit farmers' houses to buy vegetables in the late morning or the early afternoon when harvests are brought home. At around 2 o'clock the next morning, they ride together on a minibus with their cargoes to the *pasar*. In the *pasar*, each vendor has established a customary right to use a certain space at the roadside for vending operations. Usually, vendors from the same village operate at the same location.

In the *pasar*, the vendor sorts out and arrange her commodities in different piles ready for sale to customers. Early customers are mainly small retailers such as pedlars and owners of grocery (*warung*) shops. Later, householders begin to swarm the *pasar*. Bargaining is involved in every transaction to some extent. Vendors hope to sell out their vegetables before 8 o'clock but sometimes have to wait until around 10 o'clock.

After the operation in the *pasar*, the buyer (usually a woman) has to hurry back to the village for replenishment of her supply for the next day. In the lean season when supply in her village is expected to be short, she buys bags of vegetables at the wholesale market and stores them at the site of her operation in the *pasar* before going home. If she is responsible for household chores, she has to do them in the afternoon.

How high is the return for this hard work? Table 5.2 compares the average income of a *pasar* vendor with an income from farming as the alternative income opportunity. Average income of vendors as measured by total marketing margin minus paid-out cost for marketing amounts to Rp 3,250 per day. Assuming 9 hours of effective work per day, vendors' hourly income is more than twice the wage they could have earned as a hired farm worker. Moreover, unlike seasonally-limited farm employment, the vendor can operate as many as 300 days on the average, thus their average annual income amounts to approximately the farm income of an owner operator from 1 hectare of rainfed lowland. This is quite a large income by village standards, considering the fact, that the average operational holding of farm households is only 0.38 hectares and ownership holding is 0.22 hectares (Table 2.3).

**Table 5.2 Average Income of *pasar* vendors in the study village, 1990**

	(Rp)
Daily income:	
Total margin (1)	5,400
Paid-out cost (2)	
Transportation	1,050
Market tax	250
Lapping material	750
Vendor income (3) = (1) - (2)	3,350
Hourly income:	
Vendor income (4) = (3)/9 hours	372
Farm wage rate	170
Annual income:	
Vendor income (5) = (3) x 300 days	1,005,000
Farm income <sup>a</sup> of owner operators from 1 ha of tained lowland in the village	1,002,000

a Farm income is defined as the sum of imputed family labours' income, land rent and operator's surplus.

Source: Pasar vendor surveys I and 2.

## Conditions of Pasar Vendor

Most village women who operate as *pasar* vendors are wives (or widows) of farmers. Out of 18 *pasar* vendors in the study village, 15 are farmers' wives and 3 are windows. Table 5.3 compares family and farming status between all farm households whose wives (or widows) are vendors. The data of 15 *pasar* vendors are used for this

comparison because of the lack of relevant data for the 3 observations. The comparison indicates that both the number of family members and the number of working family members are larger for the households in which housewives work as vendors. This tendency might reflect the need for other family members to do household chores so that the wives are able to work outside.

The average farm size of a vendor household is larger than the average of all farm households. If a family's income and asset position is represented by its land ownership, this observation is inconsistent with the hypothesis that wives work on off-farm jobs because their families are poor and have insufficient lands to fully employ family labor. Instead, vendor households hold less operational farm areas, despite owning larger areas than non-vendor households; implying vendor households rent their land to non-vendor households. These observations seem to indicate that wives of relatively well-to-do families in the village work as *pasar* vendors, and that their high vendor incomes enable their families to evade the drudgery of farm work.

**Table 5.3 Family and farming status of *pasar* vendor households in the study village 1990.**

	All farm households (n = 113)	Vendor/farm households (n = 15)
No. of family members:		
Male	1.9	2.2
Female	1.9	2.5
Total	3.8	4.7
No. of working family members:		
Male	1.2	1.5
Female	1.3	1.7
Total	2.5	3.2
Owned farm land (ha):		
Per household	0.22	0.49
Per family member	0.06	0.10
Operated farm land (ha):		
Per household	0.38	0.42
Per family member	0.10	0.09

Source: Baseline surveys I and 2.

One reason why women from poor families tend to participate less as *pasar* vendors might be the difficulty of mobilizing working capital, even though, the amount of daily working capital is very modest; around Rp 20,000 for purchase and transport of the vegetables. It is possible to defer payment to the growers until the next day, but this deferment reduces the buyer's bargaining position, especially in the selection of higher quality vegetables for her purchase. To continue the business during the non-harvesting season in the home village, cash is needed to procure vegetables at the wholesale market in town. For this reason vendors from poor families tend to stop operating during the lean season

Credits for small businesses are available but costly (Table 5.4). The Women's Association (*PKK-Pendidikan Kesejahteraan Keluarga*), a semi-official organization chaired by the wife of the village headman, has a savings and loan programme from which small credits are advanced for facilitating women's economic activities in the village. In this program, for a loan of Rp 10,000 the debtor must repay Rp 2,400 five times in two weeks, implying an interest rate of 13.2 percent per month or 343 percent per year. Credit from the co-operative (*KUD-Koperasi Unit Desa*) is even more costly. In its credit program for small business, a credit of Rp 10,000 must be paid back at Rp 300 daily for 40 days giving an effective interest rate of 24.4 percent per month or as high as 1270 percent per year.

**Table 5.4 Small credit for petty traders**

Creditor	<i>PKK</i> (Women's Association)	<i>KUD</i> (Village Unit Co-operative)	<i>KOSIPA</i> (Saving and loan Association)
	<i>USP (Usaha Simpan Pinjam), Saving and</i>	<i>KPK (Kredit Pedagang Kecil, credit for</i>	
Example:		Rp	
Amount of loan	10,000	10,000	10,000
Payment condition:			
Payment schedule	2,400/2 weeks	300/day	300/2 days (a)
Initial deduction	0	0	1000 (b)
Period	10 weeks	40 days	3 months
Total payment	12,000	12,000	13,000
Premium	0	500 (c)	500 (c)
Interest rate			
For debtor			
%/month	13.2	24.4	21.4
%/year	343	1.270	920

- Payments need not be made each two days but should be made 40 times at any time within three months.
- One half (Rp 500) is deducted for handling charge and another half deducted for compulsory deposit in the debtor's account with interest of 20 percent per year.
- Prize payment to be deposited in the debtor's account if he completed repayment according to the schedule. ' Assume a default rate of 10 percent.
- Assume a default rate of 10 percent

It is not clear how accessible these institutional credits are for poor village women. The *PKK* loan might be limited to those having close relations with officials of the Women's Association because many villagers are not aware that this credit program exists. There is no sign that the *KUD* loan officials come often to this village to thereby facilitate easy credit applications by villagers. Of the 18 vendors we interviewed, 4 received *PKK* loans but none received a *KUD* loan.

A much more operational credit program to which *pasar* vendors have relatively easy access is the Saving and Loan Association (*KOSIPA-Koperasi Simpan Pinjam*). This association is a federation of local moneylenders. Although *KOSIPA* is given the status of a co-operative under the auspices of the Department of Co-operatives (*Departemen Koperasi*), each branch office is essentially a private business based on

private capital and management. It advances small credits, mainly to petty traders and manufacturers. Every morning its employees go around advancing credits and collecting repayments. Credit application is simple, requiring only an identification card, and it is processed very quickly.

While the KOSIPA loan is easily accessible, its interest rate is high. For a loan of Rp 10,000, the debtor receives only Rp 9,000 in cash, since 10 percent is initially deducted, and he is obliged to pay Rp 300 each repayment for 40 days within 3 month. If a repayment schedule is agreed so that the debtor pays Rp 300 every 2 days, this credit bears an interest as high as 21.4 percent per month or 920 percent per year. In fact, many debtors agree to pay Rp 300 every day instead of every 2 days which raise the effective interest rate to as much as 48 percent per month or more than 10,00' percent per year. While the implied rate of interest is astronomical, it is not difficult for a small trader to pay back this loan. For example, if a *pasar* vendor borrows Rp 20,000, her daily payment is Rp 600, equivalent to only about 30 U.S. cent, which is perfectly bearable considering the average vendors' income, is higher than Rp 3,000 per day (Table 5.2). Moreover, the repayment schedule can be adjusted flexibly as repayment can be easily changed from day to day. Thus, the KOSIPA credit appears to be a very convenient and effective way of financing working capital for petty trader's.

The problem is that this credit, too, is not so readily available for the very poor. A KOSIPA employee, whose salary depends to a large extent on his repayment collection, is not so accommodating to a new face in the *pasar* unless guaranteed by old-timers from the same village. Only one *pasar* vendor in our survey borrowed Rp 20,000 from KOSIPA, despite the fact that several vendors are said to stop operations in the lean season due to working capital constraint.

Even though these small credit programs appear to impose very high interest costs on debtors, interest earnings of lenders may not be so high considering the high default risk of non-collateral loan. If we assume a default rate of 10 percent, which does not seem far out of line in the KOSIPA case, the annual rate of interest earning for PKK declines from 343 to 86 percent, for KUD from 1,270 to 88 percent, and for KOSIPA from 920 to 264 percent. Such rates might not be quite so usurious, considering the high transaction costs associated with small-sized loans.

### **Bargaining and Price Setting**

How do *pasar* vendors determine their purchase prices from farmers and sale prices to consumers? According to our interview survey, the most common reference for deciding their purchase price is the price paid by collectors in the same village (Table 5.5). The next common reference is hearing from other *pasar* vendors whose opinion will also be based heavily on the collectors' purchase prices. Therefore, since village collectors' payments are based on their receipts from inter-village collectors, farm-gate prices in this village are essentially determined by prices in the Jakarta market. Both farmers and middlemen at the village level are price takers in the wide regional market.

For selection of the *pasar* sale prices, vendors seem to base their decision on word-of-mouth from fellow vendors, also reflecting the competitive nature of their price setting (Table 5.6).

The fact that *pasar* vendors are essentially competitive price takers is not inconsistent with bargaining in their sale operations. Rather, bargaining is one

instrument for seeking the market equilibrium price. For example, according to an experienced *Pasar* vendor from the study village, she plans to sell cucumber within a price range of Rp 150 to 200 per kg, when she buys it at Rp 125, ; if a regular customer appears, she begins to offer the price of Rp 200 for the first bid wishing to settle at Rp 175, while she would offer the first bid of Rp 230 to a new customer; she adjusts the target price according to the speed by which her stock depletes. Bargaining is done not only in prices but also in the buyers' selection of good pieces or a request for a handful of vegetables as an extra. The bargaining is normally short, seldom more than a couple of minutes, since both selling vendors and buying household keepers basically share the same information on both market price and product quality

**Table 5.5 Distribution of 12 pasar vendors' answers to the question: “how do you collect information on price in the village?”, study village,1990**

Village collectors' purchase price	7
Hear from other <i>pasar</i> vendors	5
Hear from farmers	2
Judging from yesterday's sales market price	2
Observe at the wholesale market	1
Total	17 (a)

a. 5 of 12 vendors collect information from 2 sources.  
Source: *Pasar* vendor survey 2.

**Table 5.6 Distribution of 12 Pasar vendors' answers to the question: “How do you know the sales market price?”, study village,1990.**

Hear from other <i>pasar</i> vendors	7
Judging from the sales price in previous days	3
Judging from the purchase price in the village	2
Total	12

Source: *Pasar* vendor survey 2

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## Marketing Margins and Middleman Incomes

This chapter attempts to estimate the average marketing margins, costs and middleman incomes for vegetables under normal conditions and to analyze how they are determined. However, our price observations are too few to estimate average price relations relative to large variations over time, across space and among grades. The analysis in this chapter is based on what we consider to be "typical" prices, in order to illustrate the margins and the profits in normal conditions for a typical grade of each product. For this purpose, figures are rounded off for the analysis.

### Transportation costs

Transportation costs are a major determinant, not only of marketing margin but also marketing organization and trade practice. Table 6.1 summarizes estimates of transportation costs per kg of ordinary vegetables. In the case of truck transportation, not only the truck charter fee but also load/unloading cost and other related charges, are included in the transportation costs.

**Table 6.1 Estimates of transportation cost, 1989/1990**

	Assumption			Transportation cost (Rp/Kg)
	Distance (Km)	Transportation means	Lot size (Kg)	
Village to local town		Minibus	50	1\$ <sup>a</sup>
			100	3 <sup>a</sup>
			150	7 <sup>a</sup>
			250	6 <sup>a</sup>
			10	Small truck
		1,500	6(3) <sup>c</sup>	
Local wholesale to retail market	0.1	Pedicab ( <i>becak</i> )	Up to 150	2
Village to Jakarta market:				
<i>Pasar</i> Cibitung (Bekasi)	250	Large truck	5,000	28(18)
<i>Pasar</i> Induk (Jakarta)	300	Large truck	5,000	30(20)

- Includes a round trip for a passenger who accompanies the cargo
- Truck charter fee plus load/unloading cost is shown outside parenthesis, and truck fee alone is shown in parenthesis.
- The sum of truck charter fee, the costs of packing material (Rp 20,000) wages to agent (Rp 12,000) and 2 loading coolies Rp 3,000/day, highway toll Rp 5,000 for Bekasi and Rp 8,000 for Jakarta and weight tax Rp 5,000 is shown outside parenthesis, and truck fee alone is shown in parenthesis

Farmers and *pasar* vendors commonly go by minibus from the study village to the Kadipaten *Pasar* (and also the Majalengka *Pasar*). Each passenger pays Rp 500 for a round trip, with additional payments for any cargo depending on its size. The unit transportation cost for vegetables including the passenger fee amounts to Rp 7 per kg if a *pasar* vendor carries the typical load of 150 kg. If a village collector sends vegetables by small truck to the local wholesale market in Kadipaten, the cost for charter and loading/unloading is Rp 6 per kg for a full load of 1.5 tons, but increases to Rp 8 if he collects only one ton. Moreover, if these vegetables are purchased by retailers in the *pasar*, an additional cost of Rp 2 is required for their transfer to shops in the *pasar*. As illustrated by this case, scale economies in transportation are not strong in local transportation from villages to local marketing centres.

The cost of transporting vegetables to the Jakarta market are estimated to be Rp 28 per kg and Rp 30 per kg, respectively, for sending cargos to *Pasar* Cibitung in Bekasi and *Pasar* Induk within the Jakarta City. These costs include truck charter fee (Rp 90,000 per truck to *Pasar* Cibitung and Rp 100,000 to *Pasar* Induk), wages for two loading coolies at village collectors' depots (Rp 3,000 per day each) and for an agent to ride on the loaded truck to Jakarta (Rp 12,000 for one-round trip), and other charges such as highway toll and weight tax. Since these costs are fixed for one truck load, the unit cost increases proportionally if the size of the cargo decreases; e.g., it rises to Rp 60 if a truck carries a half load to *Pasar* Induk.

## Prices

Table 6.2 summarizes typical prices of three major vegetables (cucumber, string bean and eggplant) at various points in the local marketing chain between farmers in the village and consumers in town. Middlemen who buy from farmers at the village are the *pasar* vendor and village collector. Usually, the vendor pays higher prices than the collector because she selects good pieces for her small purchase. However, in order to maintain comparability for analysis, it is assumed that the village collector buys vegetables of the same average quality as the vendor, hence their purchase prices are the same.

Table 6.2 Typical prices of vegetables for sale by various marketing agents in the marketing channel for local consumption, 1989/1990.

Seller	Buyer	Point of sale transaction	Price received for selling (Rp/Kg) <sup>(a)</sup>		
			Cucumber	String bean	Eggplant
Farmer	<i>Pasar</i> vendor	Farmer	125	200	115
	Village collector	Village collector	125	200	115
Village collector	Resaler	Wholesale market	150	235	130
Resaler	Stall	Wholesale market	160	245	140
Stall	Consumer	Stall	200	300	175
<i>Pasar</i> vendor	Consumer/ Pedlar	<i>Pasar</i>	175	275	160

a. The purchase prices of the village collectors are adjusted to make the quality of their commodities the same as those purchased by the *pasar* vendor

At the town end of the local marketing chain, the *pasar* vendor and pasar stall (*kios*) owner are major competitors in retailing vegetables to consumers. It is assumed that stall prices are higher than vendor prices because of the stall's advantage in continuing business the whole day, as their commodities are protected from the sun.

While the *pasar* vendor buys vegetables directly from farmers, the stall owner must procure a supply from the town wholesale market. It is assumed that the stall keeper buys from a reseller in the wholesale market, to whom a village collector sells in bulk, although it is more common for a stall keeper to buy directly from a village collector who brings a small cargo to the market, as assumed in Table 5.1.

Table 6.3 summarizes typical vegetable prices at various points in the marketing chain for transshipment to the Jakarta market. Here, the Jakarta market is represented by *Pasar Induk*. It must be noted that village collector's purchase prices from farmers for this interregional trade channel, are indicated to be lower than their purchase prices for the local consumption channel, as specified in Table 6.2. This is because village collector's purchase prices are adjusted upward in Table 6.2 in order to make the commodity grades comparable between the village collector and *pasar* vendor. Village collector's purchase prices in Table 6.3 are considered average prices or typical prices, of average grade vegetables, while those of Table 6.2 are considered the prices of higher-grade vegetables. Both are the prices paid at the village collector's house (depot).

The prices that the village collector receives from the inter-village collector are also paid at the depot, although actual payments are deferred until next day. The prices that the inter-village collector receives from the Jakarta market are the prices that his consignee pays to him after deducting the consignee's commissions from sale prices at the wholesale market.

**Table 6.3 Typical prices of vegetables for sale by various marketing agents in the marketing channel for Jakarta market, 1989/1990.**

Seller	Buyer	Point of sale transaction	Price received for selling (Rp/Kg)		
			Cucumber	String bean	Eggplant
Farmer	Village collector	Village collector	100	175	90
Village collector	Inter-village collector	Village collector	120	200	105
inter-village collector	Consignee	Jakarta wholesale market	170	250	150
Consignee	<i>Pasar</i> reseller	Jakarta wholesale market	190	270	170

## Marketing Margins and Middleman Incomes

Marketing margins for various middlemen, as implied in Tables 6.2 and 6.3, and their incomes after deducting the costs of marketing from the margins, are illustrated for the case of cucumber in Table 6.4. The deducted costs include: transportation (Table 6.1), retail - such as plastic sheets for lapping the vegetables, a *pasar* tax on vending activity, and commodity loss due to spoilage. The middleman's income is defined here as "value added" by middleman's marketing activities.

Both marketing margin and middleman income per kg of cucumber marketed are higher for the *pasar* vendor than for the *pasar* stall. This reflects the advantage of the *pasar* vendor in directly connecting the producer and consumer in local retail trade. This advantage would even be greater if imputed labour and capital costs would be considered. Of course, the lower income per unit of the commodity sold does not mean that stall keeper's income per day or per year is lower than the *pasar* vendor's, since stalls can operate for much longer hours and sell larger quantities.

It is indicated that the marketing margin of the village collector is higher when he carries his assembled cargo to the wholesale market in town, than when he sells it to the inter-village collector. However, after deducting the transportation cost, his income from his marketing in town is equivalent to the sale at his house to the inter-village collector. Considering the additional effort of marketing in town, as well as the disadvantage of losing credit ties with inter-village collectors, it is no wonder to find few village collectors selling at the town market. The exception is the small ones who are located very close to town and can carry small cargos on their own bicycle or motorcycle.

Table 6.4 Marketing margins for various channels of vegetable marketing, the case of cucumber, 1989/1990.

Marketing agent	Marketing channel <sup>a</sup>	Marketing margin (1)	Transportation cost <sup>b</sup> (2)	Retail cost <sup>c</sup> (3)	Commodity loss (4)	Middlemen income (1)-(2)-(3)
Rp/Kg						
(a) Marketing channel for local consumption						
<i>Pasar</i> vendor	F to consumer	50	7	7	12	24
Village collector	F to Reseller	25	6	-	-	19
Reseller	VC to Stall	10	0	-	-	10
Stall	Reseller to consumer	40	2	7	12	19
(b) Marketing channel for Jakarta market						
Village collector	F to IVC	20	0	-	-	20
Inter-village collector	VC to consumer	50	30	-	10	10
Consignee	IVC to Reseller	20	9 <sup>d</sup>	-	1	10

<sup>a</sup> F: Farmer; VC: Village Collector; IVC: Inter-village Collector;

<sup>b</sup> Include load/unloading costs and other expenses associated with transportation (Table 6.1). <sup>c</sup> Include the costs of lapping material such as plastic bag and *pasar* tax on vending activity.

<sup>d</sup> Includes the costs of coolies for unloading and weighing, tips to driver and agent and market tax.

The marketing margin of the inter-village collector is high, but after deducting the high transportation cost, his income per kg of cucumber marketed is one half of the village collector's. This unit marketing income for the inter-village collector is still a gross overestimation, because he has to pay costs for communication, office facilities, clerical staff, etc. Moreover, he has to shoulder credit costs for tying village [collectors](#), as discussed in chapter 4. Although it is difficult to estimate these costs, it would not

be surprising if the inter-village collector's net income (including returns to his entrepreneurial and managerial inputs) would be less than one half of Rp 10 per kg as estimated in Table 6.4. On the other hand, the marketing income of Rp 20 per kg for village collectors seems close to his net income since his capital cost is modest. He can even earn some margins from credit operations based on interest-free loans from the inter-village collector, even though the interest-free loan is usually less than the total loan that he advances to farmers.

Yet, the total income of the inter-village collector should be much higher because of the much larger volume of marketing by the former. While a village collector usually assembles within the range of 100 to 300 tons per year, an inter-village collector handles more than 1,000, up to even 10 thousand tons, of vegetables. Assuming that a village collector assembles 200 tons with a unit income of Rp 20 per kg, his income per year amounts to Rp 4 million, which is about 4 times the annual income of a *pasar* vendor. On the other hand, if an inter-village collector assembles and transships 5,000 tons of vegetables to the Jakarta market with a modest margin of Rp 4 per kg, his total income per year amounts to Rp 20 million (nearly 10 thousand U.S. dollars), which is a very high level by local Indonesian standards.

**Table 6.5 Local incomes generated from vegetable marketing for local consumption and the Jakarta market, the case of cucumber, 1989/1990.**

	Marketing activities for	
	Local consumption	Jakarta market
	Rp/kg	
Middleman income:		
<i>Pasar</i> vendor	24	-
Village collector	-	20
Inter-village collector	-	10
Labourer's income	0	5 <sup>a</sup>
Transporter's income <sup>b</sup>	6	15
Total	30	50
Women's share (%)	(80)	(0)

<sup>a</sup> Inter-village collector's payment to agents and loading/unloading coolies.

<sup>b</sup> Cost of fuel and oil is deducted from the transporter's gross income.

Table 6.5 illustrates how much income is received by people who engage in vegetable marketing activities at the local level (excluding activities based in the metropolis), for the two major alternative channels. If cucumber is brought to town by a *pasar* vendor for sale to consumers, the local income of Rp 30 per kg consists of the vendor's marketing income (80 percent) and the transporter's income (20 percent), which consists of a minibus owner's profit and the driver's wage. If cucumber is sent to the Jakarta market through village and inter-village collectors, the local income of Rp 50 per kg consists of the collectors' middlemen income, compensation for employees (laborer's income), the truck owner's profit and the driver's income (transporter's

### Comparison with Soybean and Rice

Table 6.6 compares the marketing margins and middleman incomes of vegetables with those of soybean and rice per unit of marketed volume. The comparison is limited for the local marketing channel, to the producer in the village and the consumer (or processor) in town. The comparison for the channel in the metropolitan market is not attempted because of a lack of sufficient data.

A major characteristic of vegetable marketing revealed in Table 6.6 is its high marketing margin and rates of return to middleman. In this comparison, vegetables are assumed to be purchased by the *pasar* vendor from the farmer and sold directly to the consumer. The margins for vegetables are about 5 times larger than the margins for soybean and rice. Marketing costs are also higher for vegetables, because of higher transportation costs for the smaller amounts carried by the pasar vendors, in addition to significant commodity loss. However, even after deducting the high marketing costs, middleman incomes for vegetables are also 5 times higher than for soybean and rice. Not only absolute margins and incomes, but also their ratios to retail prices, are much higher for vegetables. These high margins and incomes per kg of marketed vegetables, both absolute and relative, seem to reflect high risk and transaction costs associated with marketing of such perishable commodities, as well as the high intensity of labour use by *pasar* vendors.

**Table 6.6 Comparison of local marketing margins, losses and middleman income among crops produced from the rain-fed village, 1989/1990.**

	Price (Rp/kg)		Marketing margin		Transportation cost (Rp/kg)	Commodity loss (Rp/kg)	Middleman income	
	farm gate (1)	Retail/processor (2)	Rp/kg (3) = (2)-(1)	percent (4) = (3)/(-)			Rp/kg (7) = (3)-(5)	percent (8) = (7)/(2)
Vegetable <sup>(a)</sup>								
Cucumber	125	175	50	28.6	14	12	24	13.7
String bean	200	275	75	21.3	14	15	36	13.0
Eggplant	115	160	45	28.1	14	6	25	15.6
Soybean <sup>(b)</sup>	700	710	10	1.4	5		5	0.7
Rice <sup>(c)</sup>	240	250	10	4.0	5		5	2.0

- a. Assumes sales at the local market by *pasar* vendors.  
 b. Assumes sales to local processors by village collectors.  
 c. Assumes sales to local rice mill by village collectors.

Another characteristic of vegetable marketing is that absolute margins and incomes are proportional to the values of products among different kinds of vegetables. While relative margins and incomes are largely the same. In contrast, absolute margins and incomes are the same for soybean and rice, despite a large difference in their unit values. This characteristic seems to reflect, also, higher risk for vegetable marketing. Which should increase as the unit value increases

## Rural Income Generation

This chapter estimates how much rural income would have increased at the village level, not only from farm production but also from marketing and processing, corresponding to the introduction of commercial vegetable production to rainfed areas where CGPRT crops were traditionally grown in combination with rice. It also estimates changes in the share of income accruing to women's economic activities.

### Method and Assumptions

Basic estimation procedures are as follow: Firstly, we estimate how much farm income per hectare is generated from the traditional and new farming systems in the study village. Secondly, we estimate how much income is generated from the activities of marketing/processing the farm commodities produced in these farming systems. Thirdly, these marketing/processing incomes are added to the farm incomes per hectare for the different farming systems. Finally, these incomes per hectare are aggregated into the total village income, based on the shares of different farming systems in the total farmland area. In this calculation, income is measured in terms of value added (gross output minus current input cost).

The village income that we attempt to estimate is defined as the income accruing to people living in the "village", i.e. not strictly the study village itself. A part of income produced on the farms operated by farmers in the village may be paid as wages to laborers from the other village or as rent to landlords living outside the village. These incomes are included in the village income as long as the recipients are residents in rural environments and make a living from farming and farm-related activities.

Also, incomes from the marketing/processing activities for commodities produced in the study village are treated as part of the village income so far as these activities are carried out by people living in rural environments, even if they are not residents of the study village itself. For example, not all *pasar* vendors who buy vegetables in this village come from the households of this village but all these vendors' incomes are treated as part of the village income. Likewise, the income of rice millers located in nearby villages is included in the village income to the extent that their income is generated from the milling of rice produced in this village. However, incomes from the marketing/processing activities by urban-based agents such as *pasar* stalls are excluded, even though the rural-urban demarcation is not always very clear-cut. Local transportation costs (excluding fuel and oil costs) are included, even though some minibus and small truck owners and operators reside in town.

### Incomes from Farm Production

First, we estimate how much rural income would have increased corresponding to shifts from the traditional to the new vegetable-based farming systems. For the typical systems to be compared, see Figure 2.4 and 2.5.

Table 7.1 compares average labor inputs in farm production per hectare, measured in working hours, among different farming systems in the study village. The data imply that total labor input per hectare would increase more than 3 times in upland areas when the traditional CGPRT system shifts to the new vegetable system. It is also shown that, in a rainfed lowland area, labor input for the new rice-vegetable system is double that of the rice-CGPRT system. Increases in the use of women's labor are significantly larger than those for men's labor. This reflects the high intensity of female labor use for harvesting vegetables without having to resort to male labor with its higher opportunity costs.

Table 7.1 Labor input in farm production by farming system, per hectare of harvested area in the study village, 1988/1989.

	Male	Female	Total
	hr/ha		
Upland:			
(a) CGPRT <sup>a</sup>	1,311	907	2,218
(A) Vegetable	3,584	3,558	7,142
(A)/(a)	2.7	3.9	3.2
Rainfed lowland:			
(B) Rice-Vegetable	1,514	902	2,416
(B)/(b)	2,743	2,381	5,124
(B)/(b)	1.8	2.6	2.1
Integrated lowland			
(C) (Rice-Rice)-Vegetable <sup>a</sup>			

<sup>a</sup> The data does not include the labor input for rice cultivation

Source: Kawagoe et al. 1989, Table 3.1 and Labor Employment survey

High labor-absorptive capacities of the vegetable-based systems are paralleled by high income-generation capacities, as shown in Table 7.2. Especially remarkable are extremely large increases in farm output and value added for the shift from the CGPRT to the vegetable system in upland areas. Even more remarkable is a large non-labor income calculated as a residual for the new vegetable system after deducting both hire and imputed family wages from value added, whereas the non-labor income is almost zero for the traditional CGPRT system. This finding suggests the hypothesis that this upland area used to be "marginal land", as defined by Ricardo, and therefore not subject to land rent under traditional technology. It has now become "superior land which yields rent through the introduction of new vegetable technology. The same should apply to irrigated lowland in the third season, which used to be mainly left idle, but has recently been leased for vegetable production.

Compared with the upland case, the impact of new vegetable technology output and income in rainfed lowland areas seem to be much smaller. This is partly because the relatively large output and income of rice remain the same despite the shift from the old to the new system, and partly because vegetable yields are lower rainfed lowland for the second crop season than those of upland for the first crop

season, because of the difference in water availability. This relatively small advantage of vegetable production seems to underlie the low rate of adoption of the vegetable based system in rainfed lowland as compared with upland (Table 2.4). Comparison of non-labor incomes between upland and rainfed lowland areas is consistent with the hypothesis that rainfed lowland, which used to be superior to upland under traditional technology, has become inferior with the introduction of new vegetable technology.

**Table 7.2 Farm production costs and returns by cropping systems, per hectare of harvested area in the study village, 1988/1989**

	Output	Current input	Value added	Labor income <sup>a</sup>		Non labor income
	(1)	(2)	(3) = (1)-(2)	Total (4)	Women (5)	(6) = (3)-(4)
Rp 000/ha						
Upland:						
(a) CGPRT	717	139	578	559	154	19
(A) Vegetable	5,078	462	4,616	1,895	605	2,721
(A)/(a)	7.1	3.3	8.0	3.4	3.9	143.2
Rainfed lowland:						
(b) Rice-CGPRT	1,565	181	1,384	762	153	622
(B) Rice-Vegetable	2,845	420	2,425	1,456	405	969
(B)/(b)	1.8	2.3	1.8	1.9	2.6	1.6
Irrigated lowland:						
(C) (Rice-Rice)-Vegetable <sup>b</sup>	1,399	295	1,104	727	224	377

<sup>a</sup> Sum of hired labor wage and imputed family labor cost. Family labor is imputed by market wage rates (Rp 360/hour for male and Rp 170/hour for female).

<sup>b</sup> The data refers the case of third season lease for vegetable cultivation excluding rice for the first and the second season. Source: Kawagoe et al. 1989, Table 3.7 and Labor Employment survey.

## Incomes from Marketing and Processing

Incomes accruing to rural people from their marketing and processing activities are measured per kg of each farm product in Table 7.3.

The scope of activities included in the calculation of the village income from each farm product is as follows:

**Rice:** Rice consumed at the farmer's household is assumed to have been milled at a rice mill. Its milling fee is included in the village income. The rest is considered to have been collected by the village collector, which after milling, is sold to traders in town. Marketing margins of both the village collector and rice mill are included after deduction of the current input cost for rice milling.

**Soybean:** One quarter of soybean is assumed to be processed into *tempe* and sold through the grocery store (*warung*) in rural environments. The rest is marketed by the village collector to a trader in town. The marketing margins of the village

collector and grocery store, together with the margin of the *tempe* producer after deduction of current input cost, are included.

Maize: Maize is collected by the village collector for sale to a trader in town. The margin of the village collector is included in the village income.

**Table 7.3 Rural income generated from the marketing and processing of rice, CGPRT crops and vegetables per kg produced in the study village, 1988/1989.**

	Share of marketing channel (%)	Marketing		Processing		Total	
		Total income Rp/kg	Women's share (%)	Total income RP/kg	Women's share (%)	Total income RP/kg	Women's share (%)
Rice:							
Home consumption	90 <sup>c</sup>	0	(0)	12	(0)	12	(0)
Sale		9	(0)	12	(0)	21	(0)
Average <sup>d</sup>		1	(0)	12	(0)	13	(0)
Soybean:							
<i>Tempe</i> processing	25	260	(96)	237	(100)	497	(99)
Sale	75	9	(0)	0	(0)	9	(0)
Average <sup>d</sup>		72	(88)	59	(100)	131	(93)
Maize	100	9	(0)	0	(0)	9	(0)
Cassava	100	9	(0)	11	(0)	18	(0)
Vegetable:							
Sale to local market	30	30	(80)	0	(0)	30	(80)
Sale to Jakarta market	70	20	(0)	0	(0)	20	(0)
Average <sup>a</sup>		23	(30)	0	(0)	(23)	(30)

<sup>a</sup> Weighted average using shares of marketing channels as weights.

<sup>b</sup> Percentage to the total of home consumption and sale, including paddy paid in kind as wage and land rent.

Cassava: Cassava is assumed to be delivered by the village collector for processing into tapioca at a rural factory. Margins for the village collector and tapioca factory, after deduction of current input cost, are included

Vegetables: Vegetables are sold either by the *pasar* vendor directly to the consumer or assembled by the collector for the inter-village collector. The marketing margin of the *pasar* vendor is included in the village income, after deduction of retail cost and commodity loss. The total marketing margin of the village collector is included, but the inter-village collector is excluded from the calculation because he engages in trade beyond the local level, even if he usually lives in a rural area. It is assumed that 30 percent of vegetables pass through the vendor route for local consumption and the rest through the collector route for shipment to the metropolis. For the sake of simplicity, the vegetables that go through the small collector route to the local wholesale market, are added to those marketed through the vendor route

Incomes from marketing and processing of farm products per kg as shown in Table 7.3, are aggregated into incomes per hectare for the different farming system and compared with incomes from farm production itself in Table 7.4. In this calculation, women's income from farm production is estimated by multiplying women's share in labor income to total farm value added minus land rent (Table 7.2); this procedure assumes that women receive a share of the operator's surplus equal to their labor income share.

**Table 7.4 Incomes accruing to villagers from farm production, marketing and processing per hectare of harvested area under different farming systems in the study village, 1988/1989.**

	Production		Marketing		Processing		Total	
	Total Women		Total Women		Total Women		Total Women	
	Rp 000/ha							
Upland:								
(a) CGPRT <sup>a</sup>	578	158	55	25	61	24	694	207
(A) Vegetable <sup>b</sup>	4,616	1,426	713	223	0	0	5,329	1,649
(A)/(a)	8.0	9.0	13.1	8.9			7.7	8.0
Rainfed lowland:								
(b) Rice-CGPRT <sup>c</sup>	1,384	158	61	50	101	47	1,546	255
(B) Rice-Vegetable <sup>c</sup>	2,425	544	395	122	54	0	2,874	666
(B)/(b)	1.8	3.4	6.4	2.4	0.5		1.9	2.6
Irrigated lowland:								
(C) (Rice-Rice)-Vegetable <sup>d</sup>	1,104	294	322	101	0	0	1,426	395

<sup>a</sup> Assumes 1.2 t of upland rice, 0.66 t of maize, 2.1 t of cassava and 0.4 t of soybean.

<sup>b</sup> Assumes 31 t of vegetables.

<sup>c</sup> Assumes 4.5 t of paddy and 0.8 t of soybean for system (b) and 17 t of vegetables for system (B).

<sup>d</sup> Assumes 14 t of vegetables only and does not include the income from rice.

The results in Table 7.4 indicate that increases in the total income from marketing and processing, correspond to shifts from the traditional to the new vegetable-based systems and are parallel with increases in the income from farm production. Women's income from marketing and processing tends to increase less than their farm income, mainly due to the disappearance of soybean for *tempe* processing and retailing conducted by women. However, this calculation is rather misleading, since *tempe* processing and marketing activities by women can be maintained on the basis of soybean imported from other areas or from abroad, even if local production of soybean is replaced by vegetables. On the other hand, it is difficult to maintain the *pasar* vendor activities if vegetables are not grown in the village.

### Total Village Income and Women's Share

For some social and cultural reasons, women's participation in marketing is limited largely to retail activities such as *pasar* vending, peddling and shop keeping,

while wholesale activities are carried out mainly by men. For this reason, shifts to vegetables from rice and CGPRT crops (except soybean), for which wholesale activities have a higher weight than retail activities at the village level, tend to increase women's share of income from marketing.

Rural incomes estimated by the farming system in Table 7.4 are multiplied by areas under respective systems to yield estimates of the total village income in Table 7.5. The results show that the total village income in 1989/1990 amounted to Rp 123 million, of which 86 percent was produced from farm production, 13 percent from marketing and 1 percent from processing. If vegetable production was not introduced and all lands were operated under the traditional systems, the total village income would have been Rp 40 million, only one third of the actual level. The share of marketing income was significantly larger in the actual than in the counter-factual case reflecting the high employment and income generation of vegetable marketing, while the share of processing income was smaller due to replacement of soybean by vegetables.

**Table 7.5 Estimation of total income generated from farm production, marketing and processing in the study village, 1989/1990.**

Farming system	Area	Production	Marketing	Processin	Total
	ha		Rp 000		
land:					
(a) CGPRT	3.1	1,792	169	190	2,151
(A) Vegetable	14.7	67,855	10,481	0	78,336
Rainfed lowland:					
(b) Rice-CGPRT	13.7	18,961	842	1,389	21,192
(B) Rice-Vegetable	4.0	9,700	1,580	216	11,496
Irrigated lowland:					
(C) (Rice-Rice)- Vegetable <sup>a</sup>	7.1	7,838	2,286	0	10,124
Total village (1) (Actual 1989/1990)	42.6	106,146 (86) <sup>c</sup>	15,358 (13)	1,795 (1)	123,300 (100)
Total village <sup>b</sup> (2) (All traditional)	35.5	34,785 (88)	2,060 (5)	2,884 (7)	39,729 100
(1)/(2)	1.2	3.1	7.5	0.6	

<sup>a</sup> Does not include the income from rice.

<sup>b</sup> Assumes all upland and rainfed lowland in the village is under traditional cropping system, (a) and (b), and no thir, season lease in irrigated lowland.

<sup>c</sup> Percentage to total income is shown in parenthesis.

Table 7.6 estimates how much of this village income would have accrued to women. In 1989/1990, the total income of village women amounted to Rp 34 million, which was 4 times larger than their hypothetical income under the counter-factual, assumption of no vegetable production in this village. This suggests that the new vegetable-based systems have improved the income position of women more than

proportionally. This calculation is likely to be under-estimating the improvement of women's position, because the estimated reduction in their income from processing would have not actually occurred, since *tempe* processing would have been sustainable even if the farm production of soybean were displaced by vegetables, as emphasized earlier.

Table 7.6 Estimation of women's income generated from farm production, marketing and processing in the study village, 1989/1990

	Farming system		Area	Production	Marketing
	Processing	Total			
	ha			Rp 000	
Upland:					
(a) CGPRT	3.1	491	78	73	642
(A) Vegetable	14.7	20,962	3,281	0	24,243
Rainfed lowland:					
(b) Rice-CGPRT	13.7	2,170	685	649	3,504
(B) Rice-vegetable	4.0	2,177	490	0	2,667
Irrigated lowland:					
(C) (Rice-Rice)- Vegetable	7.1	2,086	716	0	2,802
Total women (1) (Actual 1989/1990)	42.6	27,886 (82) <sup>c</sup>	5,250 (16)	722 (2)	33,858 (100)
Total women <sup>b</sup> (2) (All traditional)	35.5	5,625 (69)	1,330 (16)	1,261 (15)	8,215 (100)
(1)/(2)	1.2	5.0	3.9	0.6	4.1
				%	
Women's share <sup>d</sup> (Actual 1989/1990)		26	34	40	27
Women's share <sup>d</sup> (All traditional)		16	65	44	21

<sup>a</sup> Share of women's income in total income generated is shown in parenthesis.

<sup>b</sup> Assumes all upland and rainfed lowland in the village is under traditional cropping system, (a) and (b), with no third season lease of irrigated lowland.

<sup>c</sup> Ratio of total income for women to total village income

<sup>d</sup> Percentage to total income is shown in parenthesis

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## Conclusions

This study attempted an in-depth investigation into marketing of vegetables in a rainfed area of West Java. In this area, upland rice and CGPRT crops were traditionally grown in combination under unfavorable conditions. Commercial vegetable production has recently been introduced, resulting in significant increases in farm income and employment. This innovation at the farm level has been supported by development of a new marketing system. For marketing perishable commodities like vegetables, a different organization is required than for storable commodities such as soybean and rice, traditionally grown in this area. A major purpose of this study was to identify unique characteristics of the new vegetable marketing process and to examine how efficiently it works.

This study began with a survey of an upland/rainfed-lowland village in the Majalengka District. This was followed by interviews with middlemen buying farm products in this village and, by further interviews with larger traders who are supplied by these village-based middlemen. From the successive interview surveys, data were collected on prices, transportation costs, trade practices and contracts at various stages of marketing. Based on these data, an attempt was made to estimate rural income generated not only from farm production but also from marketing of commercial vegetables.

### Summary of Findings

A unique aspect in the marketing of new commercial vegetables is the separation of the marketing channel for local consumption from the channel for transshipment to the metropolis. In this respect, vegetable marketing is different from the marketing of traditional storable commodities, such as soybean and maize, in which various middlemen engage in both local retailing and inter-regional wholesale trade. In the channel of vegetable marketing for local consumption, a major role is played by *pasar* vendors, mostly farmers' wives, who carry vegetables from the village to local markets, for sale to consumers as well as small retailers such as pedlars and storekeepers in town. The channel for transshipment to the metropolis is organized into a hierarchy of large middlemen specializing in interregional trade and small middlemen who collect vegetables from farmers to supply the large middlemen.

The hierarchical division of labor between large and small middlemen for the transshipment of local produce to a distant market, is common for the marketing of commodities produced by small peasants. The hierarchy stems from: (i) scale economies in transportation; (ii) differential endowments of human capital; and (iii) differential capital constraints between large and small middlemen. For perishable commodities like vegetables, this hierarchy must be more tightly structured in order to achieve better coordination between commodity assembling, loading and shipment, to minimize spoilage in the marketing process.

A device commonly used for this co-ordination is for a large trader to advance credits to small middlemen for their assurance to submit all their collections to him. This credit-tying contract is practiced for other commodities too, but the credits for storable commodities like soybean are short-term trade credits for only a few days and do not flow from middlemen to farmers. In contrast, the credits for vegetables are advanced to small middlemen for a crop season, for the purpose of tying farmers by credits in kind in the form of fertilizers and chemicals.

In these credit-tying contracts, interest is not explicitly charged. Charging of interest in the form of lowered purchase prices by middlemen is seldom practised. Middlemen can save their credit cost by buying fertilizers and chemicals in bulk and charging small-lot purchase prices for in-kind credits to farmers. Also, large traders have easy access to low-interest institutional credit. Yet, the credit cost shouldered by the large traders to tie farmers, via small middlemen, appears to be quite significant. The large traders bear this cost for making their business profitable through better coordination of farm production, collection and shipment of perishable commodities like vegetables.

This credit-tying does not seem to be a significant source of monopoly/monopsony. Although farmers may be obliged to sell their products to a middleman for the duration of their credit contract, he can easily shift next season to another middleman for an alternative source of credit supply. The same applies to the relation between large and small middlemen. It is observed that large middlemen tend to delay increases in their local purchase price when the Jakarta market price rises. This monopolistic pricing is not based on the credit-tying contract but on the large traders' faster access to market price information in the metropolis. Their power of setting the local price at a low level is soon lost as the Jakarta price stops its rising trend. Price settings at various levels of marketing indicate that market price risk is shared widely by all the marketing agents involved, from farmers in the village to consumers in the metropolis.

In the marketing of vegetables for local consumption, village women play the dominant role as *pasar* vendors. They are a direct bridge between producers and consumers and have a clear advantage for perishable commodities like vegetables. Their advantage is supported by the low labor-opportunity costs of rural women as well as the relatively well-developed public transportation systems in Java, that reduce scale economies for transportation at the local level. These vendors work hard and long, but their income is also high by the village standard. One problem is that participation in this business tends to be limited to women from relatively well-to-do households in the village community, because the really poor have difficulty in mobilizing modest working capital.

Marketing margins and -middleman's income in the local trade of vegetables are estimated to be much larger than those for soybean and rice. This difference seems to be explained largely by the higher risk and transaction cost associated with the marketing of perishable products

It is estimated that rural income at the village level increases significantly due to a shift from the traditional farming system based on upland rice and CGPRT crops, to the new system including vegetables. The village income rises in both farm production and marketing. A larger share of this income increase goes to women, reflecting the increased opportunities for not only their labor, but also their entrepreneurial ability.

## Policy Implication

Our investigation into the marketing of vegetables, which have only been produced recently for a commercial purpose, shows that it is organized efficiently within an informal sector with few government interventions and regulations. It is working efficiently in economizing the use of scarce capital and management input while making intensive use of local inputs, especially labor, which a low opportunity has cost.

In the marketing for local consumption, the labor and entrepreneurship of rural women are adequately tapped in delivering perishable products directly to consumers in town with minimum marketing loss. This experience suggests the possibility of mobilizing women's capacity more effectively through technological innovation, for rural development as well as the wellbeing of women themselves.

In the marketing for metropolitan markets, large and small middlemen are co-ordinated with farmers in assembling vegetables for large bulk shipments to wholesale markets in the metropolis. Decent co-ordination is also established between local traders and agents in the metropolitan markets. Middlemen were not found to be exploiting peasants through the practice of monopsonistic pricing and usury. Instead, in the credit-tying contract, middlemen shoulder a part of the credit cost for farm production inputs in consideration of the benefit from better co-ordination between farm production and marketing.

These findings imply that any government attempt to intervene in this market through regulations on trade practice and contracts, or controls on prices and profits, would be likely to result in a serious loss of social and economic efficiency. If a policy attempts to substitute the present system for a "modern system", that requires a more intensive use of capital, it not only would reduce efficiency but also may impair equity as it would reduce labor income and employment. Policy efforts in this direction should be delayed until overall economic development reaches a stage in which the real wage rate rises sharply so that labor-saving devices become socially beneficial.

This conclusion does not mean that government can do nothing to improve the existing system. While information is equitably shared among middlemen, farmers and consumers in the local market, access to information on the metropolitan markets is limited to large traders. This situation becomes a source of excess profit for the large traders in the short run when prices fluctuate. Regular quotations of commodity prices in the major market centers of the nation through radio and television, for example, will improve both efficiency and equity in marketing. Government investment in roads and highways is a major means to reduce the cost of marketing. More importantly, government investments in agricultural research and extension to discover profitable crops and cropping systems (like commercial vegetables in our study site), as well as for increasing crop yield and product quality, are vital not only for improving farm production but also for increasing income and employment opportunities in the marketing activities. The design of technological development must be directed to tap the ability of women more effectively.

Our findings would also have relevance for the design of a strategy to develop horticulture as a major export sector. The international trade of horticultural products such as vegetables, fruits, and flowers, has been increasing much faster than total agricultural trade. Moreover, the share of developing countries in world horticultural export is also rising significantly (Islam 1990). A critical condition for a developing

country to enter into this expanding trade area is how to develop an adequate marketing system for the markets of high-income countries. It requires an extreme skill to design and operate a system to co-ordinate harvesting, collection, quality control, and shipment of perishable horticultural products, especially if production is carried out by a large number of small farmers. For this enterprise, formal organizations will have to be established. However, unless the system is designed to properly incorporate the indigenous marketing organization now being carried out in the informal sector, it will never work efficiently and equitably. A design for an effective strategy to develop the horticultural sector as a source of major export earnings must be based on the understanding of indigenous marketing organizations and trade practices at the grassroots level. This could be done by pursuing investigations similar to those attempted in this study.

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# Appendices

## **Appendix A Estimation of credit costs for vegetable producers under alternative credit arrangements.**

This appendix explains the method and assumptions made for estimating the credit costs for vegetable producers under alternative credit arrangements. See Table A. 1.

A producer who plants vegetables on 125 *bata* (0.18 ha) of farmland in the study village, typically applies 300 kg of fertilizer and 1 litre of chemicals (Table A.1, Column 1). If the producer purchases some portion of these inputs from a village grocery (*warung*) in small lots, usually less than a bag (50 kg), his purchase price would be Rp 200/kg for urea and ZA (ammonium sulfate), Rp 210/kg for TSP (Triple superphosphate) and Rp 5,000 for a bottle of Azodrin (monocrotophos) (Column 2). Thus his total cost for the cash purchase is calculated to be Rp 70,500 (Column 3).

If the producer buys the inputs on credit, he may have several alternative options; A) collectors' trade credit, B) purchase from fertilizer dealers on credit, and C) cash purchase from a fertilizer dealer by receiving a bank loan. The credit costs under these alternative credit arrangements are compared with the cost for cash purchase mentioned above.

### **A) Collectors' trade credit**

Many vegetable producers in the study village receive fertilizers and chemicals from a collector at the early stage of planting, and pay back their debt when the vegetables are harvested, usually 2 months later. Under this arrangement, collectors typically charge Rp 200 for urea and ZA, Rp 215 for TSP and Rp 5,000 for Azodrin (column 8), which is almost the same price charged by village groceries. Thus the producer's total payment is Rp 70,750 (Column 9), which is only Rp 250 higher than that of cash purchase (Column 11). The difference between the cost of cash purchase (Column 3) and the payment to the collector (Column 7) indicates his implied interest payment under this credit arrangement. The monthly interest rate is calculated to be 0.18 %.

However, this does not mean that the collector receives 0.18 % of interest payment. Since he can buy in a large lot from fertilizer dealers, his purchase prices are much cheaper: Rp 182 for urea and ZA, Rp 207 for TSP and Rp 4,400 for Azodrin (Column 4). If we assume that the collector buys 1.5 t of fertilizer and dozens of chemicals, and then charters a small truck, the transportation cost to the village would be Rp 4,500, including loading and unloading costs, that is Rp 900 for 300 kg of fertilizer (Column 6). Thus his cost for this credit arrangement is Rp 65,550 (Column 7). As he receives repayment of Rp 70,750 from the producer, he can obtain the implicit interest of Rp 5,200, which implies 3.89 percent per month.

### **B) Fertilizer dealers**

The farm producer can purchase his inputs on credit, from fertilizer dealers in town. The dealer charges Rp 10/kg monthly for the sales on credit. If he pays back two months later, his purchase price is Rp 202 for urea and ZA, and Rp 227 for TSP (Column 12). Since the dealer does not sell chemicals on credit, he has to buy in cash

and pays Rp 4,500 for a bottle of Azodrin. His cost is Rp 70,850 (column 13). Besides this cost he has to pay for transportation. The bus fare from the village to the dealer's shop is Rp 500 for his round trip and an additional Rp 1,900 is required for carrying a 300 kg of load. Thus his total cost is Rp 73,250 (Column 15) and his interest is Rp 2,750 (Column 16), which implies 1.93 percent per month.

### **C) Bank loan**

Another possible alternative for the farm producer is to get a loan from a government bank, such as BRI (*Bank Rakyat Indonesia*). If he purchases all necessary inputs from the fertilizer dealer in cash, the price will be Rp 20 lower than the credit buying case, namely Rp 182 for urea and ZA, Rp 207 for TSP and Rp 4,500 for Azodrin. His payment is thus Rp 64,850 (Column 18).

Although BRI claims a monthly interest rate of only 1.5 percent for small loans, the actual interest rate is 2.5 percent, since an additional 1 percent of insurance premium is charged. Applicants must submit several documents, such as a copy of their ID card, a land certificate for collateral, pictures of the applicant and his wife, and an endorsed letter by the village head. In order to prepare these documents, an applicant must go to town at least twice, which costs Rp 1,500 for transportation and Rp 900 for the documents preparation. Moreover he has to pay Rp 3,300 for a revenue stamp irrespective of the size of his loan. If he borrows Rp 65,000, which only covers the cost of fertilizer and chemicals, and pays back all at the time of harvest (2 months later), his total cost for the bank loan is Rp 8,700 (Column 20), which includes Rp 3,300 for interest payment to the bank and Rp 5,400 for other costs for application. Thus his total cost under this arrangement is Rp 75,950 (Column 21), implying an interest payment of Rp 5,200 (Column 22) or an interest rate of 3.79 percent per month in this case.

**Table A.1 Estimation of credit costs for vegetable producers under alternative credit arrangement, 1990. (RP)**

	Fertilizer		Chemical		Total
	Urea	TSP	ZA	Azodrin	
(1) Quantity (kg) <sup>a</sup>	150	50	100	2	
Cash purchase:					
Farmer (in small lots) <sup>b</sup>					
(2) Price (Rp/kg)	200	210	200	5,000	
(3) Cost (2) x (1)	30,000	10,500	20,000	10,000	70,500
Collector (in large lots)					
(4) Price (Rp/kg)	182	207	182	4,400	
(5) Cost (4) x (1)	27,300	10,350	18,200	8,800	64,650
(6) Transportation cost <sup>c</sup>	450	150	300	0	900
(7) Sum (5) (6)					65,550
Credit purchase:					
A. Collectors' trade credit					
(8) Price (Rp/kg)	200	215	200	5,000	
(9) Cost (8) x (1)	30,000	10,750	20,000	10,000	70,750
(10) Implied interest obtained by collector (9)-(7)					5,20
				0 Interest rate (monthly): 3.89%	
(11) Implied interest paid by farmer (9)-(3)					250
				Interest rate (monthly): 0.18%	
B. Fertilizer dealers' sale on credit					
(12) Price (Rp/kg)	202	227	202	4,500	
(13) Cost (12) x (1)	30,300	11,350	20,200	9,000	70,850
(14) Transportation cost <sup>d</sup>	1,200	400	800	0	2,400
(15) Sum (13) + (14)					73,250
(16) Implied interest paid by farmer (15)-(3)					2,750
				Interest rate (monthly): 1.93%	
C. Bank loan					
(17) Price (Rp/kg)	182	207	182	4,500	
(18) cost (17) x (1)	27,300	10,350	18,200	9,000	64,850
(19) Transportation cost <sup>d</sup>	1,200	400	800	0	2,400
(20) Bank loan coste					8,700
(21) Sum (18) + (19) + (20)					75,950
(22) Implied interest paid by farmer (21)-(3)					5,200
				Interest rate (monthly): 3.79%	

<sup>a</sup> Measurement unit of chemical is bottle (= 0.5 litre).

<sup>b</sup> Assumes farmer purchases from a village grocery in small lots.

<sup>c</sup> Assumes the portage of 1.5 t of load by small truck costs Rp 4,500 including loading/ unloading.

<sup>d</sup> Rp 1,900 for 300 kg of load plus Rp 500 for a passenger by mini-bus.

<sup>e</sup> Interest payment Rp 3,300, duty stamp Rp 3,000, copy of ID cards Rp 60, transportation cost Rp 1,500 and the cost for pictures of husband and wife Rp 840 (Rp 1,250/3 prints for each).

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## Appendix B

appendix B List of local names for major vegetable and CGPRT Crops produced in the study site

English	Indonesian	Sundanese	Javanese	Scientific
Rice/Paddy	Padi	Pare	Pantun/Pari	<i>Oriza saliva</i>
<b>CGPRT crops:</b>				
Cassava	Ubi kayu/ Ketela pohon	Sampeu	Telo pohong	<i>Manihot utilissima</i>
Maize	Jagung	Jagung	Jagung	<i>Zea mays</i>
Cowpea	Kacang merah	Kacang beureum	Kacang abang	<i>Vigna unguiculata</i>
Soybean	Kacang kedele	Kacang kedele	Dele	<i>Glycine max</i>
Sweet potato	Ubi rambat	Hui'boled	Telo pendem	<i>Ipomea batatas</i>
<i>Faro</i>	Talas	Taleus	Bentul	<i>Colocasia esculenta</i>
<b>Vegetables:</b>				
Angled loofah	Oyong	Oyong/Emes	Ceme	<i>Luffia accutangula</i>
Eggplant (big)	Terong besar	Terong gede	Terong	<i>Solanum melongena</i>
Eggplant (small)	Terong kecil	Terong leutik		<i>Solanum macrocarpon</i>
Bitter gourd	Pare	Paria	Pare pait	<i>Parkia speciosa</i>
Chayote	Labu siam	Gambits	Jepan	<i>Sechium edule</i>
		Waluh siam		
Chilli	Cabe rawit	Cengek/Sabrang	Lombok rawit	<i>Cap. rinfum / rutescens</i>
Cucumber	Ketimun	Bonteng	Timun	<i>Cucumis sativus</i>
Jack fruit	Nangka/gori	Nangka	Nongko/ngori	<i>Artocarpus heterophyllus</i>
Kidney bean	Kacang buncis	Kacang huncis	Kacang buncis	<i>Phaseolus vrdgaris</i>
i Leunca)	Leunca	Leunca	Leunca	<i>Solnum nigrum</i>
Pepper (red)	Cabe merah	Cabe beureum	Lombok abang	<i>Capsicum annum</i>
Pepper (green)	Cabe hijau	Cabe hejo	Lombok ijo	
Spinach	Bayam	Bayem	Bayem	<i>Amaranthus hrhridus</i>
String bean!	Kacang panjang	Kacang panjang	Kacang panjang	<i>Nigna ungericulata</i>
Yard lang bean				
Swamp Cabbage	Kangkung	Kangkung	Kangkung	<i>Ipomea reptans</i>
Winged pea	Kecipir	Jaat	Cipir	<i>Psophocarpus tetragonolobus</i>

Source: Afriastini, LL 1985. *DyJtar Nnma Tanaman* (Crops name table). Jakarta: Penebar Swadaya. Iwasx, Shunkichi. 1980. *Nnuai no Yasni* (Vegetables in Tropics). TARC: Tsukuba. Japan.

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Appendix C

**C-1 Baseline Survey Form**

Respondent No. \_\_\_\_\_

Interviewed: \_\_\_\_\_

Date: / / '89

Name of family head: \_\_\_\_\_ By: \_\_\_\_\_

Address: RT \_\_\_\_\_ /RW \_\_\_\_\_ Hamlet \_\_\_\_\_ Village \_\_\_\_\_

**I. Occupation of family head**

\_\_\_\_\_ Farmer ( \_\_\_\_\_ full time, \_\_\_\_\_ part time, if part time, other job: \_\_\_\_\_ )

\_\_\_\_\_ Non-farm jobs: \_\_\_\_\_

Are you a native of this village? \_\_\_\_\_ Yes; Year of independence: \_\_\_\_\_

\_\_\_\_\_ No.; When did you come to this village?: \_\_\_\_\_

From where?: \_\_\_\_\_ Former occupation: \_\_\_\_\_

**II. Household members (including the family head)'**

Name	Sex	Age	Marital <sup>2</sup> status	Educa- tion <sup>3</sup>	Occu- pation	Full/ Part time	If p.time other job	Stay <sup>4</sup>
Family head								
1. _____	(m/f)	_____				F/P		_____
2. _____	(m/f)	_____				F/P		_____
3. _____	(m/f)	_____				F/P		_____
4. _____	(m/f)	_____				F/P		_____
5. _____	(m/f)	_____				F/P		_____
6. _____	(m/f)	_____				F/P		_____
7. _____	(m/f)	_____				F/P		_____
8. _____	(m/f)	_____				F/P		_____

1/ Include non-family members who live in the same household.

Exclude the family members who have independent household with independent income.

2/ Married, Single, Widowed, Divorced, Separated.

3/ Final educational attainment or current school enrollment.

4/ If dependent family members are living in other place, state the location.

III. Operational farmland (Land cultivated by family members.): answer by plot.

#.	Area	Land <sup>5</sup>	Land tenure <sup>6</sup>	Since	From whom <sup>7</sup>	Rent for past 1
	year					
	type	type	when (Name,Address,relationship)	(amount,	date of payment)	

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Output (During the past one year; crop(kg of output) per plot)

	1st season	2nd season	3rd season
_____	_____	_____	_____
	crop (output)	crop (output)	crop (output)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Rent-out farm land (if any)

#.	Area	Land <sup>5</sup>	Land tenure <sup>6</sup>	Since	From whom <sup>7</sup>	Rent for past 1
	year					
	type	type	when (Name,Address,relationship)	(amount,	date of payment)	

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

5/ IL: Irrigated lowland; RL: Rainfed lowland; UP: Upland; or specify others.

6/ Type: Owner, Share contract, Lease contract, Pawn, others.

7/ Family, relatives or neighbors. If not, specify landlord's occupation.

IV. Disposition of the output (During the past one year)

Crop <sup>B</sup>	Production (kg/season)			Sales (price)	Disposition (kg)			
	1st	2nd	3rd		Given in kind		Home Stock	
					rent	wage	use	(seed)
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____
_____	_____	_____	_____	_____ (_____)	_____	_____	_____	_____

8/ If the same crop is planted in different seasons, each production should be filled separately.

V. Assets (Check, if available. Specify the number in parentheses.)

Vehicles: \_\_\_\_\_ Mobile \_\_\_\_\_ Motor-cycle ( ) \_\_\_\_\_ Bicycle ( )  
 Animals: \_\_\_\_\_ Ox ( ) \_\_\_\_\_ Water buffalo ( ) \_\_\_\_\_ Goat ( )  
 Poultry: \_\_\_\_\_ Chicken ( ) \_\_\_\_\_ Duck ( ) \_\_\_\_\_ Goose ( )  
 Machinery: \_\_\_\_\_ Hand tractor \_\_\_\_\_ Sprayer ( ) \_\_\_\_\_ Other<sup>9</sup>: \_\_\_\_\_  
 Miscellaneous: \_\_\_\_\_ Radio \_\_\_\_\_ TV \_\_\_\_\_ Sewing machine  
 \_\_\_\_\_ Grocery \_\_\_\_\_ Other<sup>10</sup>: \_\_\_\_\_

9/ Specify other farm machinery which cost is more expensive than manual sprayer.

10/ Rice mill, Drying place, Warehouse, Other processing facilities, if any.

## C-2 FARMER SURVEY FORM

Date: \_\_\_\_\_ / \_\_\_\_ '90 Interviewed by: \_\_\_\_\_

Name: \_\_\_\_\_ Address: RT \_\_\_\_\_ Hamlet \_\_\_\_\_

### Sale of farm produce ( Ask for rice, soybean and vegetables)

Crop	Buyer	Quantity (kg)	Price (Rp/kg)	Frequency of trade'	Credit in kind		
	Name (Address)				Qntty	Cost	Period
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Note: 'Always, Sometimes ' If the farmer receive current input (fertilizer etc) from the middleman in advance, write input name, quantity, cost paid back (Value or price (Rp/kg)) and period of credit.

### Information

	Rice	Soybean	Vegetables
1. How many middlemen did you contact before deciding to sell? (No. of person)	_____	_____	_____
2. To how many middlemen, can farmers in this village sell the crop? (No. of person0)	_____	_____	_____
3. Is it easy to sell directly at the town market if the offers of middlemen are not satisfactory?	_____	_____	_____
4. How well do you know about prices prevailing in the market? (Very well, not very well, very little)	_____	_____	_____
5. How do you collect information on market prices? (Direct visit to market, cross check with many middlemen, hear from neighbours/friends, no information collection)	_____	_____	_____

**C-2 Farmer Survey Form (Complementary)**

Date: \_\_\_\_\_ #. \_\_\_\_\_ / \_\_\_\_\_ '90  
 Interviewed by: \_\_\_\_\_

Name: \_\_\_\_\_ (Baseline #. \_\_\_\_\_) RT \_\_\_\_\_ Hamlet \_\_\_\_\_

1. Credit

Did you receive in kind credit from a collector? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, for

\_\_\_\_\_ are of upland

Urea TSP ZA Azodrin ( ) ( )  
 kg. \_\_\_\_\_

2. Sales of vegetables for the last harvest season

a) How many percent of vegetable did you sell to

*Pasar* vendor: \_\_\_\_\_ % *Pasar*: \_\_\_\_\_ % Village collector: \_\_\_\_\_ %

b) Sales of vegetables

(1) Cucumber

Harvest period: \_\_\_\_\_ to \_\_\_\_\_ (Total: \_\_\_\_\_ days)

Harvest: \_\_\_\_\_ time/ \_\_\_\_\_ days. (Total: \_\_\_\_\_ times)

Harvested quantity (kg)	Sale to <i>Pasar</i> vendor		Sale to Village collector	
	Buyer's name	Quantity (kg)	Buyer's name	Quantity (kg)
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____

(2) String bean

Harvest period: \_\_\_\_\_ to \_\_\_\_\_ (Total: \_\_\_\_\_ days)

Harvest: \_\_\_\_\_ time/ \_\_\_\_\_ days. (Total: \_\_\_\_\_ times)

	Sale to <i>Pasar</i> vendor		Sale to Village collector	
	Harvested quantity (kg)	Buyer's name	Quantity (kg)	Buyer's name
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____

(3) Small chilli

Harvest period: \_\_\_\_\_ to \_\_\_\_\_ (Total: \_\_\_\_\_ days)

Harvest: \_\_\_\_\_ time/ \_\_\_\_\_ days. (Total: \_\_\_\_\_ times)

	Sale to <i>Pasar</i> vendor		Sale to Village collector	
	Harvested quantity (kg)	Buyer's name	Quantity (kg)	Buyer's name
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____

### C-3 Employment Structure Survey

Respondent No. \_\_\_\_\_ Interviewed:  
Date \_\_\_\_\_ j By:

Name of family head: \_\_\_\_\_  
Address: RT \_\_\_\_\_ Hamlet \_\_\_\_\_ Village \_\_\_\_\_

I. Cropping Patterns (Land cultivated by family members): answer by plot.

Plot	1988								1989				
	May	Jun.	Jul.	Aug.	Sep	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1( )													
2( )													
3( )													
4( )													

Notes ///, Land preparation: o----x, Planting to Harvesting: \_\_\_\_\_, Leave land fallow

Name of family head: \_\_\_\_\_ Resp. No. \_\_\_\_\_ ( Page \_\_\_\_\_ of \_\_\_\_\_ )

## II. Labor Input:

Crop: \_\_\_\_\_ Variety \_\_\_\_\_

Planted area \_\_\_\_\_ Output \_\_\_\_\_ kg

Operations (Current inputs)	Family		Exchange		Hired	
	Male	Female	Male	Female	Male	Female
	Seedling: ( _____ )					
Land Preparation:						
Planting or Transplanting:						
Fertilizing: ( _____ )						
Spraying: ( _____ )						
Weeding:						
Irrigation/ Drainage:						
Harvesting/ Threshing:						
Drying:						
Manure Making:						
Others (specify):						

Notes a Labour hours should be expressed as No. of persons x No. of days x No. of hours per day (example I man x 5 days x 8 hours/day = I x 5 x 8).

b (Trans) planting: month and day. Other operations: How many days before/after (trans) planting

III. Exchange Labor:

To whom did you ask the help for your farming in exchange basis?)

Crop/ Operation	Name Age	Sex (M/F)	Address <sup>a</sup>	Relation -ship <sup>b</sup>	Farm Size <sup>c</sup>	Frequency <sup>d</sup> Since When?	Cost of Meals if provided	Labor provided in exchange	
								crop/ operation	labor input <sup>e</sup>

Notes: <sup>a</sup> RT or name of village.

<sup>b</sup> Relatives (specify), neighbors, others (specify).

<sup>c</sup> Farm area owned and operated by the employee's household. (ex. 140BT; 70BT). ]

<sup>d</sup> How often do you ask their help? (always, sometimes).

<sup>e</sup> Answer by male and female. (example: 2 days by 2 men (8 hours per day) = 2m x 2 x 8. If female, 2f x 2 x 8)

IV. Hired Labor:  
(Who did you hire for your farming?)

Crop/ Operation	Name Age	Sex (M/T)	Address <sup>a</sup>	Relation -ship <sup>b</sup>	Farm size <sup>c</sup>	Since when?	Frequency Wage Payment	
							In cash <sup>d</sup>	In kind
1.								
2.								
3.								
4.								
5.								

Notes <sup>a</sup> RT or name of village.

<sup>b</sup> Relatives (specify), neighbors, others (specify).

<sup>c</sup> Farm area owned and operated by the employee's household. (ex. 140BT/70BT).

<sup>d</sup> Wage rate (Rp./day) x No.of days employed. (example: 1000 x 5).

V. Agricultural Labor (to be hired)

Name	Employer's	Address <sup>a</sup>	Relation	Farm	Since	Crop/ Operations	Wage received	
	Name		-ship <sup>b</sup>	size <sup>c</sup>	when?	Period <sup>d</sup>	In cash <sup>e</sup>	In kind
2.								
3.								
4.								

Notes: <sup>a</sup> RT or name of village

<sup>b</sup> Relatives (specify), neighbors, others (specify).

<sup>c</sup> Farm area owned and operated by the employee's household.

<sup>d</sup> Crop: R: Rice, S: Soybean, O: Others Operations, LP: Land preparation,

T: (Trans) Planting, W: Weeding, H: Harvesting, 0: Others (ex. SiLP 3 days mid-Jan).

<sup>e</sup> Wage rate (Rp./day) x No. of days employed. (example: 1000 x 5). If share contract, state the amount of crop received and its value.

**C-4 Pasar Vendor Survey Form 1**

Date: \_\_\_\_\_ / \_\_\_\_\_ /'90 #. \_\_\_\_\_

Name: \_\_\_\_\_ Age: \_\_\_\_\_ Address: Hamlet \_\_\_\_\_ Village \_\_\_\_\_

Name of family head: \_\_\_\_\_ Job: \_\_\_\_\_

**A. Marital status**

1. \_\_\_\_\_ single \_\_\_\_\_ married ( year: \_\_\_\_\_ ) \_\_\_\_\_ divorced/widowed ( year: \_\_\_\_\_ )

2. Birth place: \_\_\_\_\_ Spouse's birth place: \_\_\_\_\_

3. Occupational career: Entering date: \_\_\_\_\_

**I Activity in general****B. Handling items and quantity (Kg./day)**


---



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**C. Working condition**

## 1. Working place and type of seller/buyer:

Buying at: \_\_\_\_\_ from: \_\_\_\_\_ Farmer \_\_\_\_\_ Middleman \_\_\_\_\_ Shop -

Other: ( )

Selling at: \_\_\_\_\_ to: \_\_\_\_\_ Middleman \_\_\_\_\_ Shop \_\_\_\_\_ Retailer

- Pedlar - Consumer - Other: ( )

2. Working hours: from \_\_\_\_\_ to \_\_\_\_\_ ( \_\_\_\_\_ times/week)  
(Working hours and activities)

---

**D. Cost/income (daily)**

## 1. Transportation cost: Total Rp \_\_\_\_\_ /day

From	To	Type	Fare (Rp)	Load (kg)
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

## 2. Other cost:

\_\_\_\_\_ (Rp \_\_\_\_\_ ) \_\_\_\_\_ (Rp \_\_\_\_\_ )

## 3. Profit for typical one day activity

Gross sales per day: Rp \_\_\_\_\_ Net profit per day: Rp \_\_\_\_\_

**II An example of the activity**

(Record a normal day activity. Date: \_\_\_\_\_ / \_\_\_\_\_ '90)

**E. Buying**

Item	Seller <sup>1</sup>	From whom/where	Price (Rp/kg)	Payment <sup>2</sup> condition	Quantity (kg)
	Type (No.)	Address (name)			
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____
7.	_____	_____	_____	_____	_____

**F. Selling**

Item	Buyer <sup>1</sup>	To whom/where	Price (Rp/kg)	Payment <sup>2</sup> condition	Quantity (kg)
	Type (No.)	Address (name)			
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____
7.	_____	_____	_____	_____	_____

Note: 1. F = Farmer, M = Middleman, T= Trader (shop), P = Processor, C = Consumer, etc.  
 2. A = Advance (period,amount), C= Cash. D = Deferred (period)

**G. Credit**

Did you receive credit from middleman, bank, PKK, arisan or others?

From whom	Type of lender	Received		Returned	
		When	Amount	When (period)	Amount
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

**C-5 Pasar Vendor Survey Form 2**

Date: \_\_\_\_\_ / '90

Interviewed by: \_\_\_\_\_

Name: \_\_\_\_\_ Ref # \_\_\_\_\_

Address: \_\_\_\_\_

**1. Charecteristics:**

a) Which vegetable is the most perishable? Put your order by number.

b) How many days can you store the vegetable?

	Cucumber	String bean	Eggplant	Small chilli	Big chilli
a) perishable (No.)					
b) storable (day)					

c) Which vegetable is the most difficult to sell? Reason: \_\_\_\_\_

d) Which vegetable is the most difficult to collect? Reason: \_\_\_\_\_

e) Which vegetable do you like to handle? Reason: \_\_\_\_\_

2. Risk:

a) Can you always sell all the vegetable? \_\_\_\_\_ yes \_\_\_\_\_ no

If no, how do you handle it? \_\_\_\_\_

b) How many percent of the vegetable is normally spoiled during the sale?

	Cucumber	String bean	Eggplant	Small chilli	Big chilli
b) spoiled ( % )					

c) If you find the vegetable has started to spoil, how do you handle it?

\_\_\_\_\_

d) Which vegetable price fluctuates the most?

Seasonally:

Daily:

e) If you ever had large loss, explain in detail.

When: \_\_\_\_\_ How much: \_\_\_\_\_

Why: \_\_\_\_\_

How often does it happen?

\_\_\_\_\_

**3. Marketing margins:**

a) How much the margin do you normally expect?

	Cucumber	String bean	Eggplant	Small chilli	Big chilli
a) margin ( Rp/kg )					

b) If the margin differ among the vegetables, ask the reason.

Why is the margin of \_\_\_\_\_ higher/lower than others?

**4. Other:**

a) What is the most difficult point to do your business?

b) Why did you start this job?

c) Compared to *ceblokan* job, which is more profitable?

d) How many days do you work as vendor?

Harvest season (from \_\_\_\_\_ to \_\_\_\_\_ ) \_\_\_\_\_ days/month

Off season (from \_\_\_\_\_ to \_\_\_\_\_ ) \_\_\_\_\_ days/month

e) How much can you earn as vendor per year? Net income Rp \_\_\_\_\_

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## Glossary

### Acronyms

BRI	Bank Rakyat Indonesia (Indonesian Peoples Bank)
BULOG	Badan Urusan Logistik (Food Logistic Board)
CGPRT	Coarse Grains, Pulses, Roots and Tuber Crops
ILO	International Labor Organization
KOPTI	Koperasi Produsen Tempe dan Tahu Indonesia (Co-operative of <i>tempe</i> and <i>tahu</i> producers in Indonesia)
KOSIPA	Koperasi Simpan Pinjam (Saving and loan association)
KPK	Kredit Pedagang Kecil (Credit for small business)
KUD	Koperasi Unit Desa (Village Unit Co-operatives)
PKK	Pendidikan Kesejahteraan Keluarga (Women's association)
TSP	Triple Superphosphate
USP	Usaha Simpan Pinjam (Saving and loan program)
ZA	Zwafellzure Ammonium (Ammonium Sulphate)

### Local words

Angkutan kota/desa	Minibus, major public transportation
Bata	Measure of land (1 bata = 0.0014 ha)
Becak	Pedicab
Departemen Koperasi	Department of Co-operatives
Desa	Village
Kabupaten	District
Kampung	Hamlet
Kelompok tani	Farmers' group
Kecamatan	Sub district
Kios	(Green) grocery with roofed stall
Leunca	Vegetable specific for Sundanese (See Appendix B)
Maro	Share contract where both output and cost for Fertilizers and Chemicals are shared equally between landlord and tenant.
Pasar market	Traditional marketplace in Indonesia Pasar induk Central
Pedagang kaki lima	Market vendor
Penampung (pengepak)	A middleman who usually lives in a village and collects farm produce in his village and surrounding for delivery to markets
Pengepit	Small village collector who bring a few bags of vegetables by bicycle or motorcycle

Rupiah (Rp)	Indonesian currency Rp 1,850 = US \$1 (at the time of survey, August 1990)
Tahu	Soybean curd
Tempe	Fermented soybean cake
Toko	Shop inside permanent building
Tukang tembak (centeng)	Market resellers
Warung	Small grocery store

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