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THE EMERGING MARKET AND ITS IMPACT ON TRADER TIES: A CASE STUDY OF MAIZE IN EAST JAVA

HITOSHI YONEKURA

I. INTRODUCTION

AGRICULTURAL development from the 1980s onward has brought many changes in rural Asia, which is characterized by diversification of agriculture. The research on Indonesia alone has intensively studied not only rice, but cassava, maize, soybeans, and vegetables as well (Pearson et al. [16], Falcon et al. [7], Timmer [18], Morooka and Mayrowani [15], Kawagoe et al. [14], Hayami et al. [12]). Maize in Indonesia has developed remarkably since the 1980s, due in large to the development of the feed industry serving a growing poultry farming industry. This development has brought about substantial changes in maize marketing. Timmer's study on maize [18] does not cover this recent dramatic change. This paper will investigate traders' activities and the financial aspects of the maize business centering around traders' accessibility to business funds. It goes without saying that the financial aspects have been critical in coping with such change.[1]

Traders will sometimes use institutional lenders and enjoy advantages over farmers in their accessibility to rural financial markets. Traders, therefore, can play a major role in introducing innovations in not only marketing but also farming itself. Only relatively large traders, however, have easy access to institutional lenders, who are mainly located in urban areas. Traders in producing areas, on the other hand, find it relatively difficult to find access to such institutional lenders. This

This paper was written based on a market survey that was one component of the fieldwork undertaken by the author in the two sub-districts of Pace and Wajak and the two cities of Kediri and Malang from February 1991 through July 1991. The work was part of a research project sponsored by the ESCAP Regional Co-ordination Centre for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (ESCAP CGPRT Centre) in Bogor in collaboration with Malang Research Institute for Food Crops (MARIF; presently Research Institute for Legume and Tuber Crops) in Malang. The author would like to express his sincere thanks to Dr. S. Shindo, former Director of CGPRT Center, and to Dr. Sumarno, former Director of MARIF for their cooperation.

[1] Farmers' accessibility to institutional lenders was also investigated, but only six cases were observed in the village under investigation. The author's village household study was conducted between July 1990 and August 1991 (see footnote 6). The six cases comprised four cases of credit borrowing, one open account, and one saving deposit. This leads on to believe that farmers rarely have access to institutional lenders. The term "institutional lenders" in this paper refers to formal financial institutions, such as banks under the control of the central bank and the government. Other lenders are called "noninstitutional lenders."

reflects an incompleteness of rural financial markets, which brings about the enhancement of cash or credit ties between local traders and large urban traders. This paper will investigate this relationship and its mechanism.

The market economy is playing a critical role in agriculture as market prices determine resource allocation. Hayami and Kikuchi [9] point out that the rural mechanism is the same as decision making done by urban business enterprises. However, they are forced to admit that little is known about how efficiently price incentives are transmitted to peasants through marketing systems comprised of numerous traders, processors, and transport agents (Hayami et al. [11]). Moreover, these systems are being rapidly changed and transformed by the growing economies of the developing countries. New use of harvested crops and input goods are being constantly introduced into the rural areas. How peasants, traders, and the marketing system can cope with such a dynamically changing environment is an important issue that needs to be addressed.

An ideal market basically satisfies the following three conditions. First, there must exist a competitive equilibrium price that ensures the efficient allocation of resources and makes the market work as a consistent incentive system. Secondly, transaction costs are negligible for each player in the market. Thirdly, complete information is being provided. It is assumed that there is no asymmetry of information and no adverse selection by the players.

The reality in developing countries does not necessarily satisfy these three essential conditions, and this is particularly true of the maize market, which is today undergoing rapid change. We should bear this in mind whenever investigating the trader's potential role and the problems they face, which are generated in the process of economic development. Some active players in the market who can keep up with changing business opportunities can gain greater benefits, and information must always be available to match the changing circumstances.

In this paper, Indonesia's maize market, which today exists under a drastically changing environment, is considered as a newly emerging maize market. The peculiar change taking place in this newly emerging maize market is the enhancement of credit ties among traders. This paper is an attempt to clarify the reasons for this change in terms of the market structure of maize trading and the incompleteness of rural financial markets. The incompleteness of rural financial markets will be examined from the three aspects: (1) traders' accessibility to institutional lend-

TABLE I

MARKET SURVEY AREA

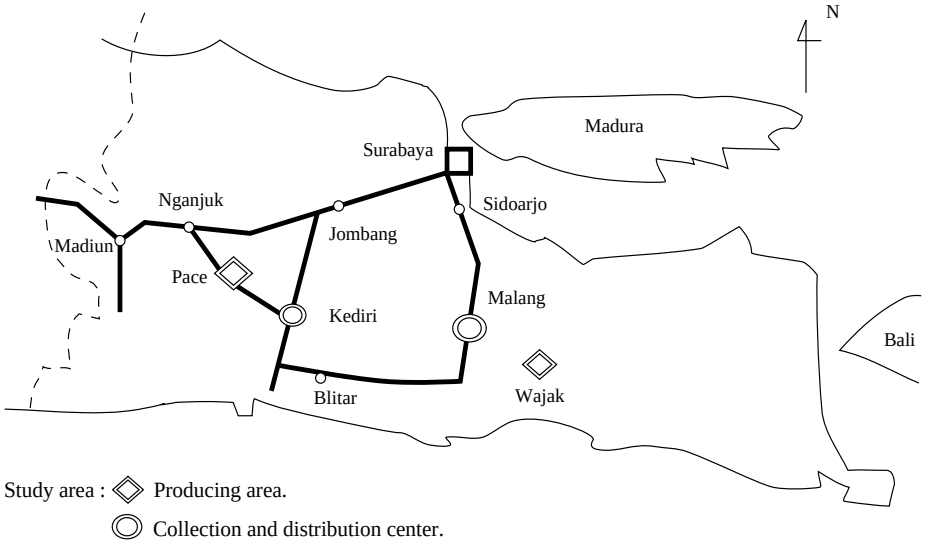
Location	Producing Area (Sub-district)	Collection & Distribution Center (Urban Area)
Nganjuk and Kediri	Pace (76)	Kediri City (11)[a]
Malang	Wajak (13)[b]	Malang City (2)

Note: Figures in parentheses show the number of interviewed traders.

[a] Includes one trader in Jombang.

[b] Includes one tapioca factory in Turen Sub-district.

Fig. 1. Map of the East Java under Investigation



ing; (2) traders' transaction costs in borrowing from lenders; and (3) the lack (or asymmetry) of information available to traders and institutional lenders.

For this study market surveys were undertaken in eighteen villages of the sub-district of Pace, six villages of Malang District, and the two cities of Kediri and Malang (referred to hereafter as 1991 market survey). Between three and five traders (including some in the processing industries of *tahu* [soybean protein curd], *tempe* [fermented soybean cake], and tapioca flour) were interviewed in each village. Seventy-six traders were interviewed in Pace and eleven in Kediri City. Another fifteen traders were interviewed in Wajak of Malang District (thirteen) and Malang City (two). The selection of traders to be interviewed was based on information gained from household surveys in Pace and Wajak. Traders who procured commodities from the survey sub-districts, particularly from the farmers in the village under study, were mainly selected (see Table I and Figure 1).

II. THE DEVELOPMENT OF THE MAIZE BUSINESS

A. *Diversification of Agriculture and Trading*

The increase in demand for poultry meat, resulting in a production increase of broilers and the growth of the feed industry, has had both a wide and deep impact on the existing market structure of CGPRT crops,[2] particularly maize. The production of maize has rapidly increased from approximately four million tons per year at the beginning of the 1980s to approximately eight million tons in the 1990s. The

[2] CGPRT stands for coarse grains, pulses, roots, and tubers. It is called *palawija* in Indonesia, but *palawija* could include some vegetables like chili.

increase in the maize supply has been absorbed by the processing sector, particularly by the feed industry. The maize economy in Indonesia has dynamically moved toward establishing a new market order to cope with the growing demand of the feed industry since the mid-1980s. The development of the maize market is one of the most interesting cases of the diversification of agriculture, and this paper will try to clarify the critical points of the maize market that will enable further support of transactions through the market and improve its efficiency.

Small farmers in rural areas cultivate food crops either for self-consumption or for sale to local processing industries producing *tempe, tahu, gaplek* (chopped and dried cassava), etc. In commercialized areas, where farmers mainly produce for sale, maize is sold out immediately after harvesting. The development of a large feed industry has absorbed the market surplus of maize in East Java. Provincial- and island-wide maize markets emerged and developed during the 1980s. Large urban traders and some large local brokers sometimes send the maize they have amassed directly to Surabaya and Jakarta. They procure maize not only from local farms, but also from other provinces, even in outer Java.

The development of the feed industry has induced the rise of groups of large local collectors/brokers and harvesting contractors (*penebas*es) in the maize-producing areas.[3] Their flourishing activity indicates the structural change that has occurred in the maize markets of producing areas. The role of large local collectors/brokers has become important as an inter-link between the local and urban market. Large local brokers, working as agents for large urban traders, procure maize and send it directly to feed companies. One of these traders can deal in maize, paddy (rough rice), and the other crops to the tune of more than 10,000 tons in total per year. The large urban traders have shifted their major task from collecting in local areas to providing to these large local collectors/brokers information, credit, transportation, and any other required services. The feed company deals with the large urban traders in order to avoid the cost of searching for and procuring maize.

In contrast, the traditional local maize market has been in relative declined. The local market mainly involves the activities of small traders, called *bakul*s and *pengumpul*s.[4] *Pengumpul*s have adapted quickly to the changing situation and

[3] A *penebas* is a harvesting contractor under the *tebasan* system. *Tebasan* is a harvesting practice in which standing crops, mainly paddy and maize, are sold on an area basis just before harvesting. The *penebas* himself organizes harvesting workers and travels from village to village to get contracts and carry them out during the harvesting season. His business territory covers several villages and can often span more than one sub-district. *Tebasan* is a representative institutional change in rural Java (Collier, Gunawan, and Soentro [4], Hayami and Kikuchi [9]), and its rise has drawn attention as an example of the transformation of rural society. Since the *ijon* institution was suppressed by the government (see Ace Partadirejo [1]), *tebasan*, which is similar to *ijon*, has flourished and replaced it. The duration between contracting and harvesting of *ijon* is several months, but that of *tebasan* is only a few weeks.

[4] A *bakul* is a small collector working mainly within his (or her) hamlet or village. He procures harvested crops from the villagers and sells them at a local market place nearby. He will also often arrange to process villagers' paddy at a mill for a fee.

A *pengumpul* is also a collector, but in this paper a village collector is called a *pengumpul* when his business covers several villages. Some large collectors can cover a whole sub-district (*kecamatan*) comprising fifteen or more villages. See Dewey [5].

work for the large local collectors/brokers.[5] *Bakul*s, however, have had their role decreased in accordance with the shrinking local market resulting from maize commercialization. Some *bakul*s, nevertheless, have expanded their businesses and became *pengumpul*s or *penebas*es, thus adapting to the changing market situation.

There were fifteen small traders including one *penebas* who traded harvested crops and other items (livestock, ice, firewood, scrap iron, etc.) in KA in Pace Subdistrict.[6] Most of them were originally landless villagers, but now they, as traders, have assumed a positive role in the village economy.[7]

B. *Scale of Working Capital and Mode of Transaction*

The scale of working capital strongly correlates with a trader's business scale. Almost all *bakul*s (1BB in Table II) possess working capital less than one million rupiah. Small collectors with groceries (1BB+PC, not in Table II) had *warung*s (small shops or roadside stands: they are usually a part of resident house or under canopy) within a village or at market places. Not a small percentage of *penebas*es (2T) possessed working capital of less than one million rupiah; but some of them, who could have been *pengumpul*s (3PG) rather than *penebas*es, possessed more than ten million rupiah. Rice millers in the producing area (4HL, not in Table II) had, unexpectedly, only a small amount of working capital. Since their main business is rice milling, their trading scale is not very large. More than half of the large local collectors (4PG+HL), on the other hand, required working capital of more than ten million rupiah.

Large urban traders in Kediri and Malang (6PB+HL, 7PB+TK, 8PB+EX) possessed far larger amounts of working capital than collectors in the producing areas of Nganjuk or Wajak. The amounts ranged from ten million to more than one billion rupiah. Some of the largest traders in Kediri boasted a grain storage capacity of more than 10,000 tons. One of them leased his warehouses to the Food Logistics Agency (Badan Urusan Logistik, BULOG) when the agency faced a storage capacity shortage in the late 1970s and early 1980s.

The development of commercialization has affected the mode of transactions among traders and farmers. The extent of commercialization can be shown by looking at the means and time of payment.

Table III shows the usual means of payment practiced among traders. Each figure in the table shows the number of traders' representative transactions regarding various kind of crops. Some traders indicated using two or more representative

[5] The large local collector is also the rice miller. He may serve several villages or a whole subdistrict. In some cases the large local broker specializes in collecting food crops without offering rice milling services. See the notes of Table II.

[6] The village KA (anonym) in question is administratively classified not as a village (*desa*) but as a hamlet (*dusun*). It comprises eighty-one households, all of which were surveyed in the author's field work. The study was conducted between July 1990 and August 1991.

[7] Careful attention should be given to the socioeconomic context of rural areas where many landless laborers are involved in the trading sector for paddy and CGPRT crops. The alleviation of rural poverty cannot be achieved without mobilizing *bakul*s or the landless within the village economy.

TABLE II

WORKING CAPITAL PER TRADER IN EAST JAVA

(No. of traders)

	Million Rp.							Total	Average Dealing Volume	
	0< <1	1≤ <5	5≤ <10	10≤ <50	50≤<100	100≤ <1,000	1,000≤		Ton/Year	Sample No.
Producing area:										
1BB	16	1						17	11.3	(17)
2T	17	16	2	1				36	50.9	(36)
3PG	1	4	3	3				11	259.4	(11)
4PG+HL	1	2		3	1			7	143.5	(5)
5PB				1				1	3,000	(1)
5PB+HL				1	1			2	1,700	(3)
Collection and distribution center:										
6PB+HL				0	0	9	1	10	2,219	(8)
7PB+TK							1	1	20,000	(1)
8PB+EX						1		1	n.a.	n.a.
Total	35	23	5	9	2	10	2	86		

Source: 1991 market survey.

Notes: 1. Trader's code (same code will be applied in the following tables):

(1) Producing area

1BB = *bakul*s (small collectors).
2T = *penebas*es (harvesting contractors).
3PG = *pengumpul*s ([inter] village collectors).
4HL = rice millers whose collection is a minor part of business (HL = rice millers).
4PG+HL = large local collectors.
5PB = large local brokers or wholesalers in producing area (PB = wholesalers).
5PB+HL = large local brokers who have rice mill.

(2) Large urban traders in collection and distribution center

6PB+HL = wholesalers and rice millers.
7PB+TK = wholesalers and retailers (TK = retail shop owners).
8PB+EX = wholesalers and international traders (EX = exporters/importers).

2. n.a. = no data available (applied in the following tables).

TABLE III

PAYMENT IN SALES TRANSACTIONS: ALL CROPS

(No. of transaction)

	B	B(Chq)	B(Chq)+CC	B+CC	CC	Total
Producing area:						
1BB	0	0	0	0	46	46
1BB+PC	0	0	0	0	8	8
1PP	0	0	0	0	1	1
2T	0	0	0	0	94	94
3PG	0	0	0	0	29	29
4HL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4PG+HL	0	0	2	0	10	12
5PB	0	0	0	0	3	3
5PB+HL	0	0	0	0	10	10
Collection and distribution center:						
6PB+HL	11	3	3	0	15	32
7PB+TH	1	0	0	1	3	5
7PB+TK	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8PB+EX	5	0	0	1	0	6
Processing (*tahu* and tapioka):						
91PBR+TH	0	0	0	0	6	6
92PBR+TP	0	0	0	0	1	1
Total	17	3	5	2	226	253

Source: 1991 market survey.

Notes: 1. B = remittance to bank account, B(Chq) = check, and CC = cash.

2. Trader's code (same code will be applied in the following tables):

(1) Producing area

1BB+PC = small collectors with groceries.

1PP = market traders in local market.

(2) Collection and distribution center

7PB+TH = wholesalers and *tahu* or *tempe* factories (TH = *tahu* or *tempe*).

(3) Processing

91PBR+TH = *tahu* or *tempe* factories.

92PBR+TP = cassava (TP = tapioca) processing factories.

transactions. Crops comprise maize, paddy, hulled rice, and soybeans among others. If a trader usually uses two types of payment, for example, cash and bank remittance, this is counted as a mixed type (B+CC) in the table. For sales, 226 out of 253 transactions were conducted in cash. Payment via the banking system, including cheque payment, B(Chq), was employed more in selling than in buying. This is mainly because the large urban traders sell their crops to agribusinesses such as feed companies. For procurement, on the other hand, payment in cash (CC) comprised 232 cases, payment by bank remittance (B) only 2 cases, and payment in kind 1 case.

In the case of maize, only cash is used in procuring crops from farmers and traders (seventy-nine transactions in total). On the other hand, there were nine

TABLE IV

TIME OF RECEIVING PAYMENT: MAIZE SELLING

(No. of transaction)

	aa	az	c	c+a	c+aa	c+az	c+d	d	n.a.	Total
Producing area:										
1BB	0	2	12	2	0	1	0	0	0	17
1BB+PC	0	0	3	0	0	0	0	0	0	3
2T	4	10	17	3	1	1	0	0	0	36
3PG	3	1	5	0	0	2	0	0	0	11
4PG+HL	1	0	2	0	0	0	1	1	0	5
5PB	0	0	0	0	0	1	0	0	0	1
5PB+HL	0	0	2	0	0	0	0	1	0	3
Collection and distribution center:										
6PB+HL	0	0	2	0	0	0	0	7	2	11
7PB+TH	0	0	0	0	0	0	0	1	0	1
7PB+TK	0	0	0	0	0	0	0	1	0	1
8PB+EX	0	0	0	0	0	0	0	3	0	3
Total	8	13	43	5	1	5	1	14	2	92

Source: 1991 market survey.
Note: a = prepayment (a small sum of money), aa = prepayment (a certain sum of money), az = entire prepayment, c = direct payment in cash, and d = totally deferred payment.

cases of cheque or bank remittance account when the collected crops were sold. Those using banks were large local collectors (4PB+HL, one case) and large urban traders (6PB+HL, four; 7PB+TK, one; 8PB+EX, three) who dealt with feed companies or traders in distant places. In the case of soybeans, paddy, and rice, the banking system was rarely used, except in trading with the local offices of the BULOG (Depot Logistik, DOLOG).

Table IV shows the timing of payment for sales. Each number in the table indicates the trader's representative practices with his regular customers regarding the time of payment. If a trader uses two or more times, his payment is classified as a+az+d etc. In the case of collected maize sales, forty-three out of ninety transactions (the data for two cases out of ninety-two were not available) involved direct payment. Prepayments (aa, az) accounted for twenty-one transactions, and those accepting either direct payment or prepayment (c+a, c+aa, c+az) numbered eleven. Direct or deferred payment (c+d, d) was accepted in fifteen cases. Cases of deferred payment were greater in selling than in buying. This was also the case in rice selling, since large urban traders and large local collectors/brokers sell rice to DOLOG. In the case of soybeans and paddy, this characteristic was not observed. With regard to buying maize, data for eighty-six transactions is available. Direct payment in cash (c) was the most popular method, occupying about 40 per cent (thirty-three) of the cases. There were thirty-nine cases in which the pattern comprised mainly prepayment without direct payment (a, a+az, a+az+d, aa, az; deferred payment, d, was partly included). Deferred payment was rarely used in maize buying.

*Penebas*es (2T) often use prepayment (a, aa, or az) both in buying (twenty-nine out of thirty-six cases) and in selling (i.e., receiving payment in advance). Paddy dealing by *penebas*es shows the same pattern. On the other hand, *pengumpul*s (3PG) tend to pay directly in cash, but when they sell the crops, they have usually received money in advance from large local collectors/brokers. The large local collectors/brokers provide money in advance to *penebas*es or *pengumpul*s in order to ensure the procurement of harvested crops. The large local collectors/brokers are usually asked by large urban traders to procure crops and receive money in advance. This mode of payment has increased the demand for capital financing.

III. CREDIT TIES AMONG TRADERS AND SOURCES OF CAPITAL

A. *Credit Ties*

According to Dewey's study in Modjokuto of East Java in the early 1950s, Chinese warehouse would buy a large portion of the crop, and thus became the ultimate source of capital; but they seldom financed production expenses or the early stages of marketing through advance payments, because there were periods just after the War of Independence when the Chinese did not have enough capital even to support their own wholesaling operations (Dewey [5, p.108]). There is a tradition of credit provision among traders in Java, but this tradition has been affected by economic and political changes over time. Dewey also reported that *bakul*s generally financed their own trade activities in those days and when they lacked capital, they would seek credit not from those to whom they planned to sell, but from farmers. This is opposite to the case of the *bakul*s the author observed under the recent development of the maize market.

In the author's market survey, ten large urban traders in Kediri, who were mainly Chinese warehouse owners were intensively interviewed. Many of them did business in collaboration with the collectors in Pace. They provided procurement funds to large local collectors/brokers. When the large urban traders receive orders from large feed companies, they provide money borrowed from banks to the large local collectors/brokers in maize production areas.

After receiving the money, the large local collectors/brokers procure the required quantity of maize within several days. One of the large local brokers in Pace gathered crops from approximately twenty *pengumpul*s. Five of them continuously traded with the large broker. He lent money to *pengumpul*s or *penebas*es for several days without interest or collateral, but the borrowers were obligated to deliver the materials to the large broker. The large local collectors who own rice mills also follow the same lending practice. The large urban traders send tandem-trailer trucks (*gandengan*: loading capacity eighteen tons per truck) to the large local collectors/brokers and sometimes directly deliver the maize to the feed companies in Sidoarjo or in Jakarta and its surrounding areas.

Ties between the large local collectors/brokers (4PG+HL, 5PB, 5PB+HL) and small traders (*bakul*s, 1BB; *penebas*es, 2T; *pengumpul*s, 3PG) are similar to the ties between large urban traders and large local collectors/brokers; but the amount of the loan per trader is approximately ten times or more in the latter case. Cash

TABLE V

CREDIT TIES AMONG TRADERS

(No. of traders)

	Source of Credit		
	Other Traders	KUD	Total
1BB	5	0	5
2T	10	1	11
3PG	4	1	5
Total	19	2	21

Source: 1991 market survey.

amounts ranging from several million to ten million rupiah was provided to large local collectors/brokers by the large urban traders.

Regarding the conditions for borrowing money, twenty-one traders in the producing areas replied that they were required to sell their crops to their lenders (Table V). All of them were small traders. The lenders were traders and Village Unit Cooperative (Koperasi Unit Desa, KUD). KUD provided loans to the collectors in the producing areas to ensure rice for the BULOG (or its local office DOLOG).

Borrowing from traders was mostly without explicit rates of interest as reported by Hayami and Kawagoe [8]. Many borrowers answered that they were not required to pay interest. Thirty-six traders out of sixty-eight answered that they did not pay interest for the borrowing of working capital (see Table XI on p. 432). This, however, does not necessary mean that they really did not incur any costs. Most of them were obligated to collect crops and sell to the lenders as indicated in Table V.

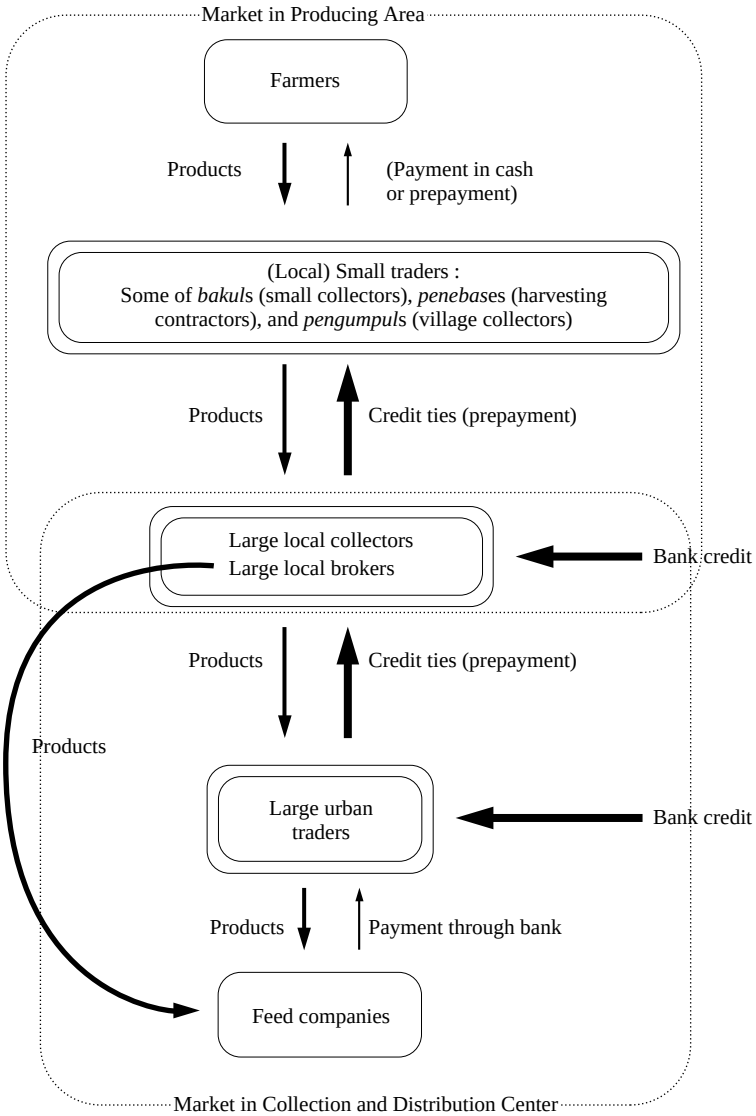
Such ties created a norm of sorts to maintain transactions among *pengumpul*s or *penebas*es and large local collectors/brokers in the producing areas. This manner was also the case among large local collectors/brokers and large urban traders. The large local collectors/brokers in the producing areas who trade with large urban traders and receive prepayment are obligated to supply collected crops and tied to maintain their business relations. These ties are not necessarily based on any explicit contractual form, rather the enforcement of procurement and payment is based on the loyalty of the traders. This is what we mean by the "credit tie" institution among traders.[8]

[8] Traditional or autonomously formed rural institutions have deserved the attention of development economics (Bardhan [3], Hoff et al. [13], Hayami and Otska [10]). Institutions (or forms of organization or contract) share important roles in the allocation of resources and distribution of income. Parameters or rules defined by institutions substitute (or complement) the economic parameters: i.e., prices, interest rates, land rents, and wage rates. Proper utilization, arrangement, or reform of such institutions is critical in the development of traditional rural economies.

B. *The Function of Credit Ties*

The newly emerging maize market in East Java is divided into two areas: collection and distribution centers (urban areas) and producing areas. According to credit ties, at least two stratified principal agent relations among traders have been formed (see Figure 2). The first principal agent relation interlinks between large

Fig. 2. Credit Ties in a Vertically Stratified Market



urban traders and large local collectors/brokers. The other is the relationship formed between the large local collectors/brokers and small traders (*bakul*s, *penebas*es, and *pengumpul*s) within the producing areas. The large local collectors/brokers thereby work as an important channel between large urban traders and small traders in the producing areas. The large urban traders sell the collected crops to feed companies or to traders in consumption areas like Surabaya and Jakarta.

The large urban traders can obtain credit for business funds from governmental or private banks such as Indonesian Peoples Bank (*Bank Rakyat Indonesia*, BRI) (see Table IX on p. 429). Their assets, mostly land and warehouses, are the collateral for obtaining credit from banks. They borrow money for both working capital and fixed capital. During the harvesting seasons of maize and paddy, they increase their borrowing from the banks.

The large local collectors/brokers also have access to bank loans, but the amounts are not enough for procuring commodities. Whenever they need money, they receive credit (or prepayments) from the large urban traders without interest or any high transaction costs. Hence, it is the large local collectors/brokers that provide the cash to the small traders for procuring crops.

The function of the "credit ties" among traders in this vertically stratified market is essential from at least following three standpoints: (1) feed companies and large urban traders are ensured the procurement of qualified harvested crops; (2) large local collectors/brokers can obtain working capital to procure the crops from small traders in producing areas; and (3) buyers can get sellers' information on controlling quality and stock at each level of the stratified market.

An important issue for the large urban traders is quick withdrawal of capital, since they usually use high interest rate bank loans of 2 per cent or more per month (see Table XI on p. 432), as working capital. They hope to act without delay in collecting bills. They also need to turn over the capital as many times as possible in order to cover the financial costs. Almost all of the large urban traders in Kediri deliver maize directly or through sole agents to such agribusinesses as Charoen Pokphand and Japfa Comfeed in Sidoarjo and Cipendawa in Jakarta, the largest feed companies and poultry farmers in Indonesia. Generally speaking, the companies promptly pay after receiving the goods, in order to ensure future orders. Some large urban traders, however, are dissatisfied with the payment schedule, since it takes more than several days.

The procurement of qualified material is a critical issue for feed companies and poultry farmers. The large urban traders' cooperation is, therefore, essential for these companies. The large urban traders meet the conditions in the standard tables prepared by the companies as to the buying price according to moisture content rating and the presence of other impurities. It is very helpful for the companies that the large urban traders can prepare working capital by themselves from banks. It is also advantageous for the feed companies that the large urban traders can participate in credit ties with large local collectors/brokers to ensure the procurement requirements and quality standards.

The principal agent relations sustained by credit ties have been autonomously formed and enhanced by the traders involved. The development of agribusiness

and the increase in demand for maize have enhanced credit ties among traders and the *tebasan* system, particularly in the producing areas. These relationships have contributed to the agricultural development of contemporary Indonesia, which is characterized by industrial linkage promoted by agro-industry and agribusiness.

Large urban traders who work as agents for feed companies seem to have become substantially competitive in procuring qualified maize. The development of the feed industry and other agribusiness in Indonesia has affected the competitive structure of the maize market. Financial position seems to be essential to gaining a certain share of this market. The development of credit ties is a sort of institutional arrangement both to cope with and support such market growth. It is hypothesized that these ties are enhanced by the two elements: (1) the competitive structure of the product market and (2) the incompleteness of rural financial markets, particularly the limited accessibility of local business people to institutional lenders and the asymmetry of information. Before examining the incompleteness of rural financial markets, it is necessary to clarify the competitive structure of the maize market in the areas under study.

IV. TRADER'S INCOME AND MARKET STRUCTURE

Credit ties are substantially connected with the competitive structure of the market. Price and profit of marketed products show the competitiveness and efficiency of any market.[9] If the market is competitive, there could be a low degree of monopoly and free entry and free exit conditions. First, let us look at estimated trader's income by group, then turn to their financial status before examining the competitive structure of the market.

A. *Trader's Income and Factor Costs*

Trader activities comprise mainly four crops in the area under study: maize, paddy (or rice), soybeans, and cassava. Income from dealing these four commodities is estimated for six groups of traders. Income (profit) Y is gross revenue (gross margin) pQ minus variable cost c_vQ and fixed cost C_f.[10]

$$Y = pQ - c_vQ - C_f,$$
$$p = p_s - p_b,$$
$$c_v = as + d,$$

where Y = income, Q = dealing volume, c_v = variable cost per unit weight, C_f = fixed cost, p_s = selling price, p_b = buying price, a = unit cost of transport, s = distance of transport, and d = cost of drying and minor operations (milling etc. excluded).

[9] However, there are large variations in prices over time and space, even within a single village as pointed out by Hayami et al. [11, p. 37].

[10] The fixed cost is assumed to be equivalent to 20 per cent of the value of fixed capital excluding land.

TABLE VI

VARIABLE COST OF MARKETING FOR MAIZE, PADDY, RICE, SOYBEANS, AND CASSAVA

	Point of[a]		Average Distance[b] (Km)	Transportation Cost[c] (Rp./Kg)	Loading/ Unloading Cost[d] (Rp./Kg)	Drying and Other Cost[d, e] (Rp./Kg)	Variable Cost c_v[f] (Rp./Kg)
	Buying	Selling					
Producing area:							
1BB	0PT	3PG, 4PG+HL, market	10	8.33	(1.75)	(1)	8.33
2T	0PT	4PG+HL, 5PB(+HL)	24	9.07	1.55	1	11.6
3PG	0PT, 1BB, 2T	4PG+HL, 5PB(+HL), market	33	3.96	1.55	1	6.51
4PG+HL	2T, 3PG, gate	Gate	7	2.59	1.50	1	5.09
(Rice)	Gate	1BB, 6PB+HL, KUD (DOLOG)	30	3.89	1.50	0	5.39
5PB+HL	Gate	6PB+HL, Surabaya	150	7.50	2.00	1	10.5
(Paddy, rice)	Gate	DOLOG (Kediri/Loceret)	30	3.27	2.00	0	5.27
Collection and distribution center:							
6PB+HL	4PG(5PB)+HL	Surabaya	170	5.95	1.04	1	7.99
(Paddy)	4PG+HL	Kediri	30	1.89	1.04	1	3.92
(Rice)	3PG, 4PG+HL	DOLOG (Kediri/Loceret)	50	2.45	1.04	0	3.49

Source: 1991 market survey.

[a] 0PT means farm gate. The points of buying and selling are mainly based on the case of Pace and Kediri. Major feed companies accurately locate at Sidoarjo (see the map of Figure 1).

[b] Average distance for 1BB, 2T, and 3PG is the sum of the distance to seller and to buyer. 4PG+HL is the distance from 2T. 5PB+HL is the distance to Surabaya (except for paddy and rice). 6PB+HL is the distance from local trader to Surabaya (except for paddy and rice).

[c] Transportation cost = a (unit cost per km) × s (average distance: note b in this table).

[d] It is assumed that each trader bears the cost of loading and unloading except for 1BB. 1BB generally does not use employed workers for loading, unloading, and drying.

[e] Manual workers' piece rate for drying each quintal is assumed to be equivalent to the twice the cost of conveyance of maize between the warehouse and drying yard. The rate is Rp.35 per quintal for conveying once. Including other costs, we assume that each trader bears the cost of Rp.1 per kg (Rp.100 per quintal) for the drying and other costs.

[f] Variable cost = $as + b$ (drying and other cost).

TABLE VII

TRADER'S ANNUAL INCOME FROM MAJOR CROPS (MAIZE, PADDY, RICE, SOYBEANS, AND CASSAVA)

(Rp.1000/year)

	Gross Revenue pQ[a]	Variable Cost c_vQ	Fixed Cost C_f	Trader's Income		Reference Wage w*[d] (Rp./Hour)	Capital		Sample No. of Fixed K_{pa}	Return to Capital[f] (%/Year)	Return to Labor (Rp./Hour)	
				Y[b]	Y/L[c] (Rp./ Hour)		Working K_w	Fixed K_{pa}[e]			Market Interest Rate[g]	Subsidized Rate[h]
Producing area:												
1BB	1,000	241	13	746	622	700	170	370	(17)	–17.33	505	568
2T	4,744	1,289	144	3,311	1,314	1,400	2,198	3,310	(35)	–3.93	737	1,052
3PG	9,402	3,424	1,185	4,794	1,737	1,400	5,843	10,999	(11)	5.52	139	1,005
4PG+HL	15,017	2,903	2,702	9,412	5,229	5,000	23,400	30,517	(7)	0.76	–2,720	1,634
5PB+HL	196,703	47,855	49,400	99,448	16,438	10,000	42,500	289,000	(2)	11.75	2,568	9,862
Collection and distribution center:												
6PB+HL	141,080	45,531	34,836	69,819	16,275	10,000	396,500	462,178	(10)	3.13	–37,061	–7,744

Source: 1991 market survey.

[a] The prices among traders depend on the form of maize which basically comprises three types, i.e., unshelled maize (*glondong*), shelled maize (*ose*), and milled maize (*beras jagung* or simply *beras*). A trader deals in two or three forms of maize. Maize data on p is in the form of *ose*. A *bakul* (1BB) buys maize in the shelled form, but a *penebas* usually procures maize on farm from farmers just before harvesting. *Glondong* is the typical form traded within villages (the price was approximately Rp.120 per kg in Pace).

In contrast, paddy is milled at rice millers in the producing areas or in the urban areas. It is rather unusual for a trader to deal in both paddy and rice except for large urban traders. A *bakul* also deals both paddy and rice. A large urban trader procures paddy from the producing areas and he usually processes it into rice and then sell, there being no selling in paddy form in the urban areas. He, however, procures rice from large local collectors and KUD to deliver to DOLOG (or BULOG). Soybeans are handled similarly in the form of dried beans among traders until being sold to *tahu* or *tempe* factories. Cassava price is based on dried root.

[b] Traders' income comprise of marketing activity only and does not include the revenue from processing activity such as rice milling.

[c] It is assumed that family workers are mainly in charge of trading activity and other workers are in charge of manual work of transporting and processing. Operation period of a small trader in the producing areas is approximately 150 days per year and that of a large local collector/ broker and an large urban trader is approximately 275 days per year respectively. As the latter traders cover wider area of Java or even outer Java, they can operate their business almost all a year round. Working hour per day is assumed to be eight hours for all groups of traders.

TABLE VII (Continued)

[d] Reference wage (or salary) is approximately as follows: carpenter for 1BB, government official such as school teacher for 2T and 3PG, middle-class private company staff for 4PG+HL (Rp.1 million per month), and executive director of private company for 5PB+HL and 6PB+HL (Rp. 2 million per month).

[e] Asset value of machine or equipment for processing is not subtracked from the fixed capital for trading K_{pa} as it shares a very small part, 8 per cent at maximum, of the total book value of the fixed capital. The asset of transportation of 6PB+HL is considers as transportation business separated from marketing of crops. Then, its value was reduced from his total capital value.

[f] Return to capital is $(Y - w^*L)/(K_w + K_{pa})$. w^* is the same as note d in this table.

[g] Return to labor (per hour) is $(Y - iK_w - jK_{pa})/L$; $i = 28.8$ per cent per year, $j = 24.8$ per cent per year (rates of private banks in Kediri).

[h] $i = j = 12$ per cent per year (subsidized rates of state-owned banks' credit).

A *bakul* had just bought some maize within his village (or hamlet) and sells it in local market, to *pengumpul*s, or to large local collectors. Since a *penebas* undertakes several kinds of activity (harvesting, drying, and transporting), the *penebas*'s gross margin is the largest among the groups of local traders. According to the author's survey, his gross margin in the form of shelled maize (*ose*) comes to 26 rupiah per kg. The margin of the *pengumpul*s and large local collectors (4PG+HL) are much smaller, 10 and 14 rupiah per kg respectively. Large urban traders buy the shelled maize at 230 rupiah per kg from large local collectors or large local brokers (5PB, 5PB+HL). The large urban traders sell the maize mainly to feed companies at a price between 240 and 250 rupiah. Large local brokers get the largest margin (35 rupiah). They usually own trucks and can transport collected crops and sell them in urban areas. Their gross margin could be an overestimate, because the sample number of 5PB+HL is small and price data is not necessarily reliable.[11] The data on variable costs is shown in Table VI.

Functionally, trader's income comprises a return to capital and a trader's surplus. Working capital is mainly a fund for procuring crops. Fixed capital comprises warehouses, equipment, drying yards, vehicles, etc. Traders, in particular small traders like *bakul*s, *penebas*es, and *pengumpul*s, can be considered as wageworkers to some extent. In this case a trader's surplus may be supposed to be a wage. In the following analysis, trade profit is assumed to be zero, and trader's income is therefore a mixed income comprised of returns to labor and capital. Trader's income is functionally broken down as:

$$Y = iK_w + jK_{pa} + R,$$

where K_w = working capital, K_{pa} = fixed capital including land,[12] i = interest rate on working capital, j = interest rate on permanent capital, and R = trader's surplus ($R = wL$; w = wage rate, L = labor input). L is the work hours of traders, including family member and other permanent staff in charge of trading. The operation period of a trader in the study areas is explained in note c to Table VII. Average income per hour (Y/L) is estimated in Table VII. The rate of return to working and fixed capital assumed to be zero.[13] This Y/L can be thought of as an opportunity cost of doing business per hour. It is difficult to get data on trader's wages and interest rates i and j. Interest rates are generally implicit among traders in the producing areas and available credit varies from group to group, because accessibility

[11] The difference between the buying price for a large local broker in Pace (5PB, not in Table VI) and the price at the Surabaya market ranges between approximately twenty and thirty rupiah (Yonekura [19, p. 64]). However, the difference fluctuated and was higher before the harvesting of dry season crop, reaching about forty rupiah.

[12] Fixed capital usually does not include land, but K_{pa} does include land. Land is valued by its current price at the time of the survey. Other assets are valued by their acquisition cost and depreciation. Scrap value is 10 per cent of the acquisition cost. Depreciation periods are forty-five years for a warehouse, office, factory, or other building; ten years for a truck or other vehicle; and five years for a motorcycle, bicycle, equipment, or machinery.

[13] The author's samples on prices, margins, and traders' assets are not necessarily sufficient to estimate price relations precisely. Yet, the data still illustrates traders' income and characteristics of the market in a rough manner.

to credit varies. Average bank loan rates are employed in Table VII (see notes g and h).

The rate of return to capital is also shown in the table, traders' wages assumed to be reference wage *w** (see note d in Table VII). *Bakul*s and *penebas*es show negative returns to capital. The other traders' rates are positive, particularly the large local brokers (5PB+HL). Trading is not lucrative for the large local collectors (4PG+HL) and the large urban traders (6PB+HL). They, however, have other lucrative activities, such as rice milling, other processing, and the transportation business.

All rates of return to capital calculated in Table VII are smaller than the market rate. This result could be partly caused by an overestimate of the reference wage. Representative market rates, namely, annual interest rates of credit offered by banks in urban areas like Kediri and Malang, were approximately 29 per cent for working capital and 25 per cent for investment. Assuming interest rates as the market rate or subsidized rate, we can make a simulation to get the returns to labor per hour. *Pengumpul*s, large local collectors, and large urban traders find it particularly difficult to cover labor cost. If subsidized credit is available, however, the situation is improved to some extent. If traders, including *penebas*es, can obtain interest-free capital, the return to labor (or trader's surplus) is substantially improved as shown by *Y*/*L* in the table. This is the necessary condition under which credit ties have been enhanced among traders in the producing areas. Moreover, since the large urban traders' major asset is the land they own, their financial status is sufficient to obtain credit from banks.

B. *Market Structure*

The degree of monopoly is indicated by Lerner's formula $(p - c_v)/p$. After simplifying the index, we come up with p/c_v in Table VIII. Since marginal cost (c_v) is equal to price, if the market is perfectly competitive, then a larger value of p/c_v would imply a larger degree of monopoly or inefficiency. The degree of monopoly substantially depends on the gross margin and the distance between buying point and selling point.

TABLE VIII

DEGREES OF MONOPOLY AMONG GROUPS OF TRADERS

	Maize	Paddy	Rice	Soybeans	Cassava
Producing area:					
1BB	2.40	4.68	2.38	11.40	
2T	2.24	4.04		12.82	1.72
3PG	1.54	3.23		11.21	
4PB+HL	2.75	5.50	7.99	19.65	
5PB+HL	3.33	5.90	5.69	9.05	1.90
Collection and distribution center:					
6PB+HL	1.50	5.60	3.44	13.77	3.00

Source: 1991 market survey.

There are at least three groups of traders in the market: (1) small traders comprising *bakul*s, *penebas*es, and *pengumpul*s, (2) large local collectors/brokers, and (3) large urban traders in the collection and distribution centers. Group (1) in the producing areas shows a relatively lower degree of monopoly in general. Larger traders like groups (2) and (3) show higher degrees. The latter two groups are able to cover wider territory and obtain higher gross margins.

The degree of monopoly according to commodity reflects the market structure of each commodity. Markets for maize and cassava show relatively lower degrees of monopoly. These two commodities are competitive in the world market. On the other hand, soybeans are less competitive.

Since large local collectors/brokers play the role of outlets from the producing areas, they enjoy higher margins and higher degrees of monopoly in each crop market, except cassava. They link small traders with large urban traders. Large local brokers, in particular, are able to transact directly with agribusiness in industrial zones like Surabaya. They transport collected and processed crops directly to the industrial zone. Large urban traders show the higher degrees of monopoly, except in the maize and rice markets. Since rice is controlled by the government, they trade rice as an agent of KUD. They make their profits mainly through processing paddy to rice.

Maize trading by the large urban traders is the most competitive and efficient. Moreover, as mentioned above, some rising large local brokers skipped the large urban trader intermediates and established close relations with agro-industry, such as feed companies or their sole agents. This made the competition more sever. The high degree of competition among the large urban traders has been an essential incentive for them to enhance credit ties and thus ensure their maize procurement. In contrast, the second group of traders shows a higher degree of monopoly, since they are tied to the third group of traders by credit, as they in turn tie the first group of traders to themselves.

V. ACCESSIBILITY TO CREDIT

In this section and next one, credit tie practices will be elucidated from the standpoint of rural financial markets.

Traders and farmers in the producing areas need to cope with developments in the downstream of the maize economy. By the development of new uses, particularly industrial-use for crops, they are required to upgrade the quality of marketed crops, while increasing production. They need drying facility and warehouse construction, moisture testing, and trucks and other transportation means. Access to credit for such investment is therefore an essential condition for the continuation of trade activity, since no one yet has enough personal funds to finance such investments.

The autonomous formation and enhancement of credit ties reflects the incompleteness of rural financial markets, particularly less accessibility of local traders to financial institutions. In order to examine this problem, it is necessary to investigate to which financial institutions and to what sort of credit traders have access.

A. *Sources of Capital*

Sources of working capital and investment capital are listed in Table IX. The table shows that *bakul*s (1BB) found it difficult to get credit from institutional lenders like banks. *Penebas*es (2T) depended mainly for borrowed funds on their intimate traders. *Pengumpul*s (3PG) depended mainly on their personal funds or loans from other intimate traders.

Bank Rakyat Indonesia (BRI) has sub-district offices, *unit desa*s (village units),

TABLE IX

SOURCES OF CREDIT FOR TRADERS

(No. of traders)

	Personal Funds	Other Traders	KUD	BRI Village Unit	State-Owned Bank[a]	BPD/ BUKOP-IN[b]	Priv. Com. Bank[b]	n.a.	Total
A. Working Capital									
Producing area:									
1BB	11	3		3					17
2T	11	20	2	3					36
3PG	4	3		3	1				11
4PG+HL	4	1			1	1			7
5PB							1		1
5PB+HL	1					1		1	3
Collection and distribution center:									
6PB+HL	0				4	0	6		10
7PB+TK							1		1
8PB+EX	1								1
Total	32	27	2	9	6	2	8	1	87
B. Fixed Capital									
Producing area:									
1BB	17								17
2T	32	1						3	36
3PG	8	2			1				11
4PG+HL	5			1				1	7
5PB	1								1
5PB+HL	2					1			3
Collection and distribution center:									
6PB+HL	2				1	0	7		10
7PB+TK	1								1
8PB+EX								1	1
Total	68	3	0	1	2	1	7	5	87

Source: 1991 market survey.

Note: Each fund source can include its left-side sources. KUD, for example, include money of self-funds and borrowing from other traders.

[a] Branches of BRI and of other state-owned banks in district capitals or urban cities.

[b] BPD (Provincial Development Bank) / BUKOPIN (Indonesia Cooperative Bank) and private commercial bank also means its branches located in district capitals or urban cities.

which provide loans to villagers. The BRI village unit, KUD, and credit cooperatives were the only institutional lenders accessible for local traders in a producing area like Pace. The size of loans available to villagers were small, generally less than three million rupiah.

Traders in the producing areas who were given access to institutional lenders like banks in urban centers like Kediri City and Malang City were large local collectors/brokers (4PG+HL, 5PB, 5PB+HL) whose trading scale was substantially large for the producing areas. They were able to borrow more than ten million rupiah. There were no *bakul*s, *penebas*es, or *pengumpul*s (except for one case) who could obtain bank loans. *Penebas*es often got their working capital for crop procurement from large local collectors/brokers. The money was used to get harvesting contracts with paddy and maize farmers.

Investment for fixed capital, such as machinery, means of transportation, and warehouses, is essential to deal with the increases of industrial-use crops and the diversification of agriculture in the producing area.[14]

Table IX shows that personal funds occupy the major source of fixed capital. Sixty-eight out of eighty-seven traders depend on their own money for capital funds. In contrast to working capital, funds for fixed capital were rarely provided by traders. This implies that credit ties do not work well for investment activities.

B. *Loan Duration and Interest Rates*

What sort of credit do traders have access to? These essential characteristics of credit in terms of its duration and cost will be clarified.

Borrowing for working capital was short term (Table X); in most cases less than four months. Durations of less than half a month accounted for about 30 per cent. There were, however, loans lasting for more than one year. Some of these might be the rollover of short-term loans from banks. Many traders borrowed money for buying crops. In other words, short-term loans for buying were relatively easy for traders to obtain.

On the other hand, only fourteen traders used borrowed money for investment purposes. Investment loans were longer in term, mainly from one to four years. It was difficult for the traders in the producing areas to obtain such investment credit.

Interest rates for borrowed working capital ranged somewhere between 2 and 3 per cent (Table XI). On the other hand, interest rates on investment loans, between 1 and 2 per cent, were utilized not by local traders but by larger urban traders. Low interest loans for investment were mainly supplied by state-owned banks in cities or district capitals, whose customers were large urban traders, some large local collectors/brokers, and rice millers in the producing areas. Small traders in the producing areas had difficulty in obtaining such low interest loans for investment.

More than half of the money loaned for working capital was interest-free and of terms less than four months. *Penebas*es used this type of loan extensively. Here are credit ties that exist between large local collectors/brokers and *penebas*es who

[14] However, it is necessary to keep in mind that traders' borrowing is often fungible; that is, it is difficult to distinguish between borrowing for fixed capital and borrowing for working capital.

TABLE X

DURATION OF CREDIT

(No. of traders)

	1BB	1BB +PC	1PP	2T	3PG	4HL	4PG +HL	5PB	5PB +HL	6PB +HL	7PB +TH	7PB +TK	8PB +EX	91PBR +TH	92PBR +TP	Total
A. Credit for Working Capital																
<15D	6	0	0	11	2	0	0	0	0	0	0	0	0	0	0	19
15D≤ <4M	0	0	0	12	3	0	1	1	0	0	0	0	0	0	0	17
4M≤ <12M	2	0	0	2	0	0	0	0	0	5	0	1	0	0	0	10
1Y≤ <3Y	1	0	0	3	1	0	1	0	0	4	1	0	0	3	0	14
3Y≤	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	3
n.a.	0	1	1	0	1	1	0	0	0	0	0	0	0	0	1	5
Total	9	1	1	28	9	1	3	1	0	9	1	1	0	3	1	68
B. Credit for Fixed Capital																
6M≤ <1Y	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
1Y≤ <2Y	0	0	0	0	1	1	1	0	0	0	0	0	0	2	0	5
2Y≤ <3Y	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
3Y≤ <4Y	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	3
4Y≤	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
n.a.	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	3
Total	0	0	0	0	2	2	2	0	0	5	0	0	1	2	0	14

Source: 1991 market survey.
Note: D = days, M = months, and Y = years.

need cash for prepayments in harvesting maize and paddy. In spite of the high interest rates for the other working capital loans, the total amount to be repaid is not large because of their short terms. Large urban traders effectively use these loans for working capital; that is, as funds for prepayment in procuring crops in the producing areas.

Comparing the sources of working capital and fixed capital, we find that the former is available for traders through the credit tie institution established autonomously among them and enhanced by the development of industrial-uses for maize. The latter is not provided through credit ties nor by institutional lenders in general. Unless they save from their surpluses, traders, particularly in the producing areas, cannot find investment funds enabling them to further develop their businesses.

VI. FACTORS UNDERLYING IN INCOMPLETE RURAL FINANCIAL MARKETS

Traders, in general, enjoy easier access to institutional lenders (namely, banks) than farmers or landless agricultural workers. As already observed, however, institutional lenders are not very accessible, particularly for traders in the producing areas. This has caused the formation and enhancement of credit ties among traders.

TABLE XI

LOAN INTEREST RATES

(No. of traders)

Monthly (%)	1BB	1BB +PC	1PP	2T	3PG	4HL	4PG +HL	5PB	5PB +HL	6PB +HL	7PB +TH	7PB +TK	8PB +EX	91PBR +TH	92PBR +TP	Total
A. Working Capital																
0	6	0	1	25	4	0	0	0	0	0	0	0	0	0	0	36
0< <1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1≤ <2	1	0	0	0	2	0	1	0	0	2	0	0	0	0	0	6
2≤ <3	0	0	0	0	2	0	2	1	0	7	1	1	0	0	0	14
3≤ <4	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	3
4≤	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
n.a.	1	1	0	2	1	1	0	0	0	0	0	0	0	2	1	9
Total	9	1	1	28	9	1	3	1	0	9	1	1	0	3	1	68
B. Fixed Capital																
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0< <1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1≤ <2	0	0	0	0	0	1	2	0	0	1	0	0	0	2	0	6
2≤ <3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
3≤	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
n.a.	0	0	0	0	1	1	0	0	0	2	0	0	1	0	0	5
Total	0	0	0	0	2	2	2	0	0	5	0	0	1	2	0	14

Source: 1991 market survey.
Note: When a trader uses two or more credits, lower rate of interest is used.

Why are local traders not able to access institutional lenders? The reasons will be clarified from two points of view: the burden of various transaction costs and a lack of information concerning local traders and their business in the producing areas.

Traders need working capital for procuring crops, and the substantial part of such capital is borrowed. Yet, the transaction costs involved in borrowing from banks, particularly for traders in the producing areas, are not cheap. Because banks get very little sufficient information on borrowers, they tend to require very high valued collateral. This seems to be the cause of the difficulty in borrowing from institutional lenders. In this section, various transaction costs according to type of trader and lenders' policy regarding collateral will be clarified.

A. *Administrative Charges*

Administrative charges comprise such costs as of the form, stamp, and copy of the loan application. Banks require each loan applicant to submit a recommendation letter from his village head as a personal reference. He has to get the recommendation through his hamlet head. This preparation is the responsibility of the applicant and takes time.[15]

Borrowing from noninstitutional lenders, namely, other traders, requires administrative costs lower than institutional lenders. Borrowing from intimate traders

[15] This preparation cost is not included in the figures of Table XIII.

need no application forms or copies. Credit from KUD, considered here as an institutional lenders, involves relatively cheap administrative costs compared to other institutional lenders. Institutional lenders, such as the village units of BRI and commercial banks, require high administrative costs. As the administrative cost per unit amount of borrowing increases, a heavier burden is heaped upon smaller traders borrowing relatively small amounts of cash.

In addition to administrative cost, borrowers are often required, especially by banks, to keep a compensating account balance or derivative deposit. They are also sometimes conditioned to pay commission or what is called *provisi* (from the Dutch *provisie* meaning commission). *Provisi* is usually charged as a part of the administrative fees. *Provisi* seems to be a traditional practice of the banking system in Indonesia. Other traders, KUD, and credit cooperatives do not charge *provisi*.

Of the 108 cases of borrowing from institutional lenders, 36 paid *provisi* and 3 were required to make derivative deposits. Twenty-three cases out of 36 paid by percent term. This fee is often charged both at state-owned and private banks. It amounted to approximately 0.5 to 1 per cent of the total amount borrowed. In seven cases *provisi* was charged in cash term. Most traders considered *provisi* to be something like a donation administratively required by banks. *Provisi* also made it hard for traders to gain access to institutional lenders. Administrative costs, derivative deposits, and *provisi* are big burdens for small traders and present barriers to institutional lenders access.

B. *Other Transaction Costs*

In addition to administrative costs within the banking system, transportation costs and various procedures also pose barriers to obtaining credit. Transportation costs are relatively low for a borrower living in the same sub-district as the lender. The cost per transaction was in most cases less than 500 rupiah. Institutional lenders, except for BRI village units, KUD, and credit cooperatives, are located at district capitals. Borrowers must use motorized transportation (motorcycle, car, or bus) to visit them. Large urban traders in cities, on the other hand, tend to have bank accounts in their cities and sometimes in other cities where clients such as feed companies are located. They usually use their own cars to visit the bank branches. In this case transportation cost can exceed 20,000 rupiah.

It takes long time to complete loan procedures (Table XII). Opening accounts and borrowing money from institutional lenders took more than ten days. State-owned banks needed about one month to open new accounts. It usually took two weeks to get a loan from a bank. On the other hand, it took only one day to deposit money in a bank, if a trader had a savings account at the bank. This fact implies that banks can operate quickly, except when having to assess the credit worthiness of borrowers. If this assessment procedure were more efficiently implemented, borrowers could receive loans within a shorter period and efficiently satisfy their short-term money needs.

Furthermore, the length of the loan procedure also essentially constrain access to lenders. In contrast to one visit required to other traders or the credit cooperatives,

TABLE XII

TIME REQUIRED FROM CREDIT APPLICATION TO ACCEPTANCE

(Days)

	Trader	KUD	Credit Coop.	BRI Village Unit	BRI Branch	State-Owned Bank[a]	BPD/ BUKOPIN[a]	Priv. Com. Bank[a]	n.a.	Average
Borrowing credit	1.2	8.8	1.0	10.3	12.4	16.0	18.5	2.7	13.9	7.5
Open account				11.0		28.9	14.0	2.5	1.0	14.2
Saving				1.0	1.0	0.9		0.7	0.8	0.9
Average	1.2	8.8	1.0	6.7	9.0	15.4	17.0	2.4	7.8	7.0
					Number of Samples					
Borrowing credit	36	4	2	18	7	16	2	11	7	103
Open account	0	0	0	2	0	7	1	6	2	18
Saving	0	0	0	13	3	7	0	3	4	30
Total	36	4	2	33	10	30	3	20	13	151

Source: 1991 market survey.

[a] Branches in district capitals or urban cities.

in the case of borrowing from institutional lenders, such as KUD and banks, a borrower was required to visit the lender approximately twice. State-owned or provincial banks require three visits. It can be said, therefore, that government banks were less efficiently managed than private banks, at least in the areas under study.

C. *The Burden of Transaction Costs*

To compare the impact of various transaction costs on traders' accessibility to loans, traders' actual burden of interest is calculated in Table XIII. Interest rates on typical loans are estimated according to group of traders. Even though nominal total transaction costs in obtaining credits are higher for larger traders [see (8) in the table], this does not greatly affect the interest rates charged to the larger traders. Conversely, the burden on smaller traders is such that actual interest rates are higher, even though the nominal absolute value is small [see the difference between (11) and (12) in the table]. Economies of scale are at work in transaction costs. The transaction cost burden in borrowing has been one of the factors that have blocked smaller trader access to the institutional lenders.

In terms of the transaction costs involved in borrowing, noninstitutional lenders like other traders have the advantage. Noninstitutional lenders as patrons in credit ties (e.g., large local collectors/brokers) offer lower costs, simpler procedures, and more convenient procedures for their clients, even though the burden in terms of the actual interest rate increases. As will be discussed later, no required collateral is also beneficial for the small traders borrowing via credit ties. Institutional lenders still befit rich and large traders in urban areas. Village units of BRI and KUD provide formal credit to traders in the producing areas; but compared with large local collectors/brokers, smaller traders have less accessibility to such institutional lenders.

TABLE XIII

SUMMARY OF TRANSACTION COSTS FOR OBTAINING CREDIT FROM LENDERS

(Rp.)

	Source of Credit[a]						
	Trader	KUD	Credit Coop.	BRI Vil. Unit	BRI Branch	State-Owned Bank	Priv. Com. Bank
Borrower	*Penebas*es	*Penebas*es	*Bakul*s	*Pen-gumpul*s	Large local collectors	Large urban traders	Large urban traders
(1) Administration	27.8	250	2,500	2,929	4,720	2,633	4,688
(2) Commission	0	0	0	0	2,750	2,500	25,000
(3) Procedures (hours)	0.9	1.4	0.5	0.9	1.3	1.0	1.2
(4) Visits (frequency)	1.1	2.0	1.0	2.3	2.6	3.0	1.3
(5) Trader's wage (Rp./hour)	1,400	1,400	700	1,400	5,000	10,000	10,000
(6) Tran. cost / visit	0	0	0	0	750	750	750
(7) Total hours for tran.	1	2	1	2	3	3	1
(8) Transaction cost[b]	2,814	6,970	3,550	11,377	41,070	89,883	56,263
(9) Loan amount[c] (Rp. mill.)	0.5	3.0	0.5	3.0	30.0	550.0	550.0
(10) Duration (mo.)	2	3	4	2	12	12	12
(11) Interest rate (%/mo.)	0.000	1.000	5.000	1.500	1.500	2.000	2.000
(12) Actual interest rate[d] (%/mo.)	0.283	1.080	5.215	1.696	1.513	2.002	2.001

Source: 1991 market survey.

[a] Typical credit available for each trader is used for comparing actual burden of interest rate.

[b] $(8) = (1) + (2) + [(3) \times (4) + (7)] \times (5) + (4) \times (6)$.

[c] Values are the median of the most frequent working capital ranges approximated from Table II. All of working capital of each trader is supposed to be borrowed (traders' average amount of borrowing for working capital was approximately from 50 to 60 per cent of total working capital).

[d] $(12) = 100 \times (\{(9) \times [1 + (10) \times (11) / 100]\} / [(9) - (8)] - 1) / (10)$; The rate is estimated by the simple-interest method.

The development of the processing industry for maize and other CGPRT crops has induced such marketing changes as larger volumes per deal and strict quality standards and delivery schedules. The important question, therefore, is whether traders in rural areas innovate in response to these changes. Rural financial markets are important for increasing working capital to deal with larger volumes of crops and providing suitable investment funds for improving crop quality and transportation. Through such financial support, traders could adapt themselves to the changing business environment. However, the transaction costs involved, that increase the actual burden of interest, could decrease traders' willingness to use institutional lenders in the producing areas.

D. *Collateral and the Asymmetry of Information*

One major asset of local small traders (*bakul*s, *penebas*es, and *pengumpul*s) is the bicycle. Many small traders cannot yet afford motorcycles. Ownership of a minitruck or comparable cheap and appropriate transportation would substantially expand business territory and expand marketing in rural areas. By such an innovation in transportation, traders and farmers could easily bring their harvested crops to market places and collection and distribution centers. The prevention of the outbreak of aflatoxin, for example, is an urgent issue for the development of the maize industry in Indonesia. Traders' fixed capital has been mainly supplied by the personal savings, but these funds alone are insufficient if traders are to cope with the rapid changes now occurring in the rural economy. The small traders (as well as farmers) could solve these problems if they were financially supported in the proper manner.

TABLE XIV

REQUIRED COLLATERAL IN OBTAINING CREDIT

(No. of traders)

Collateral	1BB	1BB +PC	1PP	2T	3PG	4HL	4PG +HL	5PB	5PB +HL	6PB +HL	7PB +TH	7PB +TK	8PB +EX	91PBR +TH	92PBR +TP	Total
A. Working Capital																
Land	2	0	0	4	2	0	0	0	0	7	1	0	0	1	0	17
Land + machine/ car/business/ license[a]/house	1	0	0	0	2	0	2	1	0	2	0	1	0	0	0	9
Car/truck	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Petok D[b]	0	1	0	2	0	0	0	0	0	0	0	0	0	1	0	4
Mutual credib.	4	0	0	9	1	0	0	0	0	0	0	0	0	0	0	14
No collateral	2	0	0	13	3	0	1	0	0	0	0	0	0	1	0	20
n.a.	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	3
Total	9	1	1	28	9	1	3	1	0	9	1	1	0	3	1	68
B. Fixed Capital																
Land	0	0	0	0	0	1	1	0	0	1	0	0	0	1	0	4
Land + machine/ car/business license[a]/house	0	0	0	0	1	0	1	0	0	1	0	0	1	0	0	4
Car/truck	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
Petok D[b]	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
No collateral	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
n.a.	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	2	2	2	0	0	5	0	0	1	2	0	14

Source: 1991 market survey.

Note: "/" means or.

[a] Business license is, e.g., SIUP (*surat izin usaha perdagangan*, license for commerce).

[b] *Petok D* is a notice of asset tax payment that is regarded as the certificate of asset, mainly land ownership.

The improvement of access to institutional lenders in rural areas has been dealt with in development policy.[16] Loans provided by institutional lenders have become available within rural areas, but are still limited only to relatively large local traders and wealthy farmers. Furthermore, these loans are still limited to short-term working capital (see Tables IX, X, and XI). A major question is why such institutional lenders as banks have not provided sufficient capital for investment purposes. Important in this question is the matter of collateral required by the lenders.

Collateral is required by lenders in the cases of large long-term loans. Table XIV shows the collateral required to get such loans. Concerning loans for working capital, twenty out of sixty-eight respondents answered that no collateral was required, while fourteen answered that mutual credibility was required. Fifty per cent of loans borrowed for working capital did not require collateral. Credit for working capital usually does not need collateral, except in the case of institutional lenders. *Penebas*es are the most active users of credit ties. Their major credit source is intimate traders among large local collectors/brokers. Here, generally no collateral was required. The mutual credibility existing among them substituted for collateral. It is also hard for *bakul*s and *penebas*es in the producing areas to provide valuable collateral, thus limiting the sources of funds to their personal savings or borrowing from intimate traders.

Credit for investment involves longer-term, larger amounts of money, which require more valuable collateral in terms of land, machinery, houses, or vehicles. Ten out of fourteen cases were required to produce some fixed capital as collateral. A trader without sufficient collateral has no access to investment credit funds provided by institutional lenders, even if he has substantial entrepreneurial capability. As mentioned above, traders who borrowed working capital number sixty-eight, while the number of borrowers for investment came to only fourteen. Long-term investment credit is granted to a very limited number of business people.

There is a serious lack of information for assessing the credit worthiness of the traders in the producing areas. Banks tend to locate in the cities and rarely directly contact local traders to collect information on their businesses. Local traders also rarely visit bank branches, except for some large collectors/brokers.[17] Table XIV shows that banks tend to support financially better endowed large urban traders,

[16] This study was carried out in 1991. Recently, lending by institutional lenders such as KUPEDES (*Kredit Umum Pedesaan*) through BRI has substantially increased. Indonesia has accepted the rural financial market approach since the mid-1980s. This approach gives priority to the viability of the rural financial market (see Adams [2], Egaitsu [6]). Under this basic approach, Indonesia has improved accessibility to institutional lenders in rural areas and reduced subsidized credit programs.

[17] One large local broker in Pace, who previously had been only a rice miller, visited a state-owned bank branch office in Kediri almost every day for about one year in order to become well enough known to the bank clerks to establish credibility. After this one-year effort, he was able to obtain a loan to expand his business in the village. Only local traders who can project their enthusiasm and potential as traders can obtain loans from a bank. Local traders in the producing areas, with the exception of few large collectors/brokers cannot project such self-confidence and capability to established state-owned or private banks. Large local collectors/brokers, however, have sufficiently valuable assets such as land, rice mills, or trucks to get secured loans from banks.

particularly in providing long-term loans for fixed capital, thus corroborating Stiglitz and Weiss [17]. The large traders have lower ratios of total liabilities to net worth, and are thus less risky borrowers for the banks. On the other hand, local traders have low value business assets for collateral, as shown by the fixed capital figures in Table VII.

The lack of standardization of financial commodities is also a critical point. This makes comparing interest rates of financial commodities very difficult. The most popular form of credit in the areas of the author's study was the short-term loan provided by credit cooperatives: term, for maximum four month, monthly interest rate 5 per cent (see Table XIII). Also, various administrative costs were charged to borrowers. These costs themselves obscure the actual rate of interest, as mentioned earlier. Moreover, the form of repayment was equal installments with interest added. This makes it hard for local traders to calculate and compare the interest rate. The average amount of a loan outstanding during its term is approximately half of the amount of the principal, meaning that the actual interest rate could become twice that of the nominal interest rate. The interest rate of 5 per cent per month become 12.6 per cent per month at compound interest. Local traders usually do not compare interest rates demanded by institutional and noninstitutional lenders in the producing areas. They just count their capability of repayment. Their criterion in coming to a decision tends to what extent of their daily or weekly income can be allocated for repayment. The interest rate does not work well as a parameter for allocating their resources. The lack of standardization of financial commodities has caused an incompleteness in rural financial markets.

As clarified by return to capital figures in Table VII, borrowing by *bakul*s (1BB) and *penebas*es (2T) will not yield favorable returns. *Pengumpul*s (3PG) yield better returns. Credit or cash provided to small traders by large urban traders through large local collectors/brokers supplements the financial needs of local traders, particularly *penebas*es. The large urban traders are substantially competitive in maize dealing, as shown by Table VIII. They get short-term loans from banks and utilize them to ensure the procurement of maize (and paddy) in the producing areas. This system of credit ties has been brought about and enhanced by the development of the maize industry. Credit ties, however, cannot support further investment by local traders, since it is ultimately financed by short-term loans. Credibility and accessibility are the realms of large urban traders. It would be difficult to change the attitudes of local traders and mobilize them toward innovation in the rural economy without reducing credit rationing and improving accessibility to long-term investment funds.[18]

VII. CONCLUSION

The maize industry in East Java has drastically developed since the mid-1980s. In particular, demand for industrial-use feed has further developed and commercial-

[18] Large local traders' role in future may expand toward providing information on local traders to the banks, thus correcting the asymmetry of information that now exists regarding borrowers.

ized the maize market. It can be considered as a newly emerging market. The comparison of the degree of monopoly by trader group and by crop in this paper shows that maize marketing in East Java is relatively competitive. Vertically structured principal agent relations have been established among traders. The emergence and the role of credit ties among traders in this vertically stratified maize market is summarized as the following manner.

First, the development of industrial-use of maize (in the forms of feed etc.) drastically increased the demand volume and the grade of quality. To ensure factory efficiency and procurement of materials, feed companies have organized large urban traders to some extent for collecting information about production, stock, quality, local price, and trader royalties. The large urban traders have in turn created ties with large local collectors/brokers, in which they provide working capital to the local collectors/brokers. The large local collectors/brokers have created and enhanced similar ties with *penebas*es and *pengumpul*s in the producing areas by providing working capital obtained from the large urban traders. In response to the uncertainty regarding procurement and quality in the trading sector, tying traders has reduced such uncertainty by doing business regularly, becoming intimate, and increasing their reliability as business partners. Some of the large local brokers have developed to the extent of dealing directly with feed companies and banks, thus increasing the competitiveness of the maize market.

Secondly, sufficient working capital is not supplied by institutional lenders in the producing areas. Hence, small traders, particularly *penebas*es and *pengumpul*s, receive prepayments from large local collectors/brokers. The large local collectors/brokers receive these payments in advance from the large urban traders. In this way, the large local collectors/brokers intermediate between the producing areas and the collection and distribution centers. They intermediate not only in terms of commodities, but also in terms of capital for procuring crops. The short-term credit without interest provided through credit ties are beneficial for local traders and substantially improves their financial status. These credit ties have filled in the gaps existing in financial markets in the producing areas. The ties form the principal agent relation among traders. An important point, however, is that credit ties are ultimately financed by loans from institutional lenders.

Thirdly, banks in urban areas require higher valued collateral because of a lack of information on local traders in the producing areas. This has caused credit rationing by institutional lenders among local traders whose credibility is hard to assess. The banks cannot ascertain whether traders are thriving entrepreneurs having the ability to manage their businesses. Banks tend to lend more to traders who have sufficient business assets and thus less needs for borrowing money. This incompleteness in rural financial markets is substituted for or filled by credit ties among traders as a kind of institutional arrangement.

Finally, the incompleteness of rural financial markets may be summarized as follows. Transaction costs for obtaining loans from institutional lenders cause relatively higher burdens for smaller traders. Actual interest rates become higher and not negligible for smaller traders. This reduces their accessibility to institutional lenders. There are economies of scale in transactions cost for borrowing. Credit

ties among traders described above have been enhanced by the development of maize industry. Traders in the producing areas, however, cannot obtain sufficient funds to buy vehicles for transportation or build drying facilities that would enable them to respond with the further development of industrial-use crops. Since credit ties are ultimately financed by bank loans, it is hard to expect that credit ties can support such investment activities. Moreover, there is no institution which provides bankers sufficient information on traders in the producing areas. One of the reasons why rural people often use high interest rate credit supplied by local lenders is the lack of standardization that would enable comparison of interest rates among financial commodities. Low accessibility to banking system, no sufficient information for assessing the financial status of traders in the producing areas, and no standardization of financial commodities are the main factors in the incompleteness of financial markets in rural areas.

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