Interlocking Transactions: Do they restrain the emergence of rice producers' organizations in Cambodia?

Sylvaine Lemeilleur,

Jean-Marie Codron*,

M'hand Fares*

(*co-authors in alphabetical order)

MOÏ SA, 2, place Viala. 34 060 Montpellier Cedex 1. France.

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Abstract

Formal credit institutions in Cambodia have largely failed to provide access to farm credit to small and medium-scale paddy producers. The paper describes interlinked transactions between commercial rice millers and paddy producers in the paddy market that facilitate the provision of credit. Moreover, interlinked transactions are also used as an incentive device for producers who can only be imperfectly monitored. This kind of interlinked transaction, which tends to be dominant, may emerge as the best governance structure to minimize production and transaction costs.
However, we show that in the context of producers' vulnerability to weather damage to crops, perverse risks may also cause indebtedness among producers. Thus, interlocking transactions could lead to unequal relations of economic power, often at the cost of delaying agrarian growth. These dependency relationships may explain, in part, why development institutions fail to promote producers' organizations with rice marketing capabilities.

1. INTRODUCTION

In many developing countries where liberalization policies were required, the rural financial market failure remains one determining barrier for small-scale farm development. While these policies multiply the number of private actors in agricultural marketing sectors, it is not the same in the majority of the agricultural services sectors. Indeed, these liberal policies are seldom accompanied by private property legislation (quasi-absence of land titles) or by legal policies (legal system deficiency). These weaknesses induce an absence of credible incentive

and sanctioning mechanisms and therefore generate high transaction costs on many markets. This is particularly true for the rural credit market, which appears an expensive and risky sector for the trade banks [1].

In Cambodia, this situation generates significant imbalances on the rice market. Since the liberalization policies in 1991[2], an increase in the number of agricultural produce tradesmen and small agricultural processing industries such as rice mills has been observed (JICA, 2001). The development of rice millers reflects a paddy demand growth, incited by rising urbanization and export opportunities. While the paddy supply has also increased in recent years (especially because of a rise in the total surface cultivated), it however has difficulties adjusting to high demand. Indeed, the farms are generally intended for family subsistence. Operating surfaces remain small, yields are weak and the farms have little capital to intensify production. In addition, a lack of rural credit available from banking institutions precludes farm modernization. Only 15% of rural population have today access to formal credit (JICA, 2001). Thus, access to formal credit represents, here again, one of the greatest difficulties for rural development in Cambodia.

Having little means to counteract this market failure, the Cambodian government and in particular the agriculture ministry (MAFF), recommend better supply so as to strengthen the market and help producers to recover. One of the solutions proposed is to promote producer organizations (thereafter POs) [3].

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[1] The rural banks require significant funds at a given period (concentration of the demand in areas characterized by a dominant crop), rural saving is weak, and there is a large covariance of harvest risks (natural risks).

2 After three decades of political strife (civil war, large scale "experiment" of communist inspiration by the Khmer Rouges, Vietnamese occupation).

[3] The Agricultural Development Plan 1999-2010, as well as the Socio Economic Development Plan (SEDPII 2001-2006) and the National Poverty Reduction Strategy (NPRS 2003-2005) insist on the need for a support policy for professional agricultural organizations. Decree n° 17 of 7 April 2000 specifying a new MAFF organization indicates its very clear mission in favor of establishing professional peasant organizations. Finally, with FAO support, the MAFF created a legal framework of the agricultural cooperatives and their unions: the royal decree on the co-operatives, called "communities of agricultural development " was signed on 16 July 2001. (Merlet, 2004)

In Cambodia, this idea is not new. For almost 20 years, many nongovernmental organizations have run producer groups in this way. Some POs have, in particular, an economic orientation. This form of governance on the agricultural markets is justified by greater equity and thus effectiveness in the added value allocation thanks to the recovery of the producers' bargaining ability[4] (Staatz, 1987).

However, according to field studies, many POs have operational difficulties. Local initiatives of professional POs do not exist yet. Even if local actors show, *a priori*, an interest in projects introduced by nongovernmental organizations or public institutions, the actors do not appropriate the organizational tools that are proposed. In fact, these organizations still remain in an experimental state and are far from autonomous (Pasquier-Desvignes et al., 1995). The issue of collective action in rural organizations is nowadays at the heart of many studies on development institutions (SCAC, AFD, GRET[5]).

In Cambodian literature, barriers to the emergence of collective action often relate to socio-cultural factors. Indeed, socio-anthropologists underline the link between Cambodian individualism and Theravada Buddhism that emphasizes personal merits (Ponchaud, 1993). In addition, where collective life is concerned, traditional (and religious) ethics call for people not to seek to singularize themselves from others, apart from social hierarchy (Népote, 1992). This can result in difficulties dealing with collective problems and conflicts, out of a fear of upsetting social harmony (Pasquier-Desvignes et al;, 1995).

Socio-cultural factors are also considered as a barrier to organization dynamics in collective action theory (CIRAD, 1995). However, this theory insists on "learning" dynamic and human capital in order to sustain organization (Ostrom, 1992; Sabourin and Antona, 2003). There may have not been enough time yet for this to take place in Cambodia.

[4] Often judged to be weakened by informational asymmetry with tradesmen (JICA, 2001).
[5] SCAC: Service of Co-operation and Cultural Action of the French Ministry for Foreign Affairs.
AFD: French Development Aid
GRET: Group for technological research and exchanges

This paper is a contribution to understanding relations between economic actors in Cambodian society, the latter still being poorly identified in the literature. We more particularly endeavor to identify current trading conditions between paddy producers and rice millers (the main purchasers of paddy). Then we confront this analysis with the emerging prospects for collective action in paddy marketing.

This work is based on a case study[6] in the Battambang province, the largest rice production area of the country, containing 50% of the commercial rice-millers. It took place from May to July 2004 (off harvest season).

We surveyed 22 producers, 11 commercial rice-millers as well as many other actors who allowed us a better understanding of the strategic determinants in the rice-marketing process (input traders, paddy collectors, rice-mill service providers, rice wholesalers, moneylenders, POs, local authorities and development institutions).

We propose a qualitative approach to the collected field data. Indeed, the figures used in this article provide useful insights, but the small number of interviews prevents us from taking a quantitative approach to the problem.

The results of this empirical research show that the transactions between producers and tradesmen are generally carried out through interlinked transaction. In this kind of transaction, common in Asia[7], the agricultural produce tradesmen become preferential middlemen to access credit for small-scale farms, in counterpart of commitments to sell paddy at harvest time.

Thus, it seems that the interlinked transaction, in this particular area of Cambodia, is an effective form of governance in a constrained environment (failure of the rural credit market for farmers, supply uncertainties for rice-millers). While reducing the transaction costs related

[6] Within the framework of a program coordinated by the SCAC.

7 Bardhan, P. (1989). "A Note on Interlinked Rural Economic Arrangements." The Economic Theory of Agrarian Institutions.

to the rural credit supply, these contracts are used as an incentive mechanism to optimize the paddy production effort.

However, we also show that they could generate dependency situations in the case of debt accumulation by producers unable to refund a loan one year. We think that these debts could sometimes set in over a long period, leading to a debt trap and "forced commerce" (Bhaduri, 1986).

Taking into consideration this analysis, we then discuss the economic problem of dependency as a mechanism preventing collective action within paddy marketing POs. In the existing literature, the approach of interlinked transaction as opposed to collective action is only briefly mentioned in an article of Bardhan and Rudra (1981) based on a West-Bengal case study. This study showed that the interlinked transaction committed to by some agricultural workers in order to have access to credit, acted as a barrier to participating in local protest movements. Our paper contributes to the reflection on the opposition between these institutional arrangements in the case of Cambodia.

The purpose of our paper is not to withdraw from the various socio-cultural analyses and collective action determinants presented previously, but to highlight a preexistent governance system that may preclude collective organization thanks to a better understanding of the local economy and society.

The paper is organized as follows. The second part of our paper describes the region of the study and the actors implied in the interlinked transaction. The third and fourth parts respectively present how neo-institutional theory justifies the choice of interlinked transactions and describe their functioning. Part five discusses the stability and relative effectiveness of these contracts in a constraining environment, and part six looks at the

institutional change lock-in generated with respect to the collective action implemented by the development institutions. We present our conclusion in part seven.

2. *OVERVIEW OF PADDY PRODUCTION AND MARKETING IN THE BATTAMBANG REGION*

The Battambang province is located on the North-West of Cambodia on the border with Thailand. The two districts chosen for this study, Mong Russei and Tmor kol, are the most significant of the province in term of cultivated surface.

2.1. PADDY PRODUCTION

The constraining ecological context strongly conditions the use of land in this region. The climate is a tropical monsoon climate whose rainy season extends from June to November followed by a dry season from December to May. A badly drained plain increases risks of strong floods in the rainy season. Conversely, access to water is limited during the entire dry season, presenting significant risks of drought. The irrigation system existing in the area (generally dating from the "Khmer Rouge" period) is badly adapted to current agriculture and benefits few farmers today.

Rice is the most appropriate crop to this ecosystem and counts for more than 90% of farms. It is generally cultivated in an extensive system with one production cycle per year. Rice is sown in June-July and is harvested in November-January. The producers generally sow rustic varieties to limit the risks of losses.

The farmers commonly produce their seeds themselves, often leading to problems of seed quality (mixture of varieties, weed seeds...) which end up reducing the output yield and increasing weeding time. Yet, the producers are suspicious of buying seed because they do not know the seed production conditions. The seed contamination risk is observable only ex-post (after sowing) involving a significant risk of supplier opportunism concerning the quality of seeds.

The paddy yield is rather weak and varies according to production systems between 0.5 to 3 tons per hectare. The yield level is very dependent on fertilizers. Indeed, even while the land is relatively rich (in comparison with the country overall), the mono-cultivation of rice, added to the reduction of available land, tends to heavily impoverish the soil. In the last few years, almost all producers have started to use chemical fertilizers. According to our interviews, their use can triple the rice yield. However the producers cannot always use the sufficient quantities. Indeed the input purchase represents a financial advance for farmers; therefore most part of the farmers must take loans to pay for input expenses.

The rice producers are generally small-scale owners. Their land resources are not sufficient to obtain formal credit but they can engage informal credit.

After harvest and beating (consisting in separating the paddy grains from the straw), the farmers generally bring their rice to the rice mill. They may sometimes sell rice directly on the field to collectors.

According to JICA (2001), only 40% of Cambodian farmers market a share of their production and the average volumes sold are around 1.6 tons per year. The sold rice is used to refund debts accumulated during the cultivation time or to pay other current expenses. In fact, our study of the two districts shows that almost all the farmers are obliged to refund debts, and so releasing a production surplus. However, it is not rare for refunds to be made with paddy bags.

Progressively, the harvest surplus is used more and more to pay multiple debts at the end of harvest time. The rice is sold to the rice millers just after the harvest, when the price is lowest. Therefore farmers often have credit cycle problems with their creditors.

2.2. THE ROLE OF COMMERCIAL RICE MILLERS

The activity of commercial rice millers

Rice millers often are from the Chinese community. They are specialized in paddy purchase and processing and in the sale of rice. They own mills, as a result of their own investment.

Theses mills are almost always established on major roads (connecting Phnom Penh, the capital, to Thailand). This facilitates arrivals and the dispatching of large rice volumes.

Paddy is purchased from the farmers who bring their paddy production after harvest. The purchase of rice is made in cash.

The quantity of paddy bought in a season depends on the miller's financial and storage capacities. The aim is to make maximum purchases at that time when prices are lowest, and to maximize commercial margins later on. To do so, the rice millers often have storage overcapacity. But the rice bought at the beginning of year cannot be stored beyond September. Indeed, on the one hand storage involves losses, which can exceed 4% beyond four months of storage, and on the other hand the early rice collected in August and September (in modernized farms), comes to compete with stocks, in particular in terms of quality.

The rice millers' distribution area

In spite of some already recorded bankruptcies (in particular because of the capital mobilized between purchases and sales and of the non-refunding of some customers), the number of rice millers increases year by year.

According to the marketing study of JICA, the province is particularly characterized by its great number of commercial processing units. In 2000, practically 50% of rice millers of the country were gathered in the province (207 out of 518 rice millers according to the figures published by JICA, 2001).

According to figures for Mong Russei published by the Rural Development Department (2003) (the only district for which results had appeared at the time of the study), the various rice mill units are rather well distributed with, however, the more significant concentrations along the road. Tmok Kol seems to show the same configuration, if not even more significantly so. We can deduce that access to mills is not a limiting factor, for most producers.

Marketing channels

There are various marketing channels. The small commercial rice millers of Tmor kol supply the urban market of the province. The largest commercial rice millers of this district, as well as the Mong Russei commercial rice millers, supply the Phnom Penh market and export.

National demand is increasing much less than supply from the numerous rice-millers and the national outlets are now saturated. They are also competing with rice imports from neighboring countries (Thailand, Vietnam). Thus, the commercial stakes are, on the one hand, competitively priced imports outside of harvest time and, on the other hand, with the export market. However, international competition is difficult for Cambodia with its high production costs and its poor quality. In addition, to have access to exports, the rice-millers need to amass paddy in significant volumes.

The rice-millers then develop many services to establish farmers' loyalty but also to control the quality of production: low cost paddy storage, sale or exchange of pure seeds sometimes on credit, and/or monetary loans to pay for harvest labor.

3. CONTRACTUAL ARRANGEMENTS FOR PADDY MARKETING: THE CHOICE OF A HYBRID FORM

3.1. RISKS AND UNCERTAINTIES: THE NEO-INSTITUTIONNALIST APPROACH AS AN EXPLANATION FOR MARKET FAILURE.

Since the liberal policy was introduced into Cambodia at the beginning of the Nineties, rice-millers have multiplied in the area. However the market is not able to set between producers and rice millers. There are various reasons for this.

Paddy demand higher than paddy supply

It would seem that the paddy demand by the rice-millers is higher than supply in this area. It is unfortunately impossible for us to use the province's statistics to compare the total processing capacity level in each district studied with the paddy volume supply by producers. The data collected at the Department of planning, the Department of rural development and the Ministry of industry are not complete or do not coincide.

However, many professionals in the sector agree on the fact that the processing potential is not a limiting factor of the market. We can support this argument by qualitative data: the mills lack paddy at some periods of the year and are obliged to buy paddy in other provinces in spite of the transport costs. It should be noted also that the Vietnamese wholesalers who come to buy paddy, are partly responsible for this shortage. It is clear that demand is significant compared to the paddy supply.

In the situation of a perfect market, supply should be adjusted to demand. However, the adjustment of production in the agricultural sector is complex because of the seasonality of production and the incompressible duration of the production cycle. There is not instantaneous adjustment in agriculture.

Moreover, we saw that paddy producers present low yield. Indeed, they choose satisfaction strategies rather than optimization strategies. In the absence of an insurance market, the agro-ecological risks on production are high.

In addition, it is difficult to increase paddy yield without a facilitated credit access to invest in agricultural technology.

The rural credit market failure: a difficult and risky undertaking

Credit needs in rural areas are marked by a strong seasonality due to the synchronization of agricultural activities (here, 90% of the farms are specialized in paddy). It is difficult for the credit institutions to supply a high loan capital concentrated over a few months; all the more so as the mobilization of rural saving is veryweak.

The specialization of an agricultural area also induces a strong covariance risk among borrowers. A bad season affects all refunding at the same time.

Otherwise, for the producers who live only from subsistence farming in the period before harvest time, some credit contracts with refunding of interest each month are difficult. Thus the micro-credit organizations that are established in the region (supported financially by international organizations) try to allow producers delays with refunding of interest after harvest. However this kind of organization encounters serious recovery problems. They do not manage to select the borrowers or to create credible incentives for refunding.

In all the cases, risks and information problems represent a constraint for the development of a credit market. Indeed, the borrowers' moral risk problem is not easily observed because of the existence of natural risks at the same time. In addition, the traditional incentive mechanisms are difficult to implement because many farmers do not have enough collateral. In the study area, there is one private bank. However, it asks for significant levels of collateral (a land title for at least two hectares, a house, etc.), which will be seized in the event of non-repayment. By implementing credible incentive mechanisms, it excludes the majority of farmers. Often it lends to tradesmen.

Credit thus remains mainly informal. It is provided by rich neighbors, tradesmen, and often rice millers.

A uncertain environmental context

Beyond the difficulty in increasing supply, supply is also irregular. Natural risks show a great covariance between all the producers of a localized area (floods, drought). The supply irregularity is spatial, intra-annual and inter-annual (Table 1).

Year	Mong Russei		Tmor kol	
	Production (ton).	% of the province's production	Production (ton).	% of the province's production
1999/2000	61,417	20.5%	No data	-
2000/2001	122,491	44.5%	55,379	20 %
2001/2002 2002/2003	No data 59,350	- 18%	No data 94,800	- 29%

Table 1: Variation of paddy production between 1999/2000 and 2002/2003 according to two studied districts' (Based on incomplete information from the Battambang Department of the planning – statistics not carried out each year).

In addition, in a context where the producers initially aim to satisfy subsistence, only production surpluses supply the market. Contrary to a purely commercial crop, the rice supply is uncoupled from the demand. This results in great uncertainty for the rice-millers, whose capital investment in the mill, financing constraints (credit given to the producer, cash paddy purchase, deferred payments from wholesalers) represent significant investment risks .

The irregularity of rice supply is not specific to our study area. The market price is based on national production but also the production of the very influential neighboring countries (Vietnam and Thailand are placed among the world's top exporters). Therefore, the rice and paddy market does not depend on local production alone.

In addition, rice storage is only used to reduce the irregularity of supply caused by seasonality.

The actors of the rice chain perform in a very uncertain environment (Figure 1).

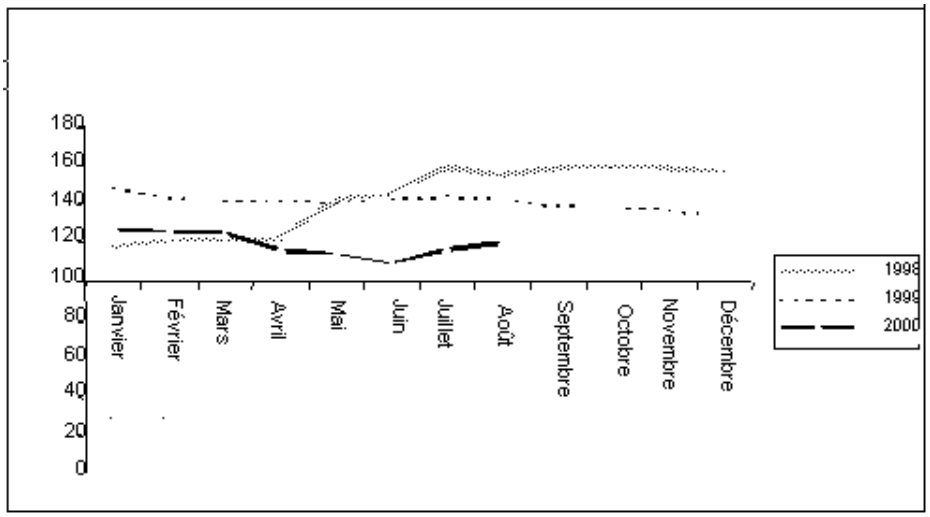

Figure 1: Price index of (medium quality) rice in Cambodia from 1998 to 2000. (ME, 1998, 1999, 2000).

Transaction costs and diversity of governance forms

Uncertainties and market failures generate transaction costs for the economic agents. To minimize these costs, which above a threshold could lead to a "non-transaction", the economic agents set up reciprocal long-term engagements. There is a multitude of institutional arrangements or degrees of governance, between the market and the absolute hierarchy (Williamson, 1985).

Since the market does not seem to work for paddy exchange in this case, and because the Cambodian legal institutions are often ineffective in arbitrating the exchanges, the economic actors tried to set up vertical integrated structures or bilateral long-term exchanges to reduce their transaction costs. We will examine these two approaches in terms of their effectiveness in the next sections.

3.2. RICE-MILLERS' FAILED ATTEMPT AT VERTICAL INTEGRATION

In the middle of the nineties, to reduce transaction costs, the rice-millers tried to integrate production by buying significant land surfaces (from 20 to 100 hectares). This vertical integration quickly turned out to be a failure (even if there are still some cases of this governance structure among big families of rice millers). Several reasons can justify

difficulties encountered by the rice-millers: i) Agriculture presents little economy of scale, all the more so when the plots are small and dispersed, as is frequent in Asia. ii) Costs related to the moral risk control of the workers are higher since the rice-millers are not specialized in rice production. Indeed, the rice-millers generally come from the Chinese community, which is above all a merchant community. In addition, they have neither time nor competence to monitor the level of optimal effort. The external workers are an imperfect substitute for family work (Eswaran and Kotwal, 1989) because rice-millers' productivity in terms of production supervision is lower than that of the head of a family farm. iii) Incentive mechanisms for the workers, such as wage differentials, are difficult to implement. iv) Family units that have a flexible working time and remuneration inside the household are much more qualified to manage production costs and risks.

Because of these internal organization costs in vertical integration, many rice-millers gave up this activity and let their land to sharecropping. They chose other governance forms.

The contractual arrangements chosen by the economic agents will correspond then to the best compromise between transaction costs generated by commercial coordination and the costs generated in the production system so that the sum is minimized. We will see that the agents choose hybrid contracts.

3.3. INTERLINKED TRANSACTIONS: A HYBRID FORM OF GOVERNANCE

Definition of interlinked transaction

In developing countries, the contractual phenomena incentives of "interlinked transactions" have been particularly noticed in economic agent exchanges. Bell and Srinivasan (1989) give a definition of this type of transaction as follows: "An interlinked transaction is one in which the two parties trade in at least two markets on the condition that the terms of all such trades are jointly determined". In the majority of interlinked transaction situations, the contracts are informal and oral (Smith et al, 1999).

Contact frequency, confidence and multilateral reputation are used as arbitration competencies.

Interlinked transactions between rice millers and producers

In the Battambang region, interlinked transactions between the rice-millers and paddy producers have become common since the economical system has changed and the number of rice mills has increased. Commercial rice-millers have tried to establish producers' loyalty by these incentive contracts.

These arrangements facilitate access to good seeds, credit, storage, and even husking for consumption by the producer's family, in return for exclusive sale of its production to the rice miller.

The terms of the contract are negotiated simultaneously, as we will detail in the following section.

Let us note that collectors (in more enclosed territories) or traditional moneylenders try to develop these same types of contracts but with much less success as we will see it in part V.

4. CONDITIONS AND MECHANISMS OF INTERLINKED TRANSACTION BETWEEN PRODUCERS AND RICE-MILLERS

4.1. THE FUNCTIONING OF INTERLINKED TRANSACTIONS

Rice-millers are the rural actors with the greatest ease mobilizing formal loan with banks because of their immobilized capital. They can be credit intermediaries between broad sources of financial capital and multiple small requests coming from producers (Smith et al, 1999).

Financial Credit

At the beginning of the crop cycle, the rice-miller supplies a loan to the producer for an input purchase. The amounts vary from 200,000 to 1,000,000 riels[8]. Contrary to other cases (Dorward et al, 1998; Smith et al., 1999), we observe that rice-millers do not integrate input trade activity. Indeed, this activity is often limited to a few months (from May to October).

[8] In 2003, 4000 riels are equivalent to around 1US $.

Yet, the input channel, which is little developed in Cambodia, requires having contact with Thaï or Phnom Penh wholesalers. This induces significant coordination costs. Most rice millers prefer to leave this activity to specialized tradesmen. However, by carrying out money loans, rice-millers take risks on sum allocation.

The rice-miller can also provide seeds on credit. There is a double interest for the rice-miller. Indeed, in this case, the loan of seeds does not represent an additional cost of coordination since the rice seeds belong to its specific sphere of activity. Moreover, it is partly ensured to improve the yield and the paddy quality that he will recover at harvest time[9].

From the producer's point of view, it avoids opportunism problems related to the information asymmetry on the seed quality to which he is constrained when he buys seed on the market. Indeed, in this case of interlinked transaction, the seeds are refunded after the harvest (thus the producer has time to check his product before repayment) and the producer knows the rice-miller interest and that he would not sanction himself by receiving bad quality rice in return.

Then, before harvest, the rice-miller can provide a second loan to pay the daily laborer for this last stage of farming work.

Rice-millers sometimes supply other services like paddy husking for family consumption; they are then remunerated through the by-products of husking (balls, brands, etc).

Rice millers can establish big producer loyalty by supplying storage services at cost price (equal to the cost losses of storage which is about 1% per month). In return, they have the exclusiveness of the output sales.

In some cases, the rice-miller can also provide money loan for urgent expenditure (hospital, funeral, etc) for some "supplier-customers ".

The terms of interlinked transaction are not homogeneous. They vary according to the producers and the rice-miller concerned (table 2).

[9] Nowadays, rice-millers still give producers little incentive to improve rice quality in terms of price whereas the price differentials among qualities on the urban markets are significant (JICA, 2001).

Services supplied in the interlinked transaction	Storage	Seeds	Credit (input)	Credit (laborer)	Others credit
Number of interviewed actors who engage interlinked transaction (18) including/understanding...	8	10	14	13	3

Table 2: services provided in the contracts according to the interviewed actors.

These various loans are then refunded after harvest time, in kind.

Modes of refunding

According to our study case, many rice millers stated that they provide low or even zero interest rate credit to producers. This is in fact not explicit but is indissociable from final commission. The final commission can vary according to paddy volumes supplied by the producer, the latter's ability to mobilize other credit sources (bargaining ability) and to the duration of relations with the rice-miller (confidence decreases risks of deviation). In addition, the commission can also vary according to the rice-miller's capital source. Indeed, the latter may have borrowed from a bank, and so, will pass on the interest rate that the bank applies to him.

Refunding takes place after the harvest, but it is the rice-miller who chooses the refunding day. He will require the paddy the day when the market prices are lowest [10] and can also benefit from the producer's lack of price information to set a price even lower than the market price (table 3). Then, he determines the paddy quantities that return to him to refund the credit allocated at the beginning of the year.

The fact that the price is not predetermined before harvest means that the producer carries the price fluctuation risk.

[10] Price information asymmetry is not such that the rice-miller can escape from market trends and fix his own price.

Table 3 presents the purchase prices at the market level and the various intermediaries that engage in interlinked transactions. Arrangements with the rice-miller are most frequent.

Paddy price (January 2004)	Market (outside of interlinked transactions)	Interlinked transaction		
Thousands of riels/T		Rice millers	Collectors	Moneylenders
Good quality varieties	550-600	500-550	400-550	500
Medium quality varieties	520	400-450	350-400	350-400
Low quality varieties	380-480	300-350	300-350	300-350

Table 3: paddy purchase price (in thousands of riels, January 2004) according to the existence of interlinked transactions or not and according to the type of purchaser.

Development of consumer loyalty

According to our investigations (among rice-millers and producers) the remainder of the production can be sold then to another rice miller (this part of output is not included in the contract terms)[11]. Generally, producers receive between 75 and 80% of the final added value of white rice, and can know the prices proposed by neighboring rice-millers to compare. The apparent transparency of the market is "very" localized, and remains relative because all the rice-millers propose almost the same prices inside of interlinked transactions. However, this price is different from the market prices received by the few big producers without contracts (tab.3).

The facts show that very few producers sell the remainder to another rice-miller (2% according to a rice-miller, none according to producers). So, even if the contract does not

[11] Smith et al. (1999) obtain the same answers from producers in Pakistan. The remainder of the production is clearly identified as not belonging to interlinked transactions and an offer considered to be inequitable could be refused. However, they show, in the same way, that the majority of the producers always sell their remainder, year after year, to the same trader.

relate to the remainder of the production, the producers, especially the smallest ones, are largely encouraged to sell it to the same rice miller, in particular not to lose access to potential future credit (obtained thanks to confidence).

It may be that the producers are also held to this sale by debts carried forward. Indeed, when there is a bad harvest, if a producer cannot refund his loan, the rice-miller allows him to defer a share of his debts to the following year. Thus, the contract plays an insurance role. In addition, it happens that rice millers allow credit for urgent needs no related to production with some of its suppliers, and the latter can spend several years refunding it.

4.2. THE INTERLINKED TRANSACTION: A MOTIVATED ARRANGEMENT

Rice-millers' motivations

Harriss (1981) observes in India, and Smith et al. (1999) in Pakistan, that the interlinked transaction aims initially to maintain rice supply and to reduce risks rather than to make profits from the interest rates [12]. The traders' objective is to ensure themselves that the paddy quantities are available for the harvest period. In Cambodia, this seems also true. Rice-millers are specialized and have made a heavy investment in the mill. They need to reach a minimal paddy quantity to carry out economies of scale.

The second objective of rice millers is to acquire the maximum paddy volume at harvest time when the price is lowest, in order to maximize their profit (maximized profit when they sell the rice bought in the harvest period, during off season).

Thus, agricultural services integrated in the trading relationship enables rice millers to limit competition from other competitors and to reduce transaction costs related to the search of producers.

Producers' motivations

The interlinked transaction answers the producer's main problem concerning the running of farm finances thanks to the access to credit, which he could not claim from other credit

[12] This could be attested to, here, by the low or zero interest rates of some loans.

sources. The interlinked transaction acts as a substitute to material guarantees and becomes an opportunity to borrow money.

Moreover, as producers often have strong risk aversion, these contracts also serve as insurance thanks to the debts carried forward.

5. *INTERLINKED TRANSACTIONS IN CAMBODIA: BETWEEN EFFECTIVENESS AND DEPENDENCY*

5.1. THE "APPARENT" EFFECTIVENESS OF INTERLINKED CONTRACTS

It is very difficult to know if the terms of interlinked transaction are competitive or not. Indeed, it is complex to isolate the terms from each transaction and to compare them with contract terms taken separately on "pure" corresponding markets (Dorward et al., 1998). The final commission could be perceived as an interest rate on the loan (perhaps effective in this case) or as an over-benefit collecting on paddy transactions thanks to informational asymmetry (in this case a source of inefficiency). The finalized terms are an indissociable combination and as the issue of the negotiations is not related to only one market, there are various interests that are compensated by the same contracting (Dorward et al., 1998). Thus, we cannot separate the two transactions to assess their effectiveness by comparison with pure markets.

However, various studies have showed that interlinked transactions can increase economic efficiency in certain contexts (Bell and Srinivasan, 1989; Smith et al., 1999).

Thus, in our case study, we can propose that the coupling with credit access (particularly if there is a zero interest rate) is an effective incentive to discipline producer efforts toward the optimum. Indeed, in situations of an "explicit " offer of credit without interest, producers tend to choose their financial capital requirement according to optimum production (Basu, 1989). The credit does not represent any cost in the production.

As for the financial transaction of the loan, the possibility of repeating the contract provides an effective incentive for refunding loans.

Thus, the interlinked transaction between rice miller and producer would appear to be an effective contractual arrangement to reduce transaction costs and to counteract market failures.

Moreover, Bell and Srinivasan's model (1989) shows that relations between producers and tradesmen are often renewed, season after season, such as also observed in our study. Thus, each party may find it beneficial to maintain this relationship. According to the above authors, this would prove that this relationship is neither irrational nor exploitative for either of the two parties. However, their model assumes free entry into the market for tradesmen. Therefore, tradesmen cannot individually obtain more than the normal profit of their activity. Likewise, the producers, of which there are many, are forced to accept a minimum utility whatever the selected contract. This assumption can be criticized.

5.2. STABILITY OF THE INTERLINKED TRANSACTION: EFFECTIVENESS MODERATED BY DEPENDENCY

The free entry assumption of Bell and Srinivasan's model is criticized by other authors who call into question the effectiveness of this governance form.

Ray and Sengupta (1989) develop a model, which examines the impact of interlinked transactions on competition in the credit market. They aim to identify under which conditions the tradesmen have comparative advantages over other competitors. According to their results, the comparative advantages of the tradesmen are connected with monopolistic advantages.

In our case study, we can also show situations where rice millers present these kinds of advantages because of their long-term relations with producers.

Comparative advantages for rice-millers: reduction in the risks on loans

In the contract with the rice-miller, the paddy harvest itself becomes a possible collateral substitute inside an informal loan system. However, the rice-millers only grant credit to

people they know through several paddy transactions[13]. They condition their loans on a broader observation of variables concerning producers and farm functioning.

A tradesman will interpret these observations as much better if he is specialized in the sphere of producer activity. Rice millers therefore have an advantage as they are specialized in the transaction of rice, compared to other moneylenders.

The tradesman decreases the loan risks thanks to better screening (Ray and Sengupta, 1989).

Moreover, an interlinked transaction is an incentive mechanism to guarantee loan refunding (Ray and Sengupta, 1989) and thus reduce the risks of producer default. The sanction used is the loss of access at all agricultural services for the paddy cultivation. In addition, in the literature, we find also non-market sanctions, such as social exclusion…(Dorward et al., 1998). In fact, here, the social pressure on rice millers remains low [14] because they generally belong to the Chinese community, which is different from the local community (Khmer) and 70% of them have settled there only since 1991. However, there can be mechanisms of reputation-sanction. Indeed, the rice millers have formed an association a few years ago. Initially the aim was export marketing (the rice-miller often quotes this prospect as a failure). It seems that this association is today primarily a place of mutual information sharing. It is avoiding launching a "price war" (identical purchase prices for all rice-millers) and can be informed about the opportunism of some producers, in order to establish collective sanctions. The voluntary defaults are strongly dissuaded by this mechanism of collusion with rice-millers.

Rice-millers must however carry the risk of the involuntary defaults, which may not be negligible in certain years (example of the 2002 drought), in spite of taking into account climatic risks in screening producers. Indeed, the interview results show that the Tmor kol

[13] At the time of the first transaction, the rice-miller does not supply a loan to the producer.

[14] At the local level, patronage relationships exist with some members of the Khmer community (often belonging to large local families) who more directly apply social pressures.

producers have more access to interlinked transactions than those of Mong Russei, area much more prone to annual drought.

Let us recall that credit relates to the principal food crop for the family. In the event of a bad harvest, the production is initially used to feed the family members before dealing with the interests of the rice-millers. The latter then choose to carry-forward the debts to decrease "involuntary" default.

Monopolistic advantages through personalized relations

The cumulated amount of possible loans (available capital) is a key determinant in the rice-miller's activity. Indeed, it defines the number of producers with whom contracts can be committed. We note that rice millers' trade is spread out in a more or less territorialized manner. On a village level, there are often only one or two commercial rice millers making interlinked transactions, and they are known perfectly to the whole village community.

The interlinked transaction implies a personalized relation between the mill owner and producer. Because of these personalized bonds, it becomes difficult for an external party to enter one of the markets concerned with this multiple transaction.

Moreover, growing trust in their "supplier-customers" creates an evolutionary rent for the rice-miller, which in fact limits competition. This rent also exists for the producers, because in the first year of the relationship they do not have access to credit through an interlinked transaction. Termination of the relationship, inducing the loss of this rent linked to trust, is thus expensive for producers.

However, we note that this trust can also generate opportunistic behavior (Ayadi, 2003). Indeed, there is often an informational asymmetry between network partners. While it is difficult to observe the defaults, the situations where the default benefit (taking into account the potential sanction by the network) becomes higher than the benefit obtained while remaining in a contractual arrangement, can generate opportunistic behavior. Thus the rice-miller and the producers engaged in a personalized relation based on "rational" trust (each

one's interest in being in the interlinked transaction) are opportunistic as soon as they can, the rice-miller thanks to his price information, the producer thanks to nonobservance of the rice miller in all his activity. There is a double opportunism of anti-selection and moral risk but as it is not easily observable, it affects trust very little.

Defaulting by the producer is rather frequent (estimated at 30% of volumes according to the interviews) because the rice-miller cannot know the quantities collected by the producers exactly. Furthermore, it is not rare for the latter to dissimulate part of the production, either for subsistence farming or for sale to other intermediaries, such as the collectors who regularly pass in the villages. The rice-millers cannot observe the producers' default when they sell with a collector.

As a result, we understand better the establishment of some competitors (such as collectors or moneylenders) who also have the ability (if their sphere of interaction with producers is not observable) to engage in interlinked contracts with producers, as we saw in the second part.

Conditions for contract implementation in the "hands" of the rice-miller.

Rice millers have high constraints where financing is concerned. Thus, every year, there are rice mills bankruptcies because some producers did not refund their credit. To avoid this, the rice-millers try to set refunding terms so that the borrowers can survive financially by refunding a share of the loans regularly but can never save money enough to finance their running expenses. The contract terms respond to the following constraints: i) At the beginning, the benefit obtained by the producers inside the interlinked transaction must be higher than the benefit of remaining in a system of subsistence farming. ii) In order to be ensured of the loyalty of the producer, this benefit must remain higher than the benefit the latter could obtain with another lender minus the switching costs and must remain lower than the possibility of financing his running expenses himself. In the end, even with a good harvest, it is difficult to save because a good harvest for one producer is often related to a good year of production for all the other local producers, and the selling price of the paddy

decreases. Thus, producers remain perpetually dependent on rice millers for the financial access. iii) Finally, if the producer is in debt, the rice-miller carries the debts forward over several years and the insurance becomes inter-temporal. In this case, it is necessary for the producer's benefit to be higher than the benefit he would earn if he defaults refunding.

Debt trap and dependency

A tradesman having a monopoly on one market of the interlinked transaction can gradually extend his control to the other markets implied in the transaction (Bhaduri, 1986). This means that the contracting party in the weaker position (here, the producer) in one of the markets (here credit) can lose a share of it's the surplus in all the other related markets (here the paddy market). Murshid (1998) indicates that on average 90% of Cambodian rural households have a loss of income every year.

Thus, the rice-miller can extend his influence to the agricultural market of production and even to the production and marketing decisions, in particular when the producers has accumulated debts. Bhaduri (1986) described a process of "forced marketing" where the tradesmen bring producers into a debt trap, constraining them to sell more output than they would want and forcing them to contract consumption credit in off season. Of course, as the sales price of their production becomes increasingly lower (harvest period) than the price of the food, which they must buy (strong demand in off season).

Moreover, the rice-miller sometimes supplies the producers with credit for urgent expenses. The latter then accumulate debts non-related to the production system, which can make them completely dependent on their "protector".

Among our interviews, 3 producers (n=22) explicitly admitted to being in this situation. Murshid's study, in 1998, highlights that 70% of the very poor and 62% of the poor in Cambodia, borrow to buy rice, particularly farmers.

6. INTERLINKED TRANSACTIONS: A BARRIER TO COLLECTIVE ACTION

We saw in the introduction that the socio-anthropological literature describes Cambodian society as having a social structure balanced between individualism, hierarchy, and the search for social harmony (Népote, 1992).

Thanks to collective action theory, we easily understand that these socio-cultural factors do not form a favorable basis for collective project dynamics. Indeed, "project and organizations are also built in reference to the social organization preexisting in the local society with varying forms of collective action, social control, and margin for initiative... " (CIRAD, 1995).

Moreover, according to same authors, the collective projects are generally set up in reaction to an environmental crisis. In Africa and Latin America, numerous peasants' organizations emerged in reaction to the economic crises brought about by adjustment policies (CIRAD, 1995).

The Cambodian situation is more complex. Admittedly, the adjustment policies also applied in the country did not contribute to a favorable economic climate for agriculture development. However, this political change followed three decades of political turmoil, and has thus accompanied the total rebuilding of the country. In the case of Cambodia, the change of economic policy was thus not experienced as a threat to farmers' assets. In fact, at the end of the communist period, farmers did not have assets any more. If it is a local "learning" of these passed events, it is, in fact, the negative connotation related to the collective work[15].

The difficult economic adaptation did not induce the development of producer collectives. On the contrary, it resulted either in a regressive adaptation: "the impoverishment of some categories of peasants caused rural migration " (CIRAD, 1995); or in defensive strategies

[15] During the Khmer Rouge period (1975-1979), all agricultural activity was collectivized. Self-criticism and denunciation meetings took place every day in each working group. Everyone had to speak of his "faults" or expect to be denounced. The "faults" were generally punished by execution (Luco, 2002).

which gave rise to the diversification of activities (agricultural or non agricultural) and the attraction of temporary work (CIRAD, 1995).

The perception of collective action as a sustainable development strategy for rural areas came about more from the reflection of development institutions than from new ideas coming from the local level. Nevertheless, the institutional support for promoting the establishment of POs is justified from the point of view of equity and thus of global effectiveness in the agricultural market. Locally, there is very little resistance from the farmers for projects. Indeed, the informal local rules are flexible and can change progressively. In fact, "the peasant organizations modify the preexisting social organization by supporting the introduction of new relations between the members [...]", all the more so that the Cambodian economic sphere has very few ties with traditional society. This is well illustrated by the distinction between the activities of various ethnic communities: the Chinese – or Sino-Khmer – community, largely dominates trade, whereas the Khmers are more farmers and fishermen. A new “learning” is possible towards collective organization in the economic sphere.

However, the policies to promote producers organizations must initially take into account the risks and uncertainties of local actors and accompany farmer needs as well as possible.

Our analysis of the current strategies in rice transactions shows that the actors use interlinked transaction as a means of access to rural credit, which they could not claim in another way.

These contracts seem effective in a context of insurance and credit market failure. However, this relative effectiveness is moderated by the possibility of generating dependency on rice millers, with debt accumulation.

The producers’ relative dependency on access to credit or the effective dependency of the debt trap, give reason to think that these interlinked transactions could prove to be also one of the significant barriers to collective action.

In their case study in West-Bengal in 1979, Bardhan and Rudra (1981) show an example where some workers did not participate in a collective social movement for income negotiation. The reason was their commitment to interlinked transactions (labor force / credit) with landowners[16].

In our case study, we wish to explain how these dependencies (relative or absolute) on rice millers seems to be a barrier to collective action.

In the villages, where collective projects are set up for collective paddy marketing, there is a high level of heterogeneity in economic situations among the various registered producers. Indeed, the latter are more or less dependent on credit access or are in a debt trap. Whereas commercial POs aim to combine the harvests of all members in order to negotiate a more satisfactory paddy price, there can be significant opportunism on the behalf of some producers: on the one hand, anti-selection, by not declaring their economic situation; and on the other hand, moral risk, if they prefer to sell their harvest to a rice-miller who promises them future credit. Indeed, we saw that leaving a long-term interlinked transaction is expensive (loss of a guarantee of new credit and insurance, loss of the trust rent acquired over time, and risks of reputation-sanction by all rice-millers). Otherwise the organization incentives are not always as credible as those of interlinked transaction. We note that the collective action of rice millers in an association is also a means for them to counter or to slow down all other collective actions, which may not come from upstream. The possibility of an interlinked transaction with a whole PO does not interest them since most of their benefit is related to the degree of informational asymmetry that they individually have with the producers.

It should be recalled that in our case study, the concerned output is the first source of food for families and so the incurred risks are particularly high (as compared to a commercial crop).

[16] The first reason mentioned by these workers being the bond with the landowners to obtain credits.

These producers therefore tend to benefit from the support of development institutions without really being willing or able to take part in the collective action of the project, thus using "free-riding" strategies. Since all the farmers know that all are potentially "free-riders", there is a significant mistrust of each one being really invested in these collective projects. In the interviews with producers, this mistrust vis-a-vis the other's opportunism was a frequently obstacle mentioned.

Thus, the collective action often justified to reduce the costs related on uncertainty and asymmetries, cannot play its role in an environment where opportunistic strategies are heavily suspicious. We can suppose that it lacks, amongst other things, a screening stage of organization membership, necessary to detect opportunistic members.

7. CONCLUSION

The first objective of interlinked transactions is to reduce the cost of transactions and therefore to establish market effectiveness through a hybrid governance system. However, it is very difficult to know if interlinked transaction terms are competitive and effective, since the terms of this multiple transaction are indissociable.

Yet, it seems that, beyond the rice miller's comparative advantages in term of an economy of scale or privileged access to information, they also build real monopolistic advantages thanks to contractual relationships. The stability of this system does not seem based on real economic efficiency, but on a "lock-in" on behalf of power groups. It becomes difficult to restore competitive markets. This inefficient institutional rigidity is consolidated by imperfect information, which remains in interlinked transactions.

However, in an area where climatic catastrophes are frequent, where there are no alternatives to rice production, where soil fertility is becoming exhausted, and where the insurance market is failing, food insecurity is still present for many producers. Any possibility of offsetting this uncertainty by providing credit to invest in agricultural input is worthwhile for producers.

Interlinked transactions are therefore an opportunity in a situation where it is not possible for them to have formal credit access. In the short term, food insecurity is worse than indebtedness. Producers are rational and the incentives to engage these contracts are quite real. These local arrangements at least have the advantage of supplying services on which the markets had not been established and for this reason they are developing. Stiglitz (1989) insists on the fact that institutional adaptations to the absence of a market, do not mean that these institutions perform optimally.

The promotion of POs could represent an alternative to this type of contract, and bring greater equity and effectiveness to rice transactions. Thanks to an initial analysis of the relations between economic actors, we can highlight various elements capable of slowing down the emergence of these organizations. We see clearly that the stakes of the organizations cannot be confined within negotiation roles but they must have multiple stakes (in terms of credit and insurance access…) for these members and certainly for the construction of social capital for paddy marketing.

This stage of analysis and comprehension of institutional arrangements between local actors is thus necessarily important in institutional reform policies (Bardhan, 1989). Yet, a significant number of institutional failures are related to the absence of this preliminary stage. It is the case of many land reforms, which were not productive because of the absence of a credit rural program at the same time (Bardhan, 1989). In the same way, we may deduce that many development programs, which for years have supported the POs, do not achieve sustainability in their project, due to, amongst other things, a lock-in in the institutional environment. Here we highlighted the lock-in from interlinked transactions resulting from the failure of rural credit.

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