

Relationship between money lenders and farmers

Theoretical perspective and evidence from potato farmers of West Bengal, India

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Abstract

Purpose – The dependence of farmers on money lenders for agricultural credit despite the penetration of the formal financial sector with subsidized interest rates remains an economic puzzle. The purpose of this paper is to revisit the relationship between money lenders and farmers in the presence of trade-loan nexus.

Design/methodology/approach – The study provides a theoretical framework supported by empirical evidence. It uses primary survey data of farmers in a major potato producing district of West Bengal, India. For the empirical analysis, apart from descriptive statistics, the authors use a logit regression model to derive insights from some testable hypotheses.

Findings – The study finds that trade-loan nexus increases defaults on agricultural loans through two channels: first, by increasing loan requirement and repayment obligations through high input prices and interest rates, respectively; and second, by reducing income of farmers by setting low prices for the output.

Research limitations/implications – The functioning of money lenders in rural areas, including their sources of finance and political control over local economy, and the existing social hierarchies in the rural context will have to be studied in detail to understand the complexities of the issue.

Practical implications – The findings of the study underline the need for policy initiatives to break the trade-loan nexus to reduce the dependence of farmers on money lenders.

Social implications – The higher defaults help the money lender to sustain in the rural agricultural loan market as the formal sector becomes reluctant to lend in the presence of pervasive defaults.

Originality/value – The study is entirely original based on primary survey data of seven blocks of a major potato producing district in West Bengal, India. It could be the first such study on the subject. The findings are fresh and expected to contribute to development economics and agriculture finance literature and policy making.

Keywords Logit model, Agricultural finance, Informal finance, Institutional finance, Money lenders, Rural credit

Paper type Research paper

1. Introduction

This study revisits the relationship between money lenders and farmers in the context of potato farmers of West Bengal. The financial dependence on money lenders in the rural credit markets of developing countries, despite the penetration of the formal banking sector, is well established in the literature, which identifies several context-specific factors responsible for this trend. The literature makes a distinction between formal and informal sources of finance and within informal finance between money lenders and friends and relatives. This study investigates how money lenders survive in the rural credit market despite the penetration of the formal financial sector.

More specifically, this paper is concerned with the question as to why, with India pushing for financial inclusion, does there remain a large dependency on money lenders? Our explanation is that in modern day India, the money lender is also a trader in the input and output markets and has a predatory advantage over formal lenders. We argue by theory and survey evidences that borrowing for inputs (or other purposes) gets linked to repayment at harvest, and at the exact time that output (potato) prices are lowest. The strategy of the money lender is to ensure that the borrower has outstanding debt that



can be carried over until the next harvest (perpetual bondage by design) and that this debt can accumulate without loss of any household collateral, only if the farmer-borrower purchases inputs and sells outputs in the following cycle under the same manner.

In the Indian context, the past two decades have witnessed various policy initiatives aimed at financial inclusion and the coverage of farmers by the formal banking sector through Government subsidized Kisan Credit Card (KCC) scheme, with substantial uptake in West Bengal. Despite these efforts, there were media reports of suicides of potato farmers in West Bengal in the Winter season of 2015 owing to crop failure and indebtedness to money lenders. In this context, given the KCC's positive features and coverage, an important question arises. How has the relationship between farmers and money lenders changed in the presence of KCC? Is KCC a substitute for loans from money lenders, or has it complemented the debt problem, and exacerbated loan repayment? From a policy perspective, it may be useful to identify the underlying factors contributing to this relationship, so that policy intervention could take place in an appropriate manner.

2. Historical context

Money lenders are not new to the Indian context; they existed even in the ancient Indian civilization. In the ancient India, money lending was recognized by Hindus as a lawful occupation. As per the historical records, however, in 600 BC there were attempts to reduce the bad impact of money lending on borrowers. During this period, the maximum rate of interest at which a money lender may lend money was fixed. Lending above this fixed rate of interest was illegal. Further, there was a check upon the accumulation of interest to ensure that the accumulated interest was not higher than the principal amount borrowed at any point of time. Thus, the maximum gain a money lender may derive out of lending is the doubling of money after which the interest stops automatically (Sen, 1910; Shah *et al.*, 2007).

Four centuries later, in the institutes of Manu, occupations were divided according to the hierarchical caste system in which only one caste, namely, Vyshyas could lend money for interest lawfully[1]. However, other castes could resort to money lending during distress. Though, later, around sixth century AD, all castes could practice money lending legally. Further, the practice of automatic stoppage of interest after it equals the amount of principal started losing its importance gradually. However, in ancient India, the defaulter did not become a slave of the lender though slavery was very much present during that period. Manu provides a clear distinction between a servant and a slave in which the latter is not legally entitled to possess any wealth but the former may possess wealth.

In the eleventh century AD, India came under the influence of the Mohammedan rulers, whose religion strictly prohibited lending money upon interest. Yet, they did not interfere with the Hindu laws of money lending and even among the Mohammedans money lending existed as an occupation. Thus, when the British occupied India, all Hindus continued to practice money lending legally while Mohammedans, who could not practice money lending legally, did practice it in various ways. The British passed legislations to fix the rate of interest in line with the system that then prevailed in England. However, in 1855 all laws relating to usury were repealed in India leaving the lender free to decide their own terms and conditions regarding interest. Yet, the conservations/reservations of the judges of India during the period could preserve one aspect of the ancient times, namely, prohibiting Hindus from accepting interest more than the principal from any Hindu debtor.

The historical accounts of the colonial period reveal further aspects of money lending apart from usurious interest rates. Ratnam and Sathyanathan (1935) documents several bad practices of money lenders apart from higher interest rates. These included not giving receipts to the borrowers, not showing the accounts to the borrower, not deducting the repaid amount from the principal for calculating the future interest dues and not separately accounting for the principal and interest.

Further, the report explained how money lenders intervened with the regular economic activities of borrowers through trade in the output crop. This was called an “Oppressive Nexus,” where the debtor was compelled to sell his produce at a pre-arranged low price immediately after the harvest to repay the outstanding loan. Meanwhile, the money lender was also trading in the output crop. Poor farmers who were generally deprived of both transportation and storage facilities easily fell prey to this trap of trade-loan nexus. This was also applicable to the prevailing rent relationship during the period. The fact that rent was to be repaid in cash immediately after the harvest made farmers more vulnerable economically. Further, landlords used to charge a high rate of interest on the unpaid amount of rent. Rent was also used to put more pressure on farmers since without settling the rent of the previous year, the annual renewal of rent contract was almost impossible.

The following extract from the report of the 1930 Madras Provincial Banking Enquiry Committee (MPBEC) summarizes the functioning of money lenders in the colonial period:

Frequently the debt is not repaid in full and a part of the loan persists and becomes a pro-note debt. In the course of time, it may with a lucky year be paid off or it may become a mortgage debt. By the existence of this heavy persisting debt, the creditor takes the bulk of the produce and leaves the ryot unable to repay short-term loans[2]. But equally, the short-term loan has produced long-term debt and there is a vicious circle. The ryot cannot clear his short-term debt because of his crop goes largely to the long-term creditor. If he pays his long-term creditor his current debts swell and overwhelm him (MPBEC, 1930, p. 77).

Among the several attempts made by the British against money lending include enactment of the Deccan Agricultural Debtors’ Relief Act (1879) “that authorized courts to stop charging of usurious interest and sales of land as a result.” Similarly, different provincial Land Alienation Acts, setting up of Land Mortgage Bank and passing of the Cooperative Credit Societies Act (1904) were other initiatives with similar objectives. Though the cooperative movement was successful in Europe, it was not that successful in India with many viewing it as an addition not an alternative to money lender as they were rife with rural politics and other factors.

Thus, largely the efforts to curb money lending were not very effective and, as a result, money lending as an occupation survived even to the twenty-first century despite the penetration of the formal banking sector in the nooks and corner of the country. Thus, it may be important to investigate whether the age-old trade-loan nexus, which is the most detrimental and unique aspect of money lending business compared to the business of the formal banking sector, has been modified by the subsidized agricultural rolling loan in India, namely, KCC. The present study gets its motivation from this historical context in which it tries to revisit the relationship between farmers and money lenders through the trade-loan nexus.

3. Review of literature

The survival of money lenders to the twenty-first century is not specific to India, rather it has happened in many countries around the world. Remarkably, this has happened amidst a rather wide expansion of the formal banking sector. Though informal sectors of finance include money lenders, traders, landlords, chit funds, farmers’ club and other community and neighborhood-level savings and credit unions, many studies have underlined that money lenders are the prominent players in the informal sector (Kurup, 1976; Bell, 1990; Banerjee and Duflo, 2007; Geertz, 1962; Levenson and Besley, 1996). Further, Turvey *et al.* (2010) analyzed the performance of informal borrowing defined as loaning among friends and relatives in the context of rural China. Borrowing and lending among friends and relatives are different from money lender business in the sense that mostly they are on a non-interest basis. There are empirical evidences that personal trust is an important determinant of loans among friends and relatives on a non-interest basis (Turvey and Kong, 2010).

On the other hand, one issue that has received much deserved attention from the researchers worldwide in the context of money lending is the interest rate formation. It is an economic puzzle that despite competition from the formal banking sector with subsidized loans, money lenders are able to survive with loans that carry higher interest rates. Bottomley (1963) argued that the interest rates are high because of the risk lenders take in the agricultural credit markets of rural areas. The same view was shared by other studies as well (Basu, 1983; Platteau *et al.*, 1981). However, Bardhan (1984) was of the view that it is not the risk of default, rather it is the monopoly profits earned by the lender which is responsible for higher interest rate. In a slightly similar view, Rao (1980) argued that the age-old hierarchical social structure that prevails in the rural areas, which places lenders as the hegemonic class, is the most important determinant of interest rate on agricultural loans. Bhattacharya (2005) also argued that “interclass distribution of all basic means of production” determines the structure of rural credit.

Long (1968) argued that much of the difference between the interest rates charged by money lenders and the formal banking sector can be explained by competitive factors. He listed factors such as higher defaults, administrative cost, reverse nature of seasonal credit requirements of farmers and merchants, etc. Further, the study also highlights a peculiar nature of default on agricultural loans, namely, its pervasiveness in a locality. This happens because all farmers belonging to a locality will be affected by a natural disaster which hits the locality. This adds additional risks to the lenders as diversification within a locality is almost impossible. Further, as the credit demand from the agricultural sector is seasonal and for shorter duration, the lender faces additional risks of idle capital. This happens when the loan is extended for 11 months, so that the remaining 1 month of the year, the capital of the lender remains idle. This pursues her to charge higher interest rate for the duration of the loan.

However, Bhaduri (1977) challenged this conventional thinking that high interest charged by money lenders works as a premium for the risk they take against default. Bhaduri theoretically refuted this argument and established that as in case of default the lender can attach the property of the borrowers, the primary objective of the high interest rate from the point of view of money lender is the accumulation of wealth. However, a few questions remained unanswered. Bhaduri does not consider the presence of the formal banking sector competing with money lenders with a subsidized farmer loan scheme. Further, Bhaduri’s theoretical expositions are completely oblivious to the trade-loan nexus of the money lending business. Thus, when the present study considers these two factors, the explanation provided by Bhaduri (1977) that the high interest rates are set to accumulate more wealth, may be subject to modification. Further, Bhaduri does not provide an explanation for the question, *prima facie*, why farmers are borrowing from money lenders in the presence of a Government subsidized farmer loan scheme?

The third line of argument is that the money lenders integrate their money lending business with other agricultural factor markets such as land, labor and output to accommodate higher default risk in the agricultural loans (Bardhan, 1984). This trade-loan nexus resulting in inter-locked credit contracts are aimed at addressing moral hazard, uncertainty and default risk in the agricultural loan market of rural areas. Interestingly, there are empirical evidences for this lending pattern from across the world. Long (1968) acknowledged the existence of trade-loan nexus in the village market reinforcing the power of lender in both the markets. Kurup (1976), in the context of Kerala in India, showed that coconut traders provide advance loans to the cultivators which the cultivators repay through their produce. Bell (1990) discussed the rise of the trader-money lender in the wake of the commercialization of agriculture. Further, Bell *et al.* (1997) provided evidences from rural Punjab in India that loan contracts were tied to the marketing of the produce through the money lender. Siamwalla *et al.* (1990) argued that the persistence of informal sector in Taiwan was the result of a rich variety of contractual relations that enable informal lenders

to solve information problems effectively, which are beyond the capacity of banks or cooperatives. Bhattacharya (2005), while studying formation of interest rates in the informal credit market of West Bengal in India, discussed various types of credit transactions in the economy apart from cash-to-cash, which indicated trade-finance linkage in the economy.

Thus, the trade-loan nexus is explained as a natural outcome to address problems of moral hazard, defaults and information asymmetry in the rural credit market. However, there are other factors which also strengthen the relationship between farmers and money lenders. Evidence suggests that the economic background of the borrower is a very important factor in determining the financial dependence on informal sectors (Kurup, 1976; Mohieldin and Wright, 2000; Banerjee and Duflo, 2007), the higher the economic status of the farmer, the lower was the dependence on informal sector. This supports the viewpoint that marginal and small farmers are most likely to be exploited by money lenders.

Further, studies have also pointed to the non-requirement of collateral as another factor for the dependence on informal sectors of finance. The informal sector often accepts a wide range of flexible collaterals including harvest produce, tractors and brass utensils, which are generally not accepted as collateral by the formal banking sector. Swain (2001), in the context of a few villages in Odisha, India, reported that informal lenders accepted utensils, tractors and harvest produce as collaterals while extending loans to borrowers. Bhaduri (1977) provided a theoretical discussion about the non-marketable securities accepted by money lenders and the subsequent under valuation of the same as a strategy of money lenders to ensure that in case of default, the value of the collateral transferred to the money lender was higher than the value of the loan extended.

The co-financing requirement and the subsequent partial funding of projects by the formal sector as a means of credit rationing is yet another factor inducing borrowings from the informal sector. Through this practice, the formal sectors of finance screens out the "bad" borrowers from their system pushing them to depend on the informal sectors of finance (Bell, 1990; Bell *et al.*, 1997; Jain, 1999). Illustratively, in the context of Egypt, Mohieldin and Wright (2000) showed that the informal sector financed those who failed to obtain loans from the formal financial sectors. Mukherjee (2013) reported that credit rationing is very high in the formal sectors of credit in rural India, thus, pushing borrowers to the informal sectors of finance. Guirking (2008), in the context of Peru, showed through a structured econometric analysis that the informal sector served both households excluded from the formal sector and households that preferred informal loans because of lower transaction costs or lower risk.

The transaction cost to access the formal credit is also highlighted in the literature as a reason for the presence of informal credit sources in the rural areas. In the context of rural India, Mukherjee (2013) reported that high transaction costs to access formal credit sources is important in determining financial dependence on informal sectors. Similar results are reported in the context of Peru by Guirking (2008). In China, Tang *et al.* (2010) noted that a household's decision to borrow either from formal or informal sources depends on their production capacity and transaction cost of credit.

Among the other relevant reasons, Chaudhuri and Gupta (1996) provided a theoretical discussion that the delayed formal sector credit and the consequent bribing cost to speed up the processing of formal sector loans play an important role in pushing the borrowers to informal sectors of finance. Guirking (2008) reported that informal loans come with more generous restructuring conditions in case of default as compared with formal sector loans, making it attractive to the risk-averse families even though it is expensive. Surprisingly, studies do not find demographic factors including age, education and marital status to be important in determining the financial dependence on informal sectors of finance.

Thus, taking motivation from historical context and literature review, the present study examines the relationship between money lenders and farmers through trade-loan nexus in the presence of competition from the formal banking sector.

4. Theoretical framework

The theoretical framework of the study draws heavily on the “default theory” developed by Bhaduri (1977). We take the interest income function of money lenders from Bhaduri (1977):

$$Y_l = i_m l_m \quad (1)$$

where Y_l is the income of the money lenders from lending; i_m the interest rate charged by money lenders; and l_m the loan extended by the money lenders.

We elaborate this function to accommodate the changes in the relationship between money lenders and farmers from a “pure lender-borrower” one to a “lender-borrower cum seller-buyer” relationship. The latter relationship is channeled through the trade of farming inputs and farm output (potato in our case study) in the locality. We make the following assumptions to elaborate the basic interest income function:

Assumption 1. A closed rural economy, with only two trader-money lenders (m_1 and m_2) interfacing with n number of cultivators (or farmers) ($c_1, c_2, c_3, c_4, \dots, c_n$).

Assumption 2. The money lender’s income is not only derived from interest income, but also from trade, i.e.:

$$Y_m = Y_l + Y_t \quad (2)$$

where Y_l is the income from lending and Y_t the income from trade.

Assumption 3. Cultivators’ only source of income is farming or selling of farm output, i.e., retail price of farm output and the amount of farm output determines the income of the cultivators:

$$Y_c = P_{\text{retail output}} \cdot Q_{\text{output}}$$

Assumption 4. Money lenders face competition from formal lenders, i.e., the total credit market, L , is shared between money lenders (l_m) and formal financial sector (l_f):

$$L = l_m + l_f \quad (3)$$

Assumption 5. The rate of interest charged by formal lenders is less than the rate of interest charged by money lenders, i.e., $i_f < i_m$.

Assumption 6. Money lender’s loans are based on sales contract, but without collateral.

Assumption 7. Once the farmer is enrolled in farmer credit schemes by the formal sector, amount of credit extended up to a limit α is collateral free.

Assumption 8. Farmers are enrolled in the formal credit scheme, thus can receive formal credit up to α collateral free.

Assumption 9. Only markets available to farmers, irrespective of their source of borrowing (formal and money lenders), for buying farming inputs and selling crop produce are m_1 and m_2 .

Assumption 10. Money lender's loans from m_1 and m_2 are repaid by farmers only through sale of crop produce to them immediately after the harvest.

Under the elaborated model, the profit function of the trader-money lender can be rewritten as follows:

$$\Pi_m = i_m l_m + \pi_t \quad (4)$$

where π_t is the profits from trade, which is defined as follows[3]:

$$\pi_t = (P_{\text{wholesale output}} - P_{\text{retail output}}) Q_{\text{output}} + (P_{\text{retail input}} - P_{\text{wholesale input}}) Q_{\text{input}} \quad (5)$$

$$\Pi_m = i_m l_m + (P_{\text{wholesale output}} - P_{\text{retail output}}) Q_{\text{output}} + (P_{\text{retail input}} - P_{\text{wholesale input}}) Q_{\text{input}} \quad (6)$$

The three terms of the right hand side in Equation (6) represent interest income from money lending ($i_m l_m$), profit from output trade $(P_{\text{wholesale output}} - P_{\text{retail output}}) Q_{\text{output}}$ and profit from input trade $(P_{\text{retail input}} - P_{\text{wholesale input}}) Q_{\text{input}}$.

Expanding Equation (6), we get:

$$\begin{aligned} \Pi_m = i_m l_m + (P_{\text{wholesale output}} \cdot Q_{\text{output}}) - (P_{\text{retail output}} \cdot Q_{\text{output}}) + (P_{\text{retail input}} \cdot Q_{\text{input}}) \\ - (P_{\text{wholesale input}} \cdot Q_{\text{input}}) \end{aligned} \quad (7)$$

where $(P_{\text{retail output}} \cdot Q_{\text{output}}) = Y_c$ is the farmers' income, which comes entirely from the sale of the output and $(P_{\text{retail input}} \cdot Q_{\text{input}}) = L$, the loan requirement of the farmers as farmers fully finance their agricultural operations through loans (both formal and money lender). Thus, Equation (7) can be rewritten as follows:

$$\Pi_m = i_m l_m + L - Y_c + (P_{\text{wholesale output}} \cdot Q_{\text{output}}) - (P_{\text{wholesale input}} \cdot Q_{\text{input}}) \quad (8)$$

Or:

$$\Pi_m = -[Y_c - L - i_m l_m] + (P_{\text{wholesale output}} \cdot Q_{\text{output}}) - (P_{\text{wholesale input}} \cdot Q_{\text{input}}) \quad (9)$$

Equation (9) represents the profit function of money lenders.

Profit function of farmers:

$$\Pi_c = Y_c - (l_m + l_f) - (i_m l_m + i_f l_f) \quad (10)$$

or:

$$\Pi_c = Y_c - L - i_m l_m - i_f l_f \quad (11)$$

Rearranging (11) we get:

$$Y_c - L - i_m l_m = \Pi_c + i_f l_f \quad (12)$$

Equation (12) represents the profit function of farmers.

Interaction of both the profit functions.

By substituting (12) in (9), we get:

$$\Pi_m = -[\Pi_c + i_f l_f] + (P_{\text{wholesale output}} \cdot Q_{\text{output}}) - (P_{\text{wholesale input}} \cdot Q_{\text{input}}) \quad (13)$$

It can be seen from Equation (13) that theoretically the profit of money lenders is negatively related to the profit of farmers and market share of formal financial sectors in the rural credit market. Thus, money lenders can maximize their profit by reducing the profit of

farmers through trade and by reducing the market share of the formal sector in the rural credit market. How can they do it in the presence of trade?

Let us go back to the profit function of farmers (Equation (12)):

$$\Pi_c = Y_c - L - i_m l_m - i_f l_f$$

which can be rewritten as follows:

$$\Pi_c = (P_{\text{retail output}} \cdot Q_{\text{output}}) - [(P_{\text{retail input}} \cdot Q_{\text{input}}) + i_m l_m + i_f l_f] \quad (14)$$

In Equation (14), the first two terms represent the trade of output and farm input in the economy, respectively. In a closed economy with an oligopolistic farming input market and oligopsonistic farm output market, money lenders possess the power to determine prices. Thus, by setting retail price of output at a lower level and retail price of input at a higher level, money lenders can reduce the profit of the farmers in the economy.

Further, the term $[(P_{\text{retail input}} \cdot Q_{\text{input}}) + i_m l_m + i_f l_f]$ in Equation (14) represents the total repayment obligations of farmers in the rural credit market. Thus, theoretically:

$$[(P_{\text{retail input}} \cdot Q_{\text{input}}) + i_m l_m + i_f l_f] = (Y_c - C) + D \quad (15)$$

where $D = d_m + d_f$.

The total defaults of loans in the economy are a sum of defaults in the money lenders' loans (d_m) and formal sector loans (d_f). C is the consumption expenditure of farmers; assumed as constant in a one-year period. Equation (15) assumes that farmers default on their loans. Equation (15) can be rewritten as follows:

$$[(P_{\text{retail input}} \cdot Q_{\text{input}}) + i_m l_m + i_f l_f] - (Y_c + C) = D \quad (16)$$

It can be seen from Equation (16) that given the consumption expenditure, money lenders can induce defaults in the agricultural loan market through two ways: by increasing the repayment burden of the borrowers and by bringing down income of the farmers through trade. This is a modification to the argument given by Bhaduri (1977), where only the high interest rate is discussed as a factor to induce defaults in the economy.

However, the formal financial sector and money lenders respond differently to the defaults on loans. While the formal sector becomes reluctant to lend once the defaults increase, money lenders do not decelerate their lending because of defaults. Money lenders continue to lend even in the presence of defaults, thus, increasing the repayment obligations on farmers through accumulated interest rates and loans. Since the formal financial sector becomes reluctant to lend in the presence of widespread defaults, by increasing defaults in the economy, money lenders can take back the share of rural credit market they had previously lost to the formal financial sector.

5. Present sample

In line with the literature, we opted for a micro-level primary survey-based analysis to better capture the interaction of local economy context with the institution of money lenders. For the survey, we chose West Midnapore district of West Bengal, where farming is the main economic activity of masses. Potato is the second most farm output, next to rice, in West Bengal. In this district, we considered seven major potato producing blocks, namely, Salbani, Keshpur, Garhbeta-I, Garhbeta-II, Garhbeta-III, Chandrakona-I and Chandrakona-II, which taken together, account for 84.78 percent of total area under potato cultivation in the district. In each block, a random sampling of potato farmers was undertaken to collate relevant information required for the study. A structured questionnaire was prepared for conducting in-depth interviews of the farmers. The questionnaire consisted of 11 detailed

sections pertaining to various aspects of the farmer, namely, personal information including family size, income, dependent members, education, financial details, potato production, costs of cultivation, potato marketing, pricing mechanism, cold storage, crop insurance, government intervention and farmers' club. The total sample size of the survey was 307 farmers spread across seven blocks of the district.

For the empirical analysis, apart from descriptive statistics, we use a logit model to analyze the data in detail by deriving insights from some testable hypotheses. The analysis started with the most elaborate model with 11 independent variables and, depending on the overall fitness and significance of individual coefficients, reduced the number of independent variables to 6 gradually. Later, immediate sales and default were also modeled (cross-section regression) with relevant independent variables to find out the implications of trade-linked lending for both the money lenders and farmers.

Certain basic facts about the survey sample are provided below before getting into the empirical testing of our theoretical framework.

Farmers' borrowing pattern shows 80.5 percent of total farmers indebted to formal sectors of finance through KCC, loans from commercial banks and cooperative banks. At the same time, 45.0 percent of farmers were indebted to informal sectors of finance, namely, money lenders, traders, landlords and chit funds. Some farmers (31.9 percent of the total sample) reported that they have borrowed from both formal and informal sectors of finance, thus, confirming the co-existence of these sectors as pointed out by many of the previous studies (Das-Gupta and Nayar, 1989; Hoff and Stiglitz, 1998; Mohieldin and Wright, 2000; Conning, 2001; Guirking, 2006; Tang *et al.*, 2010; Gine, 2011; Mukherjee, 2013; Madestam, 2014). Strikingly, 13.0 percent of the total farmers have borrowed only from informal sectors of finance, indicating the existence of financial exclusion from the formal banking sectors despite the financial inclusion efforts of the Government of India and the Reserve Bank of India. To add, 6.5 percent of the total sample reported that they have borrowed neither from formal sector nor from informal sector (Table I).

Further, almost 56 percent of financially excluded farmers belong to the lowest economic strata of the society with land dependency ratio up to 0.2 acres of land per family member[4]. As we move to the higher economic classes, the percentage of financially excluded farmers declined to 20.5, 15.4 and 7.7 percent for the land dependency ratio between 0.21 and 0.40, 0.41 and 0.60 and 0.61 and 0.80, respectively. For the land dependency ratio above 0.80, none of the farmers were financially excluded. This implies that financial exclusion is more concentrated among the farmers belonging to lower economic status. This evidence is in line with many of the previous studies (Kurup, 1976; Mohieldin and Wright, 2000; Banerjee and Duflo, 2007).

Majority of the financially excluded farmers were from the bankable age group. While 46 percent of all financially excluded farmers were younger than 40 years of age, other 36 percent were within the age group of 40-50.

Source of credit	Number of farmers	As percent of total sample
A. Formal sector	247	80.5
Of which		
1. Only formal sector	149	48.5
2. Formal and informal sectors	98	31.9
B. Informal sector	138	45.0
Of which		
1. Only informal sector	40	13.0
2. Informal and formal sectors	98	31.9
C. No loans	20	6.5
D. Total (A.1+A.2+B.1+C)	307	100

Table I.
Borrowing pattern
of farmers

Most of the financially excluded farmers (82.1 percent) have above high school education. Further, these farmers are also deprived of a strong social support system formed by friends and relatives who can lend money in time of need. This is expected in low economic settings where capacity to lend of every member in the society/community is limited. Further, quasi-formal institutions such as SHGs, farmers' club and micro finance are also yet to make a significant penetration among the target group of the present study.

In the present survey, around 31.9 percent of the total farmers interviewed were indebted to both formal and informal sectors. They include marginal, small and middle farmers, but exclude big farmers. Among this group, 52.0 percent of farmers raised either equal or higher amount of money through informal channels and friends as compared to money raised from formal financial channels. This underlines that though they are financially included, their financial dependence on informal channels is higher than their financial dependence on formal channels.

All formal sector borrowers either provided collateral or produced the land possession certificate to obtain loans. In contrast, only 14.5 percent of those farmers who have taken loans from the informal sector had to provide collateral to obtain the loan. This shows the peculiar nature of informal sector loans which are available even if the needy borrower does not possess any asset to provide as collateral. Further, not only the collateral requirement is less in the informal financial sector, it is more flexible as compared to the formal financial sector. In the formal financial sector, a land possession certificate is a must for obtaining a KCC and in the case of other loans from the formal sector, land records and gold are the preferred collaterals acceptable to the banks. However, in the case of money lenders and other agents in the informal financial sector, apart from gold and land, the harvest of the cultivation is also acceptable as collateral for the loan[5].

Finally, the most discussed characteristic of informal sector loans as compared to formal sector loans is the usurious interest rate. The informal sector stands out with a very high weighted average interest rate of 33.4 percent as compared to weighted average interest rate of KCC at 7.3 percent. This provides a very important cue that the cost of finance is not the only factor which is deciding the choice of credit source, rather there may be some other compelling factors, which push the rural masses to informal sector finance.

6. Empirical analysis

We deal with the broader issue of why farmers still borrow from the informal sector despite the presence of formal sector. For seeking answer to the question, we attempted a logit regression model. We defined a dichotomous dependent variable taking value of 1 if a farmer borrowed from the informal sector and 0 otherwise. For the explanatory variables, we considered farmer's education, age, housing, financial inclusion, economic linkage with traders, immediate sales, collateral and interest rates on loans as defined in Table II. We experimented with logit regression equation with alternative combination of explanatory variables as shown in Table III. We began with the most elaborate model with 11 independent variables. After excluding insignificant variables with wrong signs, we reached the final model with six statistically significant independent variables. The regression results provide us various useful insights.

It may be important to explain the variable "rate of interest," which appeared in our first regression model. This variable was significant at 1 percent level with the correct positive sign, indicating that rate of interest increases as one move from formal sectors of finance to informal sectors of finance. This is a well-established fact in the literature, however, it is not a causal factor which determines informal sector loans. The fact is, despite the high rate of interest, farmers are borrowing from the informal financial sources. Thus, following Wooldridge (2002), though this variable was statistically significant with the correct sign, owing to the lack of economic significance of this variable in explaining the reasons for the dependence of farmers on informal sources of finance, it was eliminated from the regression.

Table II.
Definition of variables

S. no.		Acronyms	Codes
<i>Dependent variable</i>			
1	Loans from the informal sector	IL	1 = Borrowed from the informal sector 0 = Otherwise
<i>Independent variables</i>			
1	Education	EDU	1 = Graduation and above 0 = Otherwise
2	Age	AGE	1 = more than 50 0 = Otherwise
3	Housing score	HS	1 = Value of housing score 7,8 and 9 0 = Otherwise
4	Financial inclusion	FI	1 = Having bank account 0 = Otherwise
5	KCC	KCC	1 = Having a KCC loan 0 = Otherwise
6	land linkage	LL	1 = Having leased land/share tenancy 0 = Otherwise
7	Sales to traders	SLT	1 = Sold to small traders/wholesalers 0 = Otherwise
8	Sales to money lenders	SLML	1 = Sold to money lenders 0 = Otherwise
9	Immediate sales	RM	Continuous variable (percentage of Immediate sales)
10	Collateral	CL	1 = Collateral provided 0 = Otherwise
11	Interest rate	IR	1 = Interest rate higher than 15% 0 = Otherwise

In all the regressions (Table III), we could find the coefficient of farmers' trade linkages with money lenders (sales to money lenders) statistically significant and positive. In other words, farmers' trade linkages have positive influence on their dependency on informal sector loans. Trade linkages arise in the context of commercialization of agriculture, where the crop production is more market oriented and less consumption oriented. In the present survey, many farmers pointed out that they sell their crop produce to money lenders or to traders who also provide finance.

The variable KCC, representing the policy-driven financial inclusion variable aimed at enhancing access to formal sector finance, showed statistically significant negative influence on farmer's dependence on informal sector loans, which is an encouraging development. However, it may be noted that KCC has left out a group of marginal farmers who are either landless, or do not possess proper land record or belong to a joint family where the land is not sub-divided and registered in the name of the actual farmer. Thus, in the present study sample, 19.5 percent of farmers did not possess a KCC. Interestingly, we did not find another financial inclusion variable, farmers having bank account, a significant factor of influence on informal loans.

The collateral variable also appeared as a significant determinant of informal loans. As pointed out by previous studies, most of the informal sector loans are highly personalized in nature without the requirement of a collateral. Further, even if collateral is required, informal lenders are flexible enough to accept a range of collaterals such as crop produce, tractors, utensils, gold, etc. Thus, the farmer does not have to necessarily own a piece of land to get an informal sector loan, which undoubtedly increases the attractiveness of informal sector loan to farmers.

Among the personal characteristics of farmers, housing asset reflecting upon economic status showed significant negative influence on the financial dependence on informal sectors.

Independent variables	Regressions					
	1	2	3	4	5	6
Intercept	-2.3252 (-2.04)**	0.9145 (1.56)	1.2362 (2.73)*	1.2301 (2.73)*	1.3647 (3.16)*	1.5958 (3.94)*
Housing score	-0.2530 (-0.40)	-0.3588 (-1.72)***	-0.5577 (-1.71)**	-0.5619 (-1.73)***	-0.5856 (-1.81)***	-0.5441 (-1.69)***
KCC loans	-1.3146 (-2.13)**	-0.9407 (-2.71)*	-0.8968 (-2.63)*	-0.8999 (-2.64)*	-0.8977 (-2.64)*	-0.8433 (-2.50)*
Sales to money Lenders	1.8315 (2.28)**	1.4184 (3.47)*	1.4079 (3.46)*	1.4042 (3.45)*	1.4363 (3.55)*	1.0180 (3.58)*
Immediate sales	-0.0134 (-1.74)***	-0.0104 (-2.42)*	-0.0104 (-2.42)*	-0.0104 (-2.44)*	-0.0107 (-2.52)*	-0.0086 (-2.17)**
Collateral	-0.7277 (-1.28)	-1.1190 (-3.55)*	-1.1126 (-3.55)*	-1.1155 (-3.56)*	-1.1226 (-3.59)*	-1.0820 (-3.49)*
Education	0.0200 (0.03)	-0.5179 (-1.47)	-0.5163 (-1.47)	-0.5129 (-1.46)	-0.5644 (-1.62)***	-0.5593 (-1.62)***
Sales to traders	1.0294 (1.36)	0.5959 (1.53)	0.5815 (1.50)	0.5756 (1.49)	0.5718 (1.49)	
Land linkages	0.5231 (1.04)	0.2769 (0.99)	0.2944 (1.06)	0.2938 (1.06)		
Age	0.5963 (1.14)	-0.0292 (-0.10)	-0.0531 (-0.18)			
Financial inclusion	0.7292 (0.90)	0.3880 (0.85)				
Interest rate	5.3219 (9.40)*					
LR χ^2 (12)	257.52	55.80	55.07	55.03	53.91	51.64
p-Value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LL	-65.25	-166.11	-166.48	-166.50	-167.1	-168.19
Pseudo R^2	0.66	0.14	0.14	0.14	0.14	0.13
Predicted probability	0.49	0.49	0.49	0.49	0.49	0.49
SD	0.43	0.22	0.21	0.21	0.21	0.21

Notes: Dependent variable = informal sector loans (1 = borrowed from informal sector; 0 = Otherwise). Number of observations = 280. *, **, ***, Significant at the 1, 5 and 10 percent levels, respectively

Table III.
Determinants of informal sector borrowings (logit model) – regression results

This implies that with an increase in economic status, farmers are less likely to borrow from informal sources. Notably, as alluded to earlier, this evidence is in line with the existing literature on the subject.

The education variable showed a negative influence on informal loans, albeit with a 10 percent level of statistical significance in the final regression model. This implies that as farmers become highly educated, they would be reluctant to depend on informal sources of finance. Also, it points out the importance of awareness to reduce the dependence on informal sources of finance. This result may be useful as the previous studies did not find education as a significant variable influencing farmers' dependence on informal sectors of finance.

In sum, when farmers' personal characteristics such as housing status and education are suppressed due to statistical significance only at 10 percent level, the results showed that the dependence of farmers on informal sources of finance could be intertwined with a trade-off between the positive impact of trade linkages and the negative impact of KCC. This is because other variables in the regression such as immediate sale of potatoes by farmers as well as collateral requirement are connected to trade linkages through the institution of sales contract. While immediate sale is an outcome of sales contract, collateral requirement is substituted by sales contracts in most of the cases. This prompted the study to further unveil the mechanism of trade linkages and its implications for the rural credit market.

In this section, we present the empirical testing of our theoretical framework. First, how trade is used to bring down the income of the farmer and subsequently, how trade is increasing the defaults on agricultural loans are empirically validated with the present survey data. Trade can reduce the income of the farmer through both the markets for inputs (namely, seeds, fertilizers and pesticides) and output (namely, potato).

Input market linkages and rural credit

As alluded to earlier, trader-money lenders use trade to pressurize farmers to buy seeds of potatoes from them[6]. Unless farmers succumb to this pressure, they may find it difficult to sell their potatoes at harvest since the native variety of seeds does not provide the desired quality potatoes. However, it increases the cost of cultivation as the expensive imported seeds demand higher consumption of fertilizers and pesticides. As money lenders are the only traders in the locality to sell seeds, fertilizers and pesticides, it gives rise to an oligopolistic market for inputs, where the sellers determine the prices at a high level. As a corollary, the net income as well as repayment capacity of farmers may be reduced. However, it is to be noted that since the input-output market is the same for all farmers in the locality irrespective of the source of borrowing, this higher cost of cultivation is applicable to everybody. In other words, irrespective of whether the farmer has a sales contract with the money lender or not, all farmers face higher cost of cultivation.

Output market linkages and rural credit

On the other hand, the output market linkages can work through two different channels. First, by fixing the price of potato at a lower level than the market price; and second, by inducing immediate sale of potatoes when the prices are low. A comparison of wholesale price of potato with the price reported by farmers brings out the extent of price mark up money lenders take through lower prices offered to farmers (Table IV)[7]. This price offered at the local market is fixed by money lender-trader nexus as all the respondents of the present survey reported that they came to know about the price of potato from this nexus. This undervaluation of the crop produce reduces the income of farmers and as a corollary decreases the repayment capacity. However, this is also a general factor which is applicable to all farmers irrespective of whether they have a sales contract with the money

lenders or not because the prices faced by all farmers in a particular locality is the same at any point in time.

Generally, immediately after the harvest, price of any crop produce tends to be low due to abundant supply. Thus, inducing farmers to sell potatoes immediately after sale through the execution of sales contract is a way to reduce the income and repayment capacity of farmers. To empirically validate this point, the study tested the hypothesis that trade linkages do not induce immediate sale of potatoes by farmers (Table V). The results show that trade linkages significantly determine the immediate sale of potatoes, thus, validating the argument that immediate sale of potatoes through the execution of sales contract reduces the repayment capacity of farmers.

Thus, from this section, the study takes forward the argument that trade-loan nexus reduces the repayment capacity of borrowers through higher cost of cultivation, lower farm-gate prices and immediate execution of sales contract when the price is low. This validates our theoretical framework according to which money lenders squeeze the income/profit of farmers through trade (namely, execution of sales contract at a low price immediately after the harvest) to maximize their own profits.

Further, this reduced repayment capacity could induce higher loan defaults among the farmers, which has implications for the functioning of rural credit market. The defaults make formal sector more risk averse and induce them to refrain from lending which decreases the share of formal bank lending in the rural credit market. According to our theoretical framework, by reducing the market share of banks, money lenders can maximize their own profit. Accordingly, the next section deals with the relationship between trade-loan nexus and loan defaults.

Trade linkages and farmers' loan defaults

Interestingly, the results of the previous section lead us to a much broader and important hypothesis, i.e., trade linkages are not used as a strategy to induce more default in the local economy. Table VI provides the empirical evidence in this regard.

It is evident that sales to retailers and wholesalers, who act as money lenders is a significant determinant of the amount of default in the rural economy, though at the 10 percent level. This suggests that we cannot completely rule out the negative impact of

Prices	March 2015	April 2015
Average wholesale minimum	373	437
Average wholesale maximum	393	457
Average reported farm gate	256	252

Table IV.
Comparison of
wholesale price with
the farm-gate price
(Rs./quintal)

Independent variables	Coefficients	t-statistic
Average price of potato	-0.0875	(-1.72)***
Sales to money lenders	9.5440	(2.09)**
Land linkages	-7.8099	(-1.69)***
Weighted average interest rate	1.4254	(0.18)
Intercept	67.7371	(9.24)*

Notes: Dependent variable = immediate sale of potatoes. Number of observations = 192. *F*-statistic (probability): 2.34 (0.0565)**; *R*²: 0.0477, adjusted *R*²: 0.0274. *, **, ***Significant at the 1, 5 and 10 percent levels, respectively

Table V.
Determinants of
distress sale of
potatoes – cross-
section regression
results

sales contracts on defaults in the economy. However, this may require different explanations in the context of both formal and informal markets. As sales contract reduces the repayment capacity of farmers, in the formal credit market, its impact is straightforward. In contrast, in the informal credit market as selling produce to money lenders as part of a sales contract, is basically the repayment of loan obligation of farmers, it leads to default in a different way, i.e., the undervaluation of the crop produce. The undervaluation of the produce is high to ensure that in the case of many farmers that even if they sell their entire produce they will not be able to completely repay the principal and interest obligations of the loan.

Thus, it validates the theoretical framework that apart from high interest rates as pointed out by Bhaduri (1977), trade-loan nexus is also used to induce default in the rural economy. This result is particularly important from two viewpoints. It allows the money lender to claim more money from farmers who have borrowed from them through the accumulation of interest rates which are set at very high levels. It helps the money lender to knit a debt trap for the farmer to keep him under his control. Further, in the present survey, almost one-third of those farmers, who are financially indebted only to the formal sector, have trade linkages with money lenders, thus, making them economically vulnerable. Thus, default induced by trade-loan nexus not only increases defaults among informal sector borrowers but also among formal sector borrowers. This may be beneficial for money lenders as the formal sector is reluctant to sanction further loans in case of default. Thus, this may expand space for money lenders in the rural credit market enabling them to recapture the market share which they had previously lost to KCC. Thus, as pointed out by Bhaduri (1977), inducing defaults is not only for accumulation of more wealth by appropriating the property of the borrower, but also for expanding the market share in the rural credit market.

7. Conclusion

The present study examined the relationship between money lenders and farmers despite the penetration of formal sectors of finance and the Government subsidized credit scheme, the KCC in India. Farmers' trade links with money lenders in the inputs and output markets accentuate their economic vulnerability. Under this framework of trade-loan nexus, two characteristics of loans from money lenders become prominent: first it becomes double edged, with high interest rates on the one side and reduced repayment capacity of farmers on the other. Second, economic vulnerability among farmers becomes more broad based, by ensuring economic vulnerability of not only farmers who are borrowers of money lenders but also farmers who have not taken loans from money lenders.

Thus, loans from money lenders are instrumental in pushing the farmer again to money lenders in the medium to long term, despite possessing KCC. If money lenders in their multi-guise control the market for farming inputs as well as crop produce, it is difficult to eliminate their bad

Independent variables	Coefficients	t-statistic
Sales to retailers	0.8333	1.80***
Sales to wholesalers	0.7708	1.78***
Sales to money lenders	0.6536	1.50
Dependency ratio	-1.2851	-2.14**
Housing	0.1302	2.74*
Intercept	9.9337	18.83*

Notes: Dependent variable = log amount of default. Number of observations = 191. *F*-statistic (probability): 3.25(0.01)*, R^2 : 0.0807, adjusted R^2 : 0.0559. Dependent variable is a continuous variable. Dependency ratio has been calculated as a ratio of total owned land to total number of family members. *, **, ***Significant at the 1, 5 and 10 percent levels, respectively

Table VI.
Determinants of
default among
farmers – cross-
section regression
results

impact on farmers. Thus, from a policy point of view, the trade-loan nexus may have to be broken in the rural economy through appropriate interventions. Organizing farmers into quasi-formal platforms such as farmers' club/cooperatives and developing alternate market avenues for the crop produce through it may strengthen farmers' bargaining power in the local economy.

Notes

1. Institutes of Manu or ordinances of Manu are the Hindu laws which originate from the ancient logical text known as *Manusmriti*. This text was translated into English during the British Colonial period to frame the Hindu laws.
2. Ryot here means the borrower farmer.
3. It is to be noted here that in the case of output, retail price faced by farmers (farm-gate price) is lower than the wholesale price at the time of harvest.
4. Land dependency ratio has been calculated as a ratio of total owned land to total number of family members.
5. Studies such as Bhaduri (1977) and Swain (2001) also discuss about the non-marketable securities accepted by the informal sector lenders for extending loans.
6. The anecdotal evidence from the study area suggests that the storage of good quality potatoes for seeds requires stronger cooling conditions than which is presently available in the different cold storages of the study area. As many of the cold storages are also owned either by trader-money lenders themselves or by their relatives and friends, they do not take any initiative to develop cold storages suitable for seeds in the study area. Thus, with the lack of storage facility suitable for seeds, farmers are compelled to purchase expensive potato seeds from the trader-money lenders. Yet, some farmers are keeping their potatoes in ordinary storages for the purpose of seeds, which usually affect the quality of the crop produce. Further, anecdotal evidence suggests that if the cold storage owners come to know that farmers have kept potatoes for the purpose of seeds in their cold storage, they will use all means to bring down the quality of those potatoes.
7. Farm-gate prices are always lower than wholesale market prices as the middlemen also seek normal profit out of transporting and trading of potatoes. However, very low farm-gate prices reported by some of the farmers as compared to wholesale price may be indicating to an extraordinary profit earned by middlemen in the rural areas. Data on wholesale price of potato were sourced from the website www.agmarknet.dac.gov.in on May 11, 2016.

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