

**POLITICAL ECONOMY OF SUICIDE:
FINANCIAL REFORMS, CREDIT CRUNCHES
AND FARMER SUICIDES IN INDIA**

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ABSTRACT

Over 250,000 farmers have committed suicide in India since the mid-1990s. Studies – both case studies of states and at the individual-level - attribute these deaths to credit crunches in the agrarian sector and increased debt burden among farmers. Most of the farm suicides have, however, taken place in five of India's 28 states, suggesting that adverse financial circumstances affected farmers only in some states. Why did mounting debt and credit crunches affect farmers only in some states? This paper offers an answer by relating farm suicides to the financial reforms the country undertook since the 1990s. Using an instrumental variables approach, it shows how increased competition in the banking sector diverted lending away from agriculture to create dire economic conditions that facilitated farm suicides in some Indian states.

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INTRODUCTION

Several developing countries have reformed their banking sector in the past few decades by ceding greater autonomy to banks, privatizing nationalized banks and allowing the entry of foreign banks. Such reforms are associated with higher economic growth (Goldsmith, 1969; McKinnon, 1973; Shaw, 1973). The liberalization of the financial sector, it is argued, facilitates the migration of funds to the best user and, thereby, accelerates economic growth and improves economic performance (Goldsmith, 1969). Besides the allocation of money, such bank reforms are expected to contribute to economic growth in other ways too - via better mobilization of savings, management of risks, identification of promising businesses, efficient management, etc. (Bencivenga & Smith, 1991; Greenwood & Jovanovic, 1990; Levine, 1997, 1998; Roubini & Sala-i-Martin, 1995).

Empirical studies of bank reforms confirm some of these expectations. Using data from 80 countries, King & Levine (1993) find that developments in the banking sector are strongly associated with accumulation and efficient use of capital and real per capita GDP growth. Other cross-national studies have come to similar conclusions about the positive relation between bank reforms and growth, per capita GDP and productivity growth (Beck, Levine, & Loayza, 2000; Odedokun, 1996; Roubini & Sala-i-Martin, 1995; Xu, 2000). Cross-national studies further point out that privatization of banks leads

to increased profitability, efficiency and overall economic growth, while state interference in banking is associated with slower economic growth and corruption (Barth, Caprio Jr., & Levine, 2004; Bonin, Hasan, & Wachtel, 2005; Clarke, Cull, & Shirley, 2005; La Porta, Lopez-De-Silanes, & Shleifer, 2002; Megginson, 2005). In a study of developing economies, Fries & Taci (2002) report that the presence of foreign banks has led to an expansion in customer loans. In the United States, per capita growth rates increased and the quality of lending to customers improved when states relaxed interstate branching restrictions (Jayaratne & Strahan, 1996). In a comparative study of the US, Brazil, and Mexico, Haber (1991) finds that industries in the US, and to a lesser extent in Brazil, flourished when liberalized financial markets allowed firms to mobilize resources easily. Hao (2006) finds that bank reforms boosted China's economic growth by mobilizing household savings and helping firms shift their reliance from state budget to bank loans. In India, the competition that bank reforms ushered in has augmented profits and enhanced the performance of banks, including those of the public sector banks (Bhaumik & Dimova, 2003).

However, studies also suggest that the consequences of bank reforms are not all positive. For instance, Greenwood & Jovanovic (1990) argue that even when reforms in banking lead to overall economic growth, income disparities between the rich and poor will widen initially. Studies further point out that the influence of bank reforms on overall long-term economic growth varies from country to country depending on the specific nature of reform (De Gregorio & Guidotti, 1995; Demetriades & Hussein, 1996; Rioja & Valev, 2004). Pointing to the Latin American experiences in the 1970s and 1980s, Demetriades & Hussein (1996) argue that banks, when they expect government bailouts, may lend in excessive and injudicious ways that could lead to inefficiencies and reduction in growth. Studies also point to other unanticipated consequences. Given the lack of experience, banks in the post-Soviet countries have not been successful in identifying promising firms and allocating resources to them independently (Caprio Jr. & Levine, 1994). Liang (2009) finds that bank reforms in China have led to uneven development of financial institutions, leaving banking in rural areas grossly underdeveloped. For instance, bank credit in the rural areas - where around 60 percent of the Chinese reside - was only around 10 percent of all loans. Similarly, Narayana (2000) finds that bank reforms in India have led private banks to expand in the affluent regions of the country at the expense of poorer regions to "skim the cream" without investing in the long-term development.

Taken together, these studies present a more nuanced picture of bank reforms than what the theoretical literature on financial sector reforms suggests. In particular, three lessons with significant implications for developing countries can be drawn from these studies: first, the consequences of bank reforms are not *a priori* known or certain. Second, not all the consequences of such reforms are desirable. Third, and importantly, if similar reforms produce variable outcomes in different countries, the structure of a country's economy may shape the consequences of bank reforms as much as the reforms themselves.

This paper presents the case of farmer suicides in India as an illustration that makes clear these three lessons and to demonstrate how bank reforms interacts with the structure of the economy to produce unanticipated and undesirable consequences. It argues that the higher instance of suicides among farmers in India in the recent years is an

unintended and unanticipated consequence of bank reforms that the country undertook since the early-1990s. It shows how agriculture's share in the national economy has declined in the recent decades, prompting banks to lend more to other productive economic sectors. This diversion of loans from agriculture to other sectors happened more in states where banking has become more competitive with the influx of foreign and new generation private banks. Using data on banking and suicides, the paper also shows how in such states more farmers rely on private moneylenders, have extensive debt, and commit suicides. The paper proceeds as follows: in the next section, the main argument about bank reforms in India and several observable implications of the argument are presented. I then test these implications using time-series and cross-sectional data from India. To find out how bank reforms contributed to farmer suicides in the country, I employ a two-stage least square estimation method to relate competition among banks to reduced lending to farmers, which, in turn, is related to high farm suicide rates. In the concluding discussion, I note some implications of this study, including how important it is for developing countries to examine their economic structures as they liberalize their banking.

FARM SUICIDES IN INDIA

Over 250,000 farmers in India have committed suicide since the mid-1990s.ⁱ These deaths have pushed up the suicide rate among the country's farming population. For instance, in a decade between 1995 - when India started classifying suicides according to the occupation of the deceased - and 2005, the country witnessed a 60% increase in such deaths among farmers. Such suicides did not take place in a few years due to poor monsoon rain or crop failure; they happened every year, in the thousands (Fig. 1). But, most of these deaths took place in five of India's 28 states. Andhra Pradesh, Chhattisgarh, Karnataka, Kerala and Maharashtra accounted for about two-thirds of all farm suicides in the country since the mid-1990s. What has led Indian farmers, in such large numbers, to take their lives since the mid-1990s? And, why did more farmers commit suicide in some Indian states?

FIGURE 1. FARMER SUICIDES OVER THE YEARS



Source: National Crime Records Bureau (NCRB)

WHAT WE KNOW

Several studies, including government commissions, have examined the causes of farm suicides in the country. One factor often identified in these studies as the primary or proximate cause for farmer suicides is the heavy debt burden among rural households (Assadi, 2000; Dandekar et al., 2005; GoAP, 2004; Harper 2011; Jeromi, 2007; Mishra, 2006a, 2006b; Mitra & Shroff, 2007; Mohanty, 2005; Mohanty & Shroff, 2004; Nagaraj, 2008; Rao & Suri, 2006; Sarma, 2004; Sidhu & Jaijee 2011). And, at the individual-level, careful in-depth studies among these show that the farmers who committed suicide had, on average, more debt. For instance, Dandekar et al. (2005: 30) finds that farm households where a member had committed suicide had been “starved of credit — mostly institutional credit... turn to the moneylenders for survival and then fall into the debt trap.” Inability to repay such debts was what forced farmers to take their lives. Studies, however, offer various reasons for high levels of indebtedness among farmers. These reasons include rising cost of cultivation (Mitra & Shroff, 2007), crop failures (Dandekar et al., 2005; Mohanty & Shroff, 2004), decline in institutional credit and dependence on non-institutional sources for credit (Mishra, 2006a, 2006b), unstable farm income (Mishra 2012), water scarcity (Taylor 2013), and trade liberalization (Jeromi, 2007; Mishra, 2006b; Mohanakumar & Sharma, 2006; Sridhar, 2006).

While these studies inform us of the various factors that led to farmer suicides, they also raise an important question: if rural indebtedness is the proximate cause that prompted many farmers to commit suicide, then why were farmers committing suicide only in some states? Suicide rates among farmers were high in states such as Andhra Pradesh, Chhattisgarh, Karnataka, Kerala and Maharashtra, but very low in states such as Bihar, Jharkhand and Punjab. Were farmers in such states not burdened by mounting debts? Was rural debt affecting farmers only some states? If so, why were farmers in some states more prone to debt?

Meanwhile, studies on the banking sector have noted that since the liberalization of the financial sector, banks have reduced the size of their non-performing assets and become more competitive (Bhattacharyya, Lovell, & Sahay, 1997; Bhaumik & Dimova, 2003; Kumbhakar & Sarkar, 2003; Mohan, 2002; Saha & Ravisankar, 2000; Sathye, 2003). Studies have also noted that in the post-reform period, banks have been withdrawing from the rural sector and lending less to agriculture (Chavan, 2005a, 2005b; Ramachandran & Swaminathan, 2005). How these changes in the banking sector have contributed to farm suicides has, to the best of my knowledge, not yet been studied systematically.

THE ARGUMENT

This paper argues that the increase in suicides among Indian farmers is an unanticipated consequence of the bank reforms the country undertook since the early-1990s. In particular, the entry of foreign and new generation private banks has made banking in India competitive and led to fewer loans to agriculture and farmers. With increased competition, banks saw lending to the farm sector as unprofitable and unreliable. This drop in institutional lending forced farmers to borrow from private moneylenders at exorbitant interest rates and increased farm indebtedness. When faced with heavier debt

burden that they could not repay, many farmers in India took their lives. This, I argue, happened more in some states – particularly, in states where banking became more competitive with the increased presence of foreign and private banks.

To better understand the relations between banking and high levels of farm suicides in India, it is however important to recognize the economic context within which the banks in the country operate.

From Government Control to Competitive Credit Markets

In the two decades prior to the 1990s, agriculture held a prime position for banks in India. This period, as we shall see shortly, coincided with greater government control over banking in the country. State credit cooperatives and regional rural banks had lent to agriculture and farmers even prior to this period of government control. The Reserve Bank of India (RBI) – India’s central bank and a key institution in the country’s economic development – supported this credit extension to agriculture via medium- and long-term loans to these institutions to cover such lending (Balachandran, 1998; RBI, 2005). Yet, this institutional lending fell short of the demand in the agricultural sector (RBI, 1969). Most farmers in post-independence India, therefore, continued to rely on non-institutional sources - such as moneylenders, landlords and relatives - for credit.

The dependence on non-institutional sources for farm loans waned only in the 1970s and 1980s, following a series of bank nationalizations in the late-1960s and early-1980s (Table 1). Though nationalization, government took direct control of some 20 commercial banks. In this era of “social control” over financial institutions, commercial banks were forced to extend credit to agriculture on a significant scale (RBI, 2005). To facilitate greater access to banking among farmers, the RBI imposed a 4:1 branch policy, which required banks to open four rural offices for every urban office the banks opened (Burgess & Pande, 2005; Burgess, Pande, & Wong, 2005). Further, commercial banks were directed to lend 40% of their deposits to sectors such as agriculture and rural industries that were identified as “priority sectors”. Consequently, some 30,000 bank offices were opened in rural areas. The portion of bank offices in rural areas rose from 22.4% in the late-1960s to 56% by 1984, and the share of agricultural loans increased from 5.2% to 15.3% (Burgess & Pande, 2005; Ketkar, 1993; Ketkar & Ketkar, 1992). These measures ensured that, by the 1990s, farmers relied more on banks than moneylenders and landlords for agricultural loans (Table 1).

TABLE 1. SOURCES OF RURAL CREDIT

Source of Credit	1951	1961	1971	1981	1991
Institutional	8.8	15.8	31.7	63.2	66.3
Non-institutional	91.2	84	68.3	36.8	30.6

Source: Shah et. al. (2007, p. 1355)

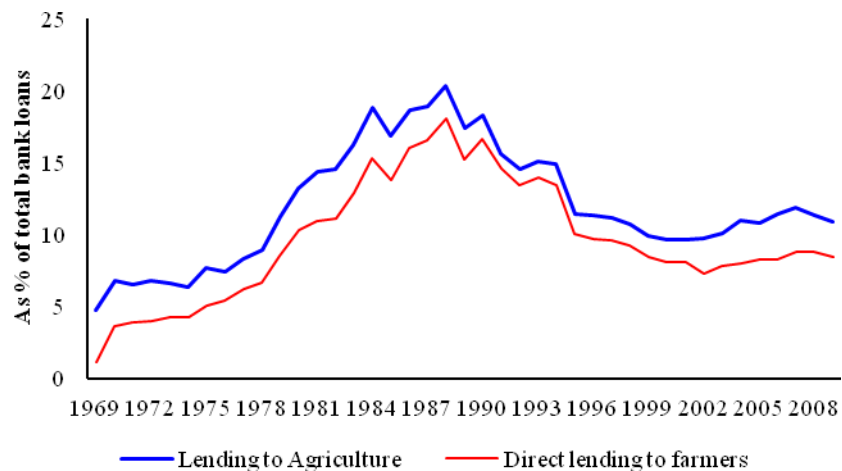
This government intervention in the financial sector to direct credit to agriculture, however, had negative consequences. Many banks became unprofitable. Extension of banking services to rural areas had increased operating costs and inflated the size of non-

performing assets. And, selective credit controls had reduced the productivity of their investments (GoI, 1991; Joshi & Little, 1996; Ketkar, 1993; Kumbhakar & Sarkar, 2003).

Recognizing the inefficiencies of “social control” and the need to make banking in the country more competitive (GoI, 1991), the Indian government started relaxing its control over banks in the 1990s. The measures the government took to liberalize banking included reducing its equity in public sector banks, ending the program that insisted banks to open rural offices, easing the entry of private and foreign banks, and giving banks greater autonomy to determine interest rates, investment and credit policies. Several studies have shown that such policies have made banks more efficient and competitive, both by reducing the size of non-performing assets and improving their performance (Bhattacharyya, Lovell, & Sahay, 1997; Bhaumik & Dimova, 2003; Kumbhakar & Sarkar, 2003; Mohan, 2002; Saha & Ravisankar, 2000; Sathye, 2003).

A significant concurrent transformation that took place in the country was the decline of agriculture as the prominent sector in the national economy. In the late-1960s, when commercial banks were being nationalized, agriculture accounted for over 40% of the country's GDP. By the time liberal bank reforms were being implemented in the 1990s, the sector's contribution had dropped to 25%. It would slip even more - to less than 15% by the 2000s. Further, when compared to the industrial and services sectors, growth in the farm-related economic activities in the past two decades was slower - on average, four to five percentage points less - and erratic - with a few years of contraction in a decade - to attract bank lending.

FIGURE 2. BANK LOANS TO AGRICULTURE AND FARMERS, 1969-2008



Source: Reserve Bank of India

The cumulative effect of greater competition in banking and the fall of agriculture as a dynamic economic sector was a decline in bank lending to agriculture. With greater autonomy on credit decisions in the post-reform period, banks were free to direct loans to economic enterprises they deemed more profitable. Agriculture was becoming

increasingly less attractive to invest in. Lending to farmers and agriculture, consequently, halved in the 1990s from its peak in the 1980s (Fig. 2).

RESEARCH DESIGN AND HYPOTHESES

In this context of liberal bank reforms and declining economic significance of agriculture, this paper advances a series of testable hypotheses that detail how competitive banking contributed to farm suicides. It does so by exploiting state-level variation in farm suicide rates in India. The reason for why most of farm suicides took place in five of India's 28 states, I argue, was the increased competition among banks in these states and, the consequent, fewer loans to farmers.

Competitive banks and credit crunches for farmers

The first hypothesis (H1) this paper advances, therefore, is that *direct bank lending to farmers was lower in the states where foreign and private banks had greater presence*. Several studies have pointed out that banking in the post-reform period has become more competitive and efficient (Bhattacharyya et al., 1997; Bhaumik & Dimova, 2003; Kumbhakar & Sarkar, 2003; Mohan, 2002; Saha & Ravisankar, 2000; Sathye, 2003; Shirai & Rajasekaran, 2001). To become more efficient, banks have followed various strategies. Narayana (2000), for instance, points out that private banks, in the post-liberalization era, have expanded in the country's affluent regions to "skim the cream". Other studies show that banks, in order to be more efficient, have reduced their presence in rural areas (Chavan, 2005a, 2005b; Ramachandran & Swaminathan, 2005). My first hypothesis is consistent with these studies. I argue that competition among banks reduced direct lending to farmers and this should be most apparent in states where foreign and private banks had a significant presence. Foreign and private banks were more likely to adopt strategies to reduce inefficiencies and become more profitable. Studies show that such banks were the leaders in the move towards efficiency (Bhaumik & Dimova, 2003; Shirai & Rajasekaran, 2001).

To confirm that the view I hold regarding competitive banking and reduced lending to agriculture is true, I posit two additional related hypotheses. The second hypothesis (H2) examines lending to agriculture as a "priority sector". Under the RBI guidelines, banks in India are required to extend a portion of their loans to particular sectors, including agriculture, for overall economic development. Public and private sector Indian banks are expected to lend 40% of their total credit to such priority sectors; foreign banks have to lend 32% of their credit. I hypothesize that *lending to agriculture, as part of priority sector lending, was lower in states with greater presence of private and foreign banks than in states where such banks had negligible presence*.

A third hypothesis (H3) examines how, despite the RBI guidelines on priority sector lending, banks diverted lending to activities other than agriculture. This is because the priority sectors include, besides agriculture, other economic activities such as small-scale industries and housing. When compared to agriculture, banks are likely to see returns to lending to small industries and housing as more certain and profitable. Therefore, I argue that *in states with more foreign and private banks, credit to small-scale industries and housing under priority sector lending was higher*.

The arguments and hypotheses had so far taken the presence of foreign and private banks as an indicator of competitiveness in the banking sector. This is based on the premise that such banks, rather than public sector banks, were more likely to be sensitive to concerns of efficiency and profitability and lend less to agriculture and farmers. Studies, however, show that after an initial phase in the 1990s, public sector banks too have become more efficient (Bhaumik & Dimova, 2003; Shirai & Rajasekaran, 2001). Therefore, I posit that even *in states with greater presence of public national banks, lending to farmers was lower* (H4). Only banks set up to finance the rural areas – such as the regional rural banks and cooperative banks – would have lent more to farmers.

Competitive banks and rural indebtedness

The fifth hypothesis (H5) links increased rural indebtedness to competition among banks. Farmers, when denied low-interest agricultural bank loans, turned to private moneylenders for credit. While banks charged concessionary interest rates for the agricultural loans they extended to farmers – usually under 10% - private moneylenders demanded from farmers monthly interest rates ranging between 25% and 45%.ⁱⁱ Higher interests on such private loans cut profitability and made repayments difficult, forcing some farm households to borrow more to repay earlier loans. However, the factor that pushed farmers to seek such private loans - competition in the banking sector - was variable across Indian states, as posited earlier. Hence, I argue that it is *in states where foreign and private banks had significant presence that more farm households had to seek loans from private moneylenders and rural indebtedness was higher*. In short, competition among banks caused the credit crunch that farmers in some Indian states experienced.

Fewer bank loans and farmer suicides

A host of psychological, familial, social and cultural factors may affect an individual's decision to commit suicide. Therefore, there are significant inferential problems in attributing causation to individual suicides. Instead, I focus on state-level suicide rates among farmers. I argue that the high incidence of farmer suicides in some Indian states and their absence in others point out that state-level structural attributes - rather than personal or societal factors – influenced farm suicides in the country. The structural factor I identify that led to higher farm suicide rates in some states is the low levels of institutional lending to farmers in these states. Therefore, the sixth hypothesis (H6), I posit, is that *farm suicide rates were higher in states where bank lending to farmers was low*.

Instrumental variables approach

My view is that bank lending to farmers that affected farm suicide rates was not a random occurrence, but a function of the level of competition among banks. The strategy I adopted to approximate this view was an instrumental variables approach. The approach also helped address concerns about bias in the estimates due to omitted predictors and

potential endogeneity.ⁱⁱⁱ The primary instrument, COMPETITIVEBANKS, I used was the share of deposits foreign and private banks held. Foreign and private banks were chosen because, following the bank reforms of the 1990s, such banks led the move towards efficiency and competition with public banks following suit (Bhaumik & Dimova, 2003; Shirai & Rajasekaran, 2001). The expectation from the model, therefore, is that as COMPETITIVEBANKS in Indian states increased, loans to farmers (LOANS) declined.

Along with COMPETITIVEBANKS, I used a series of instruments that can be expected to affect bank lending to farmers. These include: RURALBANKS that measured the share of deposits rural banks had. I expected rural banks to be guided not as much by efficiency concerns as by their stated policy of financing the rural agrarian sector. Therefore, lending to farmers should be better in states with higher presence of RURALBANKS. Similar expectations were held regarding COOPERATIVES - the number of cooperative societies per 100,000 people - since farmers formed a large number of such cooperatives in India.^{iv} However, NATIONALBANKS, the national banks' share of deposits, were expected to have a negative impact on lending to farmers as such bank were increasingly becoming as competitive as foreign and private banks (Bhaumik & Dimova, 2003).

Other factors included in the model were SMALL&MARGINAL FARMERS (the proportion of small and marginal farmers in the state), IRRIGATEDLAND (the percentage of farmlands that was irrigated), ARGIGROWTH (annual agricultural growth rate), SIZEOFINDUSTRY and SIZEOFSERVICES (the shares of the industrial and the services sectors in the state's GDP).^v SMALL&MARGINAL FARMERS were included since farmers with fewer than two hectares of land, often lacking collateral, were the least likely to secure bank loans. Irrigation, on the other hand, should increase profitability in agriculture. Therefore, bank lending to farmers in states with more irrigated lands should have been greater. Robust growth in the agricultural sector would also have attracted more farm loans. Therefore, I expected a positive relation between ARGIGROWTH and LOANS. Similarly, I expected banks to have lent more to the industrial and services sectors in states where these sectors had a large presence. Consequently, a negative relation should hold between SIZEOFINDUSTRY and SIZEOFSERVICES, and LOANS.

Utilizing such instruments, the endogenous model predicted how much loans banks extended to farmers. In the second stage, the model estimated how the decline in institutional lending is related to farm suicide rates in Indian states.

I summarize the relationships we posit thus:

$$\begin{aligned} \text{First stage: } \text{LOANS} = & b_0 + b_1\text{COMPETITIVEBANKS} + b_2\text{RURALBANKS} \\ & + b_3\text{NATIONALBANKS} + b_4\text{COOPERATIVES} + b_5\text{SIZEOFINDUSTRY} + \\ & b_6\text{SIZEOFSERVICES} + b_7\text{ARGIGROWTH} + b_8\text{AGRIPOP} + \\ & b_9\text{SMALL\&MARGINAL FARMERS} + b_{10}\text{IRRIGATEDLAND} + e \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Second stage: } \text{SUICIDERATE} = & b_0 + b_1\text{LOANS} + b_2\text{COTTON} \\ & \text{PRODUCTIVITY} + b_3\text{COTTON PRICE} + b_4\text{AGRISPENDING} + b_5\text{KISAN} \\ & \text{CARDS} + e \end{aligned} \quad (2)$$

SUICIDERATE, in the second stage (equation 2), is the number of farmer suicides per 100,000 farmers in the state. COTTON PRODUCTIVITY is the percentage change in yield of cotton on previous year. COTTON PRICE is the percentage change in the market price of cotton on previous year. AGRISPENDING is the state government's spending in agriculture as a percentage of the state's GDP. And, KISAN CARDS is the percentage of farm households in the state that had Kisan Credit Cards. These cards were a policy initiative that allowed farmers to reschedule repayment of bank loans if, for instance, crops failed.

I included AGRISPENDING and KISAN CARDS in the model to examine whether the way money was spent on agriculture contributed to farm suicide rates in the states. AGRISPENDING is an aggregate measure of governmental spending on agriculture that included, for instance, subsidies on fertilizers, support prices for agricultural produce, etc. As such, AGRISPENDING could be seen as estimating the diffused effect of government spending on the welfare of farmers. KISAN CARDS, on the other hand, is a measure of targeted financial resources made available directly to farmers. Given that my argument places importance on the availability of money to farmers, these two variables examine the distinct effects of general and targeted spending of money on farm suicide rates.

Another factor often linked to farm-related suicides in India is the cultivation of cotton (Gruère & Sengupta, 2011; Mishra, 2006a; Mitra & Shroff, 2007; Prasad, 1999). These studies note that the market price and profitability of the crop in the 1990s declined and, at the same time, the cost of its cultivation - especially with the introduction of genetically modified varieties - increased. The debt burden that forced many farmers to commit suicide bloated due this mismatch between the cost of cultivation and price of the produce. To examine whether the cultivation of cotton systematically contributed to farmer suicides in the country, I included two variables - COTTON PRODUCTIVITY and COTTON PRICE - in my model.

Taken together, the two equations of the endogenous model I used approximate the hypothesized relations among bank competition, reduced lending to farmers, and high incidence of farm suicides.

The data for the analyses were drawn from four sources: i) the bank-related data such as lending to farmers, bank competitiveness, etc. were sourced from the RBI's Handbook of Statistics on Indian Economy; ii) I relied on Census reports to gather demographic data; iii) data on agricultural prices, productivity, irrigation, etc. were collected from the Ministry of Agriculture; and, iv) the data on suicides were sourced from National Crime Records Bureau (NCRB) annual reports. The NCRB data on suicides are the most systematic state-level data on suicides that were available. These data in our models relate the time period 2000 to 2007 and cover 18 large states. Smaller states in India's mountainous northeast are excluded from our study.

FINDINGS

The results from the statistical analyses provide overwhelming evidence in support of the thesis that farmers committed suicide in greater numbers in Indian states where competition among banks had reduced bank loans to them.

From the estimates of the ordinary least squares (OLS) models (Table 2), we know that in states where foreign and private banks had substantial presence, bank lending to farmers was low. The negative and statistically significant relation between COMPETITIVEBANKS and loans to farmers reveals this (Column 1). In reality this meant that in states such as Bihar, Haryana and Punjab – where foreign and private banks held less than 1% of the total deposits - a fifth to a quarter of all bank loans went directly to farmers. In contrast, in Kerala and Maharashtra, where such banks held 35%-40% of the deposits, fewer than 3% of lending benefitted the farmers. National banks too lent less to farmers, suggesting that ownership of banks did not matter in lending to agriculture. This is consistent with earlier studies which found that, in the post-reform period, banks – both private and public - have become competitive (Bhaumik & Dimova, 2003). One thing is therefore clear: in states with a competitive financial sector, bank lending to farmers was meager. Only in states with more cooperatives or substantial presence of rural banks was lending to farmers greater. This is unsurprising as these institutions were set in place to direct credit to farmers and rural enterprises.

Further evidence of how competition among banks reduced lending to agriculture comes from bank lending to priority sectors. Take, for example, the coefficient of COMPETITIVEBANKS in column 2 of Table 2. The significant negative coefficient reveals that agriculture's share in priority lending was smaller in states where the presence of foreign and private banks was greater. In fact, we find that such banks lent more to small industries and housing under priority lending (Column 3). Read together, these results suggest that in states with competitive banking, resources were diverted away from agriculture to other sectors of the economy that were deemed to yield more certain and higher returns.

Unsurprisingly, as the proportion of small and marginal farmers went up in states, banks lending to agriculture and direct lending to farmers declined. As noted in the previous section, such farmers, often with small plots of land, find it most difficult to secure bank loans in India. Cultivating smaller plots of land was also likely to be considered less profitable than larger farm holdings. Irrigation of farmlands, however, increased the chances of farmers securing bank loans since cultivation of such lands are, other things held constant, more profitable than cultivation on unirrigated lands. Other factors such as the size of the industrial or service sectors, annual growth in the agricultural sector or the size of the population dependent on it for livelihood did not affect bank loans to farmers. In states where the industrial sector dominated the economy, bank loans under priority lending to small industries and housing increased while credit to agriculture declined. As one would expect, in such cases, banks were directing financial resources to the more productive sector in the economy. A series of robustness checks involving additional measures did not change the results in the basic model. Therefore, growth rates in the industrial and services sectors (INDUSGROWTH and SERVGROWTH in Table 1), log of state's per capita GDP (GDPpc) and its population measured by the number of households (HH) were not significant factors in determining

banks' lending to agriculture. The models were estimated with year fixed effects. I could not implement the model with state effects since some of the population data from the census are invariant over time.

TABLE 2. COMPETITIVE BANKING AND CREDIT CRUNCHES IN AGRICULTURE

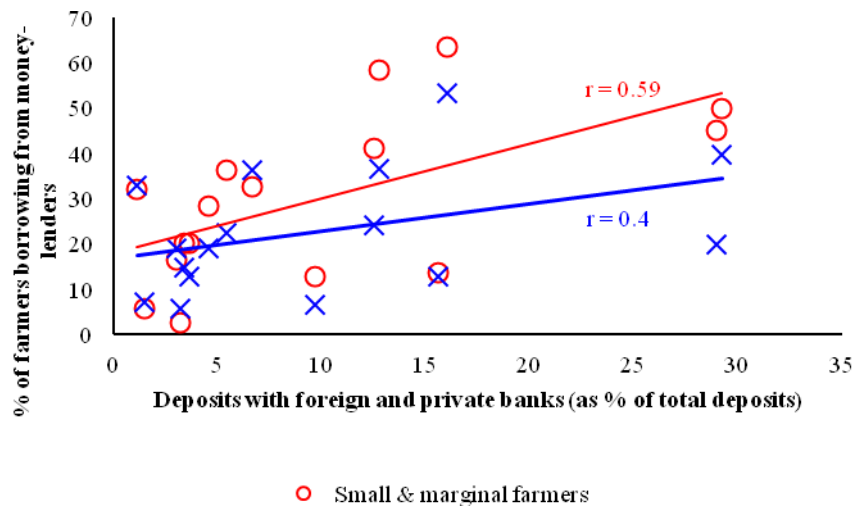
	Farmers (Total)	Agriculture (Priority)	SSI & Housing (Priority)
COMPETITIVEBANKS	-0.16** (.06)	-0.18** (0.06)	0.41*** (0.13)
RURALBANKS	0.68*** (0.18)	0.31 (0.24)	-0.8* (0.31)
NATIONALBANKS	-0.34*** (0.1)	-0.13 (0.1)	0.13 (0.12)
COOPERATIVES	1.02*** (0.23)	0.43** (0.21)	
SIZEOFINDUSTRY	0.13 (0.07)	-0.31*** (0.11)	0.23*** (0.09)
SIZEOFSERVICES	0.1 (0.06)	-0.02 (0.3)	-0.13 (0.16)
ARGIGROWTH	(0.004) (0.01)	-0.01 (0.02)	0.01 (0.03)
AGRIPOP	-0.11 (0.08)	-0.06 (0.15)	
IRRIGATEDLAND	0.18*** (0.01)	0.23*** (0.02)	
SMALL & MARGINAL FARMERS	-0.06** (0.022)	-0.25*** (0.03)	
INDUSGROWTH		0.004 (0.02)	-0.04 (0.03)
SERVGROWTH		-0.06 (0.07)	0.17 (0.1)
GDPpc		4.28 (2.96)	-0.25 (2.76)
HH		4.17 (2.74)	1.09 (1.62)
Year effects	YES	YES	YES
Constant	20.79*** (6.23)	-37.78 (48.29)	18.99 (44.99)
R ²	0.63	0.62	0.6

Sources: Census of India, 2001; Ministry of Agriculture; Reserve Bank of India.

Notes: N = 141. *** p < 0.01; **: p < 0.05; *: p < 0.1. Standard errors are in parentheses. The estimates are from standard cross-sectional time-series models, with panel-corrected standard errors, year fixed effects. Auto-correlation of the first order is corrected for

One general difficulty I faced in establishing the relation between competitive banking and rural indebtedness that led to farm suicides is that, unlike the data on banking and farm suicides that were available for each year, the data on indebtedness in India were not systematic. The National Sample Survey Organization conducts sample surveys only periodically – and, not annually - to gather socio-economic data from households. Therefore, I lacked annual data on rural indebtedness to see how these were related to bank competition over the years. Instead, I used the 2003 cross-sectional state-level data on indebtedness from the 59th round of the National Sample Survey (NSS) to examine whether competition among banks contributed to the heavy debt burden that farmers faced in some states. Given the small number of observations in these cross-sectional data, I used correlations to examine the relation between competitive banking and debt-levels in the states rather than standard regression methods.

FIGURE 3. COMPETITIVE CREDIT MARKETS AND RELIANCE ON PRIVATE MONEY LENDERS

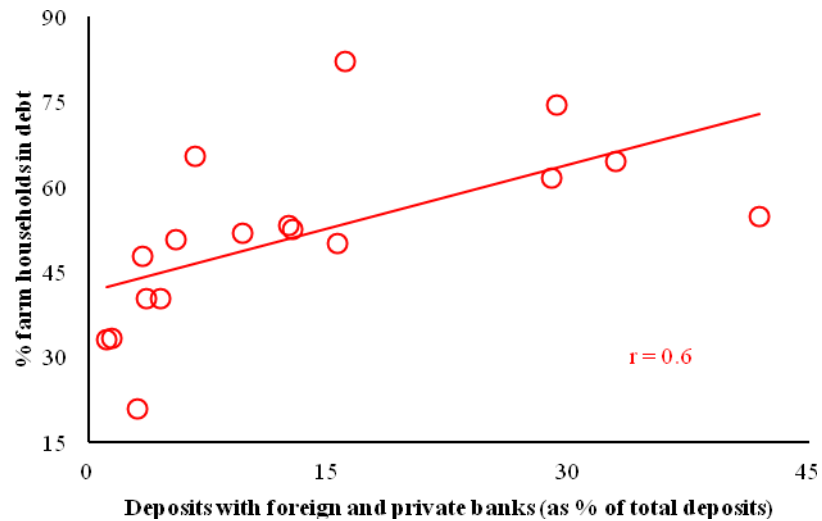


Sources: National Sample Survey 59th Round, Reserve Bank of India

The correlations suggest that competition among banks did contribute to increased reliance on private sources for loans and heightened rural indebtedness in India. Figure 3 shows how the presence of foreign and private banks related to greater dependence among farmers on private moneylenders in the states. The interest rates these moneylenders charged on their loans, as noted earlier, were exorbitantly higher than the interest the banks levied on agricultural loans. The dependence on moneylenders was even greater among small and marginal farmers with smaller plots of land to offer as collateral to secure bank loans (Fig. 3). What this suggests is the competition among banks has, by the turn of the century, reverted the sources of rural credit in some states to the situation prevalent in pre-bank nationalization India: most farmers in these states were now relying on non-institutional sources for credit.

Further, the data from the 2003 NSS also show greater levels of rural debt in states with competitive banking. In Figure 4, I related the level of debt among farming households in Indian states in 2003 to the presence of foreign and private banks for the previous year. It shows that more farm households were in debt in states that had greater presence of foreign or private banks.

FIGURE 4. COMPETITIVE CREDIT MARKETS AND RURAL INDEBTEDNESS



Sources: National Sample Survey 59th Round, Reserve Bank of India

These correlations suggest the crucial answer to why rural indebtedness, which is often cited in several studies as a proximate cause for farmer suicides in the country, affected only some Indian states. Rural debt was more pervasive - and farmers' dependence on private moneylenders was greater - in states that had competitive banking sectors.

Meanwhile, the results from the endogenous models show how competitive banking and decline in institutional lending to farmers were related to high incidence of farm suicides in India (Table 3). In states where bank loans were available to farmers, farm suicide rates were lower as the significant negative coefficient of LOANS shows. The broader import of this negative relation is that fewer bank loans created in some Indian states economically dire conditions that facilitated farm suicides. A policy measure that reduced suicides among farmers, however, was Kisan Credit Cards - it relaxed loan repayment requirements when farmers were in distress. Contrast this policy to increased governmental spending on agriculture. The allocation of more money to the agricultural sector was unrelated to farm suicide rates, suggesting that targeted policy measures such as the Kisan cards were more effective than increasing government spending on agriculture to reduce farmer deaths. These results are consistent across models. The first model (column 1) used a single instrument - presence of foreign and

private banks; and, has an F-statistic over 10, suggesting that the estimates are unbiased.

TABLE 3. COMPETITIVE CREDIT MARKETS, CREDIT CRUNCHES AND FARMER SUICIDES

PANEL A: Explaining farm suicides	(1)	(2)	(3)
LOANS	-0.34*** (0.06)	-0.38*** (0.07)	-0.14*** (0.03)
KISAN CARDS	-0.06** (0.03)	-0.13*** (0.04)	-0.04 (0.03)
AGRISPENDING	0.16 (0.17)	0.28 (0.11)	0.25 (0.68)
COTTON PRODUCTIVITY	0.002 (0.01)	0.001 (0.01)	-0.0003 (0.03)
COTTON PRICE	0.0002 (0.01)	-0.001 (0.01)	0.004 (0.01)
LITERACY	-		0.01 (0.02)
RICE PRICE		0.01 (0.01)	0.002 (0.01)
WHEAT PRICE		-0.01 (0.03)	-0.03 (0.02)
PANEL B: Estimates of bank lending to farmers			
COMPETITIVEBANKS	-0.27*** (0.04)	-0.26*** (0.04)	-0.35*** (0.05)
RURALBANKS			0.3** (0.15)
NATIONALBANKS			-0.4*** (0.07)
COOPERATIVES			1.1*** (0.3)
SIZEOFINDUSTRY			0.26 (0.79)
SIZEOFSERVICES			0.15 (0.87)
ARGIGROWTH			0.02 (0.02)
AGRIPOP			0.11 (0.08)
IRRIGATEDLAND			0.24 (0.02)
SMALL & MARGINAL FARMERS			-0.09*** (0.02)
F statistic	10.32	4.93	7.52
First-stage R ²	0.46	0.52	0.63
State effects	Yes	Yes	No
Year Effects	Yes	Yes	Yes

Sources of data: Census of India, 2001; Ministry of Agriculture; National Crime Records Bureau; Reserve Bank of India.

*Notes: N = 141. *** p < 0:01; **; p < 0:05; *: p < 0:1. Standard errors are in parentheses. Estimates are from two-stage least-squares models. Models 1 and 2 are estimated with state and year fixed effects. Model 3 has year fixed effects, but no state fixed effects since some demographic variables are constant over time. Panel A reports the estimates of the second state; Panel B lists estimates from the first stage*

There is, however, no evidence to suggest that the cultivation of a particular crop was related to suicides in India. For instance, I did not find systematic relation between cotton cultivation, which is often linked to farmer suicides in the country (Gruère & Sengupta, 2011; Mishra, 2006a; Mitra & Shroff, 2007; Prasad, 1999), and farm suicide rates. I used two variables – the annual change in the price and productivity of cotton that could push farmers further into or pull them out of debt – to examine relations between farm suicides and cotton cultivation. One reason for why there was no systematic relation between the crop and farm suicides could be that while a large number of cotton cultivators committed suicide in Andhra Pradesh and Maharashtra, the farmers who committed

suicide in states such as Kerala were not cotton farmers. Further, cotton was cultivated in some 10 other states that did not witness high incidence of farmer suicides. Similarly, I also did not find any systematic relation between the prices of rice and wheat and farmer suicides in the country (Column 2; Table 3). The reason for including such different crops were to see whether the cultivation of cash crops such as cotton – the price of which fluctuated to demand and supply – drove more farmers to suicide than food crops such as rice and wheat, where the government intervened via support price and procurement to stabilize prices. I found no systematic relation between cultivation of either these food crops or cotton cultivation and farm suicides in the country. These results were robust even when I included other confounding factors such as literacy rates that have been associated with suicide rates in India via the heightened unmet expectations increased literacy rates introduce in society (Halliburton, 1998). Column 3 reports results from an endogenous model with several instruments, approximating our equations 1 and 2. The results confirm our findings from Columns 1 and 2.

CONCLUSIONS

The sum of all the evidence I presented shows how competitive banks led to credit crunches for farmers in some Indian states that created permissive economic conditions for high incidence of farm suicides. The evidence also showed how competitive banks diverted financial resources away from agriculture to other sectors of the economy, led to pervasive rural debt and increased dependence on moneylenders in these states.

There are several implications of this study. I present four here. First, the results of this study suggest that simple policy interventions could have reduced the number of farmer suicides. Two policies that had a positive effect were the introduction of Kisan Credit Cards and irrigation. Credit cards allowed farmers both to secure loans at concessionary interest rates and defer their repayments when the crops were unprofitable. Unsurprisingly, states where more farmers had such cards witnessed fewer suicides. While credit cards to farmers may be an immediate policy intervention to stop more farmer suicides, a more suitable policy intervention is the irrigation of farmlands. The financial reforms the country undertook in the 1990s aimed to channel capital to more productive economic activities. Competition among banks was advancing that aim, albeit with ruinous consequences for farmers. Irrigation of farmlands - by reducing chances of crop failure, improving productivity and profitability - generates incentives for banks to offer loans to farmers. We saw that the banks were willing to lend more to farmers in areas where farms were irrigated. Now, a mere 35% of agricultural land in India is irrigated. Extending irrigation should make agriculture more productive in the country and lending to farmers more promising without making banks unprofitable.

A second implication is related to the structure of India's economy. The decline in bank lending in Indian states reflects the structural change the Indian economy underwent in the last few decades. As noted earlier, the once preeminent agricultural sector's share of the country GDP has declined sharply, over the decades, to under 15% now. Yet, for two-thirds of India's population, agriculture still provides employment – with some 59% depending on it as the principal means of livelihood. As other sectors of the economy become the engines of growth – the services sector now accounts for 57% of the country's GDP – we can expect financial resources to migrate from agriculture

even more. Unless the large segment of the population still dependent on agriculture can also migrate to other sectors, the continued decline in lending to agriculture does not bode well. To aid in such labor migration, the skill endowments of the population now dependent on agriculture have to be improved. The World Bank data show that tertiary school enrollment in the country now stands at a mere 18%. This is hardly suitable to move the bulk of the workforce from agriculture to more skill-intensive sectors of the economy.

A third implication, of considerable theoretical significance, is the relation between financial exclusion and violence. The results I presented here show how lower lending to agriculture has led to higher incidence of farm suicides in India. One could, however, imagine situations where such economic marginalization would lead to violence directed not at oneself, but at others, especially where the collective action problem is resolved. In China, for instance, increased rural protests have been linked to asymmetries in power and access to the market (Le Mons Walker, 2006). Further studies are needed to examine the relations between economic exclusion and the varieties of violence.

Significantly, what this illustration of the unanticipated consequences of bank reforms in India reveals are also the broader implications of bank reforms in developing countries. Particularly, it points out that, notwithstanding the theoretical association between bank liberalization and faster economic growth, the real consequences of bank reforms are contingent on the structure of the economies that undertake such reforms. Developing countries, inherently, are economies in transition, moving from an agrarian base to industrial production or to the services. Financial liberalization in such countries, among other things, removes restrictive credit policies and allows capital to migrate from agriculture to sectors where creditors attribute greater profitability. Migration of people between sectors of the economy is, however, not as easy or smooth. The resultant uneven movement of capital and labor from agriculture to new sectors could have disastrous consequences, as the Indian case illustrated. To avoid such unanticipated negative consequences of financial reforms, it is important that developing countries also prepare for inter-sectoral population migrations – among other things, via improvements in skills and labor reforms - as they undertake bank liberalization.

ENDNOTES

ⁱ Data gathered from the National Crime Records Bureau (NCRB) annual reports “Accidental Deaths & Suicides in India” National Crime Record Bureau, Viewed on 28 April 2010 (<http://ncrb.nic.in/accddeaths.htm>).

ⁱⁱ “Private money lenders exploiting farmers: OKS.” *The Hindu*, 19 December 2010, Viewed on 15 May 2011 (<http://www.hindu.com/2010/12/19/stories/2010121952460300.htm>); Ahmed, Zubair (2006): “Debt Drives Indian Farmers to Suicide” *BBC News*, Viewed on 15 May 2011 (<http://news.bbc.co.uk/2/hi/business/4954426.stm>).

ⁱⁱⁱ If, for instance, banks lent less to farmers in states with high farm suicide rates due to concerns about loan recovery from bereaving households, then OLS models would have biased estimates. An endogenous model with an appropriate instrument should address this concern.

^{iv} The variable was normalized using logarithmic transformation for estimation.

^v The share of agriculture in the state’s GDP is not included, as it would lead to multicollinearity. The shares of the three sectors amount to 100% of the state’s GDP.

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