HOW DO MARKET FAILURES JUSTIFY INTERVENTIONS IN RURAL CREDIT MARKETS?

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Understanding of the economic causes and consequences of market failure in credit markets has progressed a great deal in recent years. This article draws on these developments to appraise the case for government intervention in rural financial markets in developing countries and to discover whether the theoretical findings can be used to identify directives for policy.

Before debating the when and how of intervention, the article defines market failure, emphasizing the need to consider the full array of constraints that combine to make a market work imperfectly. The various reasons for market failure are discussed and set in the context in which credit markets function in developing countries. The article then looks at recurrent problems that may be cited as failures of the market justifying intervention. Among these problems are enforcement; imperfect information, especially adverse selection and moral hazard; the risk of bank runs; and the need for safeguards against the monopoly power of some lenders. The review concludes with a discussion of interventions, focusing on the learning process that must take place for financial markets to operate effectively.

Interventions in rural credit markets in developing countries are common and take many different forms. Chief among them is government ownership of banks; India and Mexico, for example, nationalized their major banks in 1969 and 1982, respectively. In these cases the government can compel its banks to set up branches in rural areas and to lend to farmers. Governments in other countries, such as Nigeria, have imposed a similar obligation on commercial banks (see Okorie 1990). So the presence of a bank in a particular area is not sufficient reason to assume that the bank has chosen to operate there or that it is operating profitably.

Regulations have also affected the day-to-day operation of banking. Straightforward subsidization of credit is a standard policy in many countries;
one example is the system established by the government of the Philippines in which low-interest loans are financed by a low interest rate paid on deposits (World Bank 1987). Charging below-market interest rates generates excess demand for credit, and as a result bank operations have often been governed by rules for the selective allocation of credit; the Masagna-99 program that targeted rice farmers in the Philippines is a case in point. More generally, Filipino banks were required to allocate 25 percent of all loans to the agricultural sector, and the government has also limited their flexibility to set interest rates and lend according to private profitability. Foreign and private banks in India have also faced restrictions on the extent of their lending activity (India, Government of 1991).

Various governments have also required that lenders insure their loan portfolios. The apex agricultural bank in India has insured loans in agriculture for amounts up to 75 percent of outstanding overdues. Similar policies were pursued in Mexico, where the principal agricultural lender has had its loan portfolio compulsorily insured by a government-owned insurer. Because default rates on rural loans are typically quite high, such schemes also provide an explicit subsidy to rural financial institutions.

Thus, it seems fair to say that rural credit markets in developing countries have rarely operated on a commercial basis. Substantial subsidies are often implicit in the regulation schemes. A traditional view would see these interventions as part and parcel of development policy throughout much of the postwar era: an actively interventionist government controlling the commanding heights of the economy and taking the lead in opening up new sectors.

It is widely recognized that such policies, particularly below-market interest rates and selective allocation of credit, are not without cost. One view, associated with McKinnon (1973), is that these policies lead to financial repression: without a market allocation mechanism, savings and credit will be misallocated. Thus, it became popular to argue for financial liberalization and relaxation of government regulations, especially those that held interest rates on loans below market-clearing levels.

This type of intervention was also criticized by the Ohio State University group on the grounds that many of the policies were not consistent with such objectives as helping the poor (see, for example, Adams, Graham, and Von Pischke 1984). The group pointed to two central facets of many government-backed loan programs: first, default rates were typically very high, and, second, much of the benefit of these programs appeared to go to the wealthier farmers.

Criticism of existing policies has led to considerable rethinking about intervention in rural credit markets in developing countries. In particular, the view has gained ground that interventions should be restricted to cases where a market failure has been identified; this view is investigated here. The objective is to consider whether and how interventions can be—or are being—used to make up for shortcomings of existing (formal and informal) markets to allocate credit.
What Are Market Failures?

A market failure occurs when a competitive market fails to bring about an efficient allocation of credit. Credit, like other goods, has supply and demand. Some individuals must be willing to postpone some consumption so that others can either consume (with a consumption loan) or invest (with an investment loan). The price of credit—the interest rate at which a loan is granted—must therefore be high enough for some individuals to postpone their consumption and low enough for individuals who take out loans to be willing to repay, given their current consumption needs or investment opportunities.

In an idealized credit market, loans are traded competitively and the interest rate is determined through supply and demand. Because individuals with the best investment opportunities are willing to pay the highest interest rates, the best investment opportunities should theoretically be selected. Such a loan market would be efficient, in the standard economic sense of Pareto efficiency; that is, the market is efficient when it is not possible to make someone better off without making someone else worse off (no Pareto improvement is possible). Allowing two individuals to trade typically generates such an improvement. If one has an investment opportunity and no capital, for example, and the other has some capital, both may gain by having the second individual lend to the first. They need only to find some way to share the gains from their trade for both to benefit. Both must be at least equally well off with the trade for them to participate in it voluntarily.

An outcome is thus Pareto efficient when all Pareto improvements are exhausted—which happens for credit when the loans cannot be reallocated to make one individual better off without making another worse off. In particular, Pareto efficiency is achieved when an individual who gets a loan has no incentive to resell it to another and become a lender himself.

The first fundamental welfare theorem says that competitive markets with no externalities yield a Pareto-efficient outcome. But the standard model of perfect competition, where large numbers of buyers and sellers engage in trade without transactions costs, has some deficiencies as a model for credit markets, both in theory and in practice. The waters are muddied in credit markets by the issue of repayment, because a debtor may be unable to repay (for instance, if he is hit by a shock such as bad weather or a fire), or unwilling to repay (if the lender has insufficient sanctions against delinquent borrowers). For the latter contingency, credit markets require a framework of legal enforcement. But if the costs of enforcement are too high, a lender may simply cease to lend—a situation that may well arise for poor farmers in developing countries.

Credit markets also diverge from an idealized market because information is imperfect. A lender’s willingness to lend money to a particular borrower may hinge on having enough information about the borrower’s reliability and on being sure that the borrower will use the borrowed funds wisely. The absence of good information may explain why lenders choose not to serve some individuals.

Timothy Besley

29
Efficiency in the allocation of credit has to be examined in light of these practical realities. Suppose, for example, that a bank is considering providing credit for a project to someone who, after receiving the loan, will choose how hard to work to make his project successful. If the project is successful, then the loan is repaid, but, if it fails, the individual is assumed to default. As the size of the loan increases, the borrower's effort is likely to slacken, because a larger share of the proceeds of the project go to the bank. If the bank cannot monitor the borrower's actions (perhaps because doing so is prohibitively costly), a bigger loan tends to be associated with a lower probability of repayment. A bank that wants to maximize profits is therefore likely to offer a smaller loan than it would if monitoring were costless. This may result in less investment in the economy and, in comparison with a situation in which information is costless, would appear to entail a reduction in efficiency. With full information, the bank should be willing to lend more, to the advantage of both the borrower and the lender. Thus, tested against the benchmark of costless monitoring, there appears to be a market failure—that is, the market has not realized a potential Pareto improvement.

But in the real world monitoring is not costless and information and enforcement are not perfect. A standard of efficiency impossible to achieve in the real world is not a useful test against which to define market failure. The test of efficiency should still be that a Pareto improvement is impossible to find, but such an improvement must be sought taking into account the imperfections of information and enforcement that the market in question has to deal with—that is using the concept of constrained Pareto efficiency. By this standard, the outcome described above, where the lender reduced the amount lent to a borrower because of monitoring difficulties, could in fact be efficient in a constrained sense. The information problem may still have an efficiency cost to society, but from an operational point of view that cost has no relevance.

The argument that problems in credit markets result in a lower level of output, and perhaps too much risk-taking relative to some ideal situation where information is freely available, is frequently used to justify subsidized credit or the establishment of government-owned banks in areas that appear to be poorly served by the public sector. This argument is a non sequitur and should be resisted whenever encountered. In thinking about market failure and constrained Pareto efficiency, the full set of feasibility constraints for allocating resources needs to be considered. In this article, market failure is taken to mean the inability of a free market to bring about a constrained Pareto-efficient allocation of credit, in the sense defined above (see Dixit 1987 for a sample formal analysis). The rest of the article examines the implications of this concept.

Applying the criterion of constrained Pareto efficiency narrows the field for market failure, but it still leaves room for a fairly broad array of cases in which resources could end up being inefficiently allocated. In the illustration of Pareto improvement used above, only the well-being of the two individuals involved in a trade was considered. But if externalities enter the picture—in other
words, if a third party is affected, possibly negatively, by the decision of the other two—a Pareto improvement is clearly not guaranteed, even if the two principals are made better off. It is well known that markets operate inefficiently if there are externalities (see Greenwald and Stiglitz 1986 for a general discussion), and specific types of externalities may particularly afflict credit markets. One important role for government policy to improve the working of credit markets is to deal impartially with externality problems.

Significant Features of Rural Credit Markets

What makes rural credit markets in developing countries different from other credit markets? The three principal features distinguished here—collateral security, underdevelopment in complementary institutions, and covariant risks—characterize all credit markets to some extent. The distinction is in degree rather than in kind; these problems are felt much more acutely in rural credit markets, and in developing countries, than in other contexts in which credit markets operate. That is why those governments have regarded policy initiatives in this area as important.

Scarce Collateral

One solution to the repayment problem in credit markets is to have the borrower put up a physical asset that the lender can seize if the borrower defaults. Such assets are usually hard to come by in rural credit markets, partly because the borrowers are too poor to have assets that could be collateralized, and partly because poorly developed property rights make appropriating collateral in the event of default difficult in rural areas of many developing countries. Improving the codification of land rights is often suggested, therefore, as a way to extend the domain of collateral and improve the working of financial markets. This idea is discussed in greater detail below.

Underdeveloped Complementary Institutions

Credit markets in rural areas of developing countries also lack many features that are taken for granted in most industrial countries. One obvious example is a literate and numerate population. Poorly developed communications in some rural areas may also make the use of formal bank arrangements costly for many individuals. In addition, complementary markets may be missing. The virtual absence of insurance markets to mitigate the problems of income uncertainty is a typical example. If individuals could insure their incomes, default might be less of a problem. Another way to mitigate default problems is to assemble individual credit histories and to sanction delinquent borrowers. Such means of enforcing repayment are commonplace in more developed econ-
omies, but they require reliable systems of communication among lenders that seldom exist in rural areas of developing countries.

Deficiencies in complementary institutions are mostly ancillary to the credit market and suggest policy interventions of their own. Programs that raise literacy levels may improve the operation of credit markets yet could be justified without reference to the credit market. The benefits to credit markets should, theoretically, figure in cost-benefit analyses of such interventions, but in practice it might be too difficult to quantify the value of those benefits with any precision.

**Covariant Risk and Segmented Markets**

A special feature of agriculture, which provides the income of most rural residents, is the risk of income shocks. These include weather fluctuations that affect whole regions as well as changes in commodity prices that affect all the producers of a particular commodity. Such shocks affect the operation of credit markets if they create the potential for a group of farmers to default at the same time. The problem is exacerbated if all depositors simultaneously try to withdraw their savings from the bank. This risk could be averted if lenders held loan portfolios that were well diversified. But credit markets in rural areas tend to be segmented, meaning that a lender's portfolio of loans is concentrated on a group of individuals facing common shocks to their incomes—in one particular geographic area, for example, or on farmers producing one particular crop, or on one particular kinship group.

Segmented credit markets in the rural areas of developing countries often depend on informal credit, such as local moneylenders, friends and relatives, rotating savings, and credit associations. Informal credit institutions tend to operate locally, using local information and enforcement mechanisms.

The cost of segmentation is that funds fail to flow across regions or groups of individuals even though there are potential gains from doing so, as when needs for credit differ across locations. For example, a flood may create a significant demand for loans to rebuild. But because credit institutions are localized, such flows may be limited. Deposit retention schemes, which require that some percentage of deposits raised be reinvested in the same region, or the practice of unit banking may exacerbate the segmentation. Finding the optimal scope of financial intermediaries may require a tradeoff. Local lenders may have better information and may be more accountable to their depositors than large, national lenders. However, the latter may have better access to well-diversified loan portfolios.

**Enforcement Problems**

Arguably, the issue of enforcing loan repayment constitutes the central difference between rural credit markets in developing countries and credit markets
elsewhere. In this article, a pure enforcement problem is defined as a situation in which the borrower is able but unwilling to repay. Most models of credit markets discussed below do not concern themselves with enforcement and assume that, where projects are sufficiently profitable, loan repayment is guaranteed.

Enforcement problems are broadly of two kinds. First, the lender must attempt to enforce repayment after a default has occurred. But for this to be worthwhile, the lender must reap a benefit from enforcement that exceeds the cost. And the costs of sanctions, such as seizing collateral, may not be the only cost involved. It is sometimes argued that rich farmers who fail to repay are not penalized because the political costs are too high (see, for example, Khan 1979). Furthermore debt forgiveness programs—where a government announces that farmers are forgiven their past debts—are quite frequent. They have been common in Haryana State in India (see India Today 1991), for example, and The Economist (1992) has documented them in Bangladesh. So borrowers, aware that they can default on a loan with impunity, come to regard loans as grants, with little incentive to use the funds wisely.

Second, enforcement problems are exacerbated by the poor development of property rights mentioned earlier. In both industrial and developing countries, many credit contracts are backed by collateral requirements, but in developing countries the ability to foreclose on many assets is far from straightforward. Land—which, as a fixed asset, might be thought of as an ideal candidate to serve as collateral—is a case in point. In many countries property rights to land are poorly codified, which severely limits its usefulness as collateral. Rights to land are often usufructual, that is, based on using the land, and have limited possibilities for transfer to others, such as a lender who wishes to realize the value of the land as collateral. Reclaiming assets through the courts is similarly not a well-established and routine procedure. (For a general discussion of land rights issues and collateralization in three African countries, see Migot-Adholla and others 1991).

The difficulties of enforcement also help explain the widespread use of informal financial arrangements in developing countries. Such arrangements can replace conventional solutions, such as physical collateral, with other mechanisms, such as social ties (social collateral) (Besley and Coate 1991). Informal sanctions may persuade individuals to repay loans in situations where formal banks are unable to do so. Udry (1990), for instance, cites cases of delinquent borrowers being debarred from village ceremonies as a sanction.

Governments can help solve the collateral problem by improving the codification of property rights. In many countries, particularly in Africa, governments have taken steps to improve land registration. Whether these actions have the desired effect is debatable, especially in the short run, where attempts to codify rights may lead to disputes and increased land insecurity (Attwood 1990). Such programs also raise tricky ethical questions about the extent to which countries should be encouraged to adopt Western legal notions of property. In addition, the link between improved property rights and improve-

Timothy Besley
ments in the workings of credit markets, while intuitively clear, is not yet firmly established from empirical work. Interesting studies in this direction on Thailand (Feder, Onchan, and Raparla 1988) and on Ghana, Kenya, and Rwanda (Migot-Adholla and others 1991) explore the connections among property rights, investment, and credit.

In some important respects the government is itself part of the enforcement problem; indeed, government-backed credit programs have often experienced the worst default rates. In their pursuit of other (particularly distributional) objectives, governments have often failed to enforce loan repayment. Governments are often reluctant to foreclose on loans in the agricultural sector, in part because the loans are concentrated among larger, politically influential farmers (see, for example, Neri and Llanto 1985, on the Philippines). As a result, borrowers take out loans in the well-founded expectation that they will not be obliged to repay them and consequently come to regard credit programs solely as a pot of funds to be distributed among those lucky enough to get “loans.” This lack of sanctions weakens incentives for borrowers to invest in good projects and strengthens those for rent seeking.

Appropriation of benefits by the richer, more powerful farmers has been a particular problem of selective credit schemes. The greater the credit subsidy, the higher the chances that the small farmer will be rationed out of the scheme (Gonzalez-Vega [1984] describes this as the “iron law of interest rate restrictions”). The evidence on this exclusion of small farmers is quite strong (see, for example, Adams and Vogel 1986). Given the political constituencies that governments have to serve, they are unlikely to be able to enforce repayments under certain conditions in programs that they back. Witness the reaction of the U.S. government, which, in the face of crises in the U.S. farm credit program, tends to protect the influential farming constituency by not foreclosing on delinquent borrowers or by helping them refinance their loans. A strong case may be made for privatizing credit programs to separate them from the government budget constraint. As noted above, state-owned banks are a common institution in developing countries.

The problem of weak government resolve is not confined to cases where the government actually sets up and runs the programs. Governments in various Indian states have made debt-forgiveness declarations binding on private creditors. Such practices, along with bailouts of bankrupt credit programs, give the wrong signals to borrowers if they engender expectations that bad behavior will ultimately be rewarded by debt being forgiven. Ultimately, the government’s ability to commit itself credibly to a policy of imposing sanctions on delinquent borrowers is a significant aspect of the political economy of credit programs.

Imperfect Information

As discussed earlier, credit markets can face significant problems that arise from imperfect information. This section examines information problems that
cause market failure from the perspective of constrained Pareto efficiency. The two main categories of information problem discussed are adverse selection and moral hazard.

Adverse Selection

Adverse selection occurs when lenders do not know particular characteristics of borrowers; for example, a lender may be uncertain about a borrower's preferences for undertaking risky projects. (For analyses of credit markets under such conditions, see Jaffee and Russell 1976 and Stiglitz and Weiss 1981.) One much-discussed implication is that lenders may consequently reduce the amount that they decide to lend, resulting in too little investment in the economy. Ultimately, credit could be rationed.

The typical framework for analyzing such problems is as follows. Suppose that the projects to which lenders' funds are allocated are risky and that borrowers sometimes do not earn enough to repay their loans. Suppose also that funds are lent at the opportunity cost of funds to the lenders (say, the supply price paid to depositors). Lenders will thus lose money because sometimes individuals do not repay. Therefore, lenders must charge a risk premium, above their opportunity costs, if they wish to break even. However, raising the interest rate to combat losses is not without potentially adverse consequences for the lender.

Suppose (as do Stiglitz and Weiss 1981) that all projects have the same mean return, differing only in their variance. To make the exposition easier, suppose also that all borrowers are risk neutral. The adverse selection problem is then characterized as individuals having privately observed differences in the riskiness of their projects. If the interest rate is increased to offset losses from defaults, it is precisely those individuals with the least risky projects who will cease to borrow first. This is because these individuals are most likely to repay their loans and hence are most discouraged from borrowing by facing higher interest rates. By contrast, those who are least likely to repay are least discouraged from borrowing by higher interest rates. Profits may therefore decrease as interest rates increase beyond some point. A lender may thus be better off rationing access to credit at a lower interest rate rather than raising the interest rate further.

The key observation here is that the interest rate has two effects. It serves the usual allocative role of equating supply and demand for loanable funds, but it also affects the average quality of the lender's loan portfolio. For this reason lenders may not use interest rates to clear the market and may instead fix the interest rate, meanwhile rationing access to funds.

A credit market with adverse selection is not typically efficient, even according to the constrained efficiency criterion discussed above. To see this, consider what the equilibrium interest rate would be in a competitive market with adverse selection. Because all borrowers are charged the same interest rate, the
average probability of repayment over the whole group of borrowers, multiplied by the interest rate that they have to pay, must equal the opportunity cost of funds to the lender. Each borrower thus cares about the average repayment rate among the other borrowers because that rate affects the interest rate that he or she is charged. But an individual who is deciding whether or not to apply for a loan may ignore the fact that doing so affects the well-being of the other borrowers—which generates an externality as described above.

Situations of adverse selection give a lender an incentive to find ways to separate borrowers into different groups according to their likelihood of repayment. One device for screening out poor-quality borrowers is to use a collateral requirement (Stiglitz and Weiss 1986). If the lender demands that each borrower put up some collateral, the high-risk borrowers will be least inclined to comply because they are most likely to lose the collateral if their project fails. Given the scarcity of collateral and the difficulty of foreclosure discussed earlier, sorting out high-risk borrowers is certainly difficult and may be impossible. The discussion that follows therefore assumes that the lender is unable to distinguish between those borrowers who are likely to repay and those who are not.

The Stiglitz-Weiss model (1981) of the credit markets seems relevant for thinking about formal lending in a rural context, where it is reasonable to suppose that banks will not have as much information as their borrowers. The model also appears to yield an unambiguous policy conclusion that lending will be too low from a social point of view. In fact, it can be shown that a government policy that expands lending—through subsidies, for example—raises welfare in this model by offsetting the negative externality that bad borrowers create for good ones and by encouraging some of the better borrowers to borrow. In other words, adverse selection examined in the context of Stiglitz and Weiss’s model argues for government intervention on the grounds of an explicit account of market failure.

How robust is their conclusion? DeMeza and Webb (1987) enter a caveat: instead of supposing that projects have the same mean, they suppose that projects differ in their expected profitability, with good projects more likely to yield a good return. They also suppose, as do Stiglitz and Weiss, that the lender does not have access to the private information that individuals have about the projects they are able to undertake. At any given interest rate, set to break even at the average quality of project funded, DeMeza and Webb show that some projects with a negative social return will be financed. Thus the competitive equilibrium has socially excessive investment levels. A corollary developed by DeMeza and Webb is that government interventions—such as a tax on investment—to restrict the level of lending to a competitive equilibrium are worthwhile.

Thus, both the Stiglitz-Weiss and DeMeza-Webb analyses conclude that the level of investment will be inefficient, but they recommend opposite policy interventions as a solution. The conflicting recommendations would not be especially disquieting except that the differences between the models are not
based upon things that can be measured with precision, but on assumptions about the project technology: for example, whether the mean return of the project is held fixed. So it is hard to know which of the results would apply in practice.

**Moral Hazard**

The Stiglitz-Weiss model of credit markets can also be extended to allow for moral hazard, a problem that can arise when lenders are unable to discern borrowers' actions. The central risk for the lender is that individuals who are in debt might slacken their efforts to make the project successful or they might change the type of project that they undertake. Borrowing money to invest in a project shares the risk between lender and borrower: if the project fails and the loan is not repaid, the lender bears the cost of the loan. There is a tendency, therefore, for the borrower to increase risk-taking, reducing the probability that a loan will be repaid.

Moral hazard is elaborated by Stiglitz and Weiss in their model where all projects have identical mean returns but different degrees of risk. As with their adverse selection model, they find that an increase in interest rates affects the behavior of borrowers negatively, reducing their incentive to take the actions conducive to repaying their loans. Riskier projects are more attractive at higher interest rates because, at the higher rate, the borrower will prefer a project that has a lower probability of being repaid. Once again, a higher interest rate may have a counterproductive effect on lenders' profits because of its adverse effects on borrowers' incentives. Stiglitz and Weiss again suggest the possibility of credit rationing—restricting the amount of money lent to an individual to correct incentives.

In cases of moral hazard, it is not clear-cut that the outcome is inefficient. Individuals who increase the riskiness of their projects when they are more indebted affect only their own payoff.¹ Thus, restrictions on the amount that an individual can borrow need not constitute a market failure, even though in a framework that allows for heterogeneous borrowers, such restrictions might compound the problems of adverse selection discussed above. There is no inefficiency from incentive effects if the lender is able to impose the cost of increased risk-taking on the borrower and no one else. This conclusion assumes, however, that the borrower borrows from a single lender.

In reality, that assumption may not hold (see, for example, Bell, Srinivasan, and Udry 1988). Some borrowers obtain funding for a project from more than one lender, very often mixing formal and informal lenders. Each lender typically prefers that the others undertake any monitoring that has to be done, and the monitoring may then be less vigorous and effective than otherwise. And if borrowers undertake several projects funded from different sources, effort on each project may not be separable, so that the terms of each loan contract may affect the payoff to the other lenders.
It is unclear whether either of these difficulties leads to too much or too little lending relative to the efficient level. Depending on the exact specification of the model, one can obtain a result in either direction, which from a policy viewpoint compounds the ambiguities found in the analysis of adverse selection. These arguments suggest the possibility of efficiency gains if a borrower deals with a single lender. Such an arrangement could internalize the externalities that arise when more than one lender is involved in a project.

Moral hazard may also lead to externalities in related markets, an obvious example being insurance. Individuals who have income insurance may make no effort to repay their loans, so that default ends up as a transfer from the insurer to the lender—a scenario reminiscent of the experience of some countries (for example, Mexico, as documented by Bassoco, Cartas, and Norton 1986).

The incentive effects of moral hazard need not in themselves argue for government intervention in credit markets, but if they are combined with multiple indebtedness, outcomes are likely to be inefficient, and government intervention designed to deal with such externalities may increase efficiency.

**Investing in Information**

The discussion has so far assumed that the amount of information available to lenders is unalterable. But lenders have many opportunities to augment information. They can, for instance, investigate the quality of projects and monitor their implementation. That information is costly does not necessarily imply that outcomes are inefficient (see Townsend 1978); one has to ask first whether lenders are likely to collect and process information efficiently. The answer may be negative if the “public good” nature of information is taken seriously—the fact that, once acquired and paid for by one lender, information may be exploitable by another. There seems to be no evidence of this theoretical possibility being practically important in rural areas of developing countries. Furthermore, the experience of industrial countries suggests that markets have effectively created mechanisms for generating information about borrowers that help to circumvent the public good problems. Private and independent credit-rating agencies have existed in the United States since the middle of the nineteenth century (Pagano and Jappelli 1992).

For rural financial markets of developing countries, lack of expertise in project appraisal and the high costs of monitoring and assessment relative to the size of a loan may mean that people are excluded from the credit market, even though they have projects that would survive a profitability test based on complete information. Braverman and Guasch (1989) suggest that the cost of processing small loans can range from 15 to 40 percent of the loan size (see also Adams, Graham, and Von Pischke 1984). But these kinds of transactions costs do not necessarily lead to inefficient exclusion from the credit market. It is at least possible that they reflect the real economic cost of serving a clientele
where information is scarce. Whether there is an inefficiency depends on whether the human capital and other factors that go into appraising loans are priced at their true economic costs. If not, the high figures for transactions costs discussed by Braverman and Guasch might indicate inefficiency.

The point is a reminder that parallel market failures may be important. If markets that provide inputs for the credit market are also imperfect, credit will be allocated inefficiently. From a policy viewpoint, therefore, the question is whether policy ought not to be focused on the real problem, rather than on the proximate problem of misallocated credit.

The Effect of Redistribution

The discussion so far has justified why allocation of credit can be suboptimal. This section develops the idea that the distribution of capital in the economy becomes tied together with efficiency in such situations. Suppose that there are two individuals, one with a worthwhile project to invest in and the other with some capital. If the one with the capital is uncertain about the quality of the other's project, he may be unwilling to lend enough for the project to reach its full potential. But if capital is redistributed—that is, if the person with the project now has the capital as well—the project is more likely to be undertaken because the investor does not have to allow for the risk posed by inadequate information. (For a formal analysis of such redistribution, see Bernanke and Gertler 1990.) Clearly, there is no Pareto improvement, because one individual now has less capital; however, the information problems in the economy are now reduced. The outcome would be quite different in the absence of information problems, when it should not much matter which of the individuals owns the capital because each has full information about the quality of the investment project.

When lenders face information problems, therefore, the distribution of assets matters for other than purely distributional reasons, which may help explain why such things as land redistribution can enhance growth. If severe information problems beset credit markets, land redistribution is tantamount to a redistribution of assets that can enhance investment by reducing the costs of information imperfections—assuming, of course, that the individuals to whom assets are redistributed really have access to superior investment technologies. Binswanger and Rosenzweig (1990) argue for that assumption on the basis of evidence that small farmers have good investment opportunities that go unexploited because of high risk and limited access to credit. Their argument is not, however, based on efficiency. It is either a straightforward redistribution argument, or it might be justified by adopting a social welfare function that attached special importance to investment.

In practice, there is little doubt that many arguments in favor of intervention in credit markets are motivated by a belief that those who have few assets nonetheless have good investment opportunities. Unwillingness of lenders with
little information about the poor to lend is thought to be costly in terms of investment efficiency. Sometimes intervention in credit markets emerges as an alternative to redistributing assets. Intervention may make sense for both political and incentive reasons, but it may have little to do with market failure as defined here.

Relevance of Imperfect Information Arguments for Rural Financial Markets

It seems obvious that the analysis of information problems has general relevance for rural financial markets in developing countries, because it is hard to imagine that unobservable actions and characteristics do not play some part in the way in which the formal credit sector deals with farmers. The concern here is to examine more precisely what institutional features of rural financial markets can be explained by information imperfections and how these features can be related to arguments for government intervention.

For example, information imperfections are potentially important in explaining the segmentation of credit markets. Information flows are typically well established only over relatively close distances and within social groups, making it likely that financial institutions, at least indigenous ones, will tend to work with relatively small groups. Among such groups, characteristics of individuals tend to be well known, and monitoring borrowers' behavior may be relatively inexpensive. Such considerations also suggest why informal finance is used so extensively in rural areas.3

This claim is consistent with the many studies of informal rural financial markets available, several of which are collected in a special issue of the World Bank Economic Review (1990: 4, no. 3, September). For example, Udry's (1990) study of Nigeria finds that individuals tend to lend to people they know in order to economize on information flows. Similar evidence has been found for Thailand (see Siamwalla and others 1990) and Pakistan (see Aleem 1990). The fact that individuals form into groups that intermediate funds is not inconsistent with efficiency in investment decisions once enforcement costs and information difficulties are recognized, although there may be a case for facilitating flows of funds across segmented groups.

In contrast to small local lenders, formal institutions can usually intermediate funds over larger groups. Formal institutions suffer from greater problems of imperfect information, however, and are most susceptible to the kinds of inefficiencies discussed above. In this context, the formal sector naturally suffers a greater default problem.

One view says that the informal sector serves as lender of last resort to those who are unable to obtain finance in the formal sector—the people to whom the formal bank is reluctant to lend because of their characteristics and the cost of collecting information about them. A related argument is that the transac-
tions costs of lending to this group are prohibitive, very often because the loans they demand are so small. This, by itself, does not argue for any kind of intervention, but shifting more people to the formal sector—through government subsidization of loans in the formal sector, for example—could bring a beneficial externality by making market segmentation easier to overcome. The argument for reducing the size of the informal sector does, however, rest crucially on the belief that a formal bank has a comparative advantage in certain activities, such as managing loan portfolios across areas.

Other Arguments for Intervention

Other functions that are often advanced as properly within the purview of government are protecting depositors, establishing safeguards against monopoly, and disseminating know-how and innovation in credit markets.

Protecting Depositors

Much regulation in credit markets is directed toward the relationship between a lender and the ultimate owners of the funds that are lent, depositors in many cases. Indeed, creating an environment in which savings can be mobilized in the form of deposits is an essential part of operating an efficient credit market. Depositors typically are concerned about the safety of their deposits as well as the return that those deposits yield.

Providing reliable receptors of savings in rural areas of developing countries may seem especially problematical because of the covariant risk discussed earlier. Particular problems arise if all depositors wish to retrieve their savings at the same time, which may lead to bank runs. This problem is compounded if the withdrawals occur when borrowers are having difficulty repaying their loans. In such situations market segmentation becomes particularly costly if it prevents funds from flowing toward regions where demands for retrieving deposits are greatest. The farm credit program in the United States, established with such issues in mind, provides a clearinghouse for funds to flow between regions. The program was necessitated, however, by restrictive legislation that disallowed branch banking in favor of unit banking, a kind of legislated segmentation of the credit market.

The economics literature studies cases in which depositors withdraw funds en masse, causing the bank to collapse. Two different views emerge on the efficiency of such situations. In Diamond and Dybvig's (1983) analysis, bank runs are inefficient. They are modeled as resulting from a loss of confidence. Once depositors lose confidence, a run becomes a self-fulfilling prophecy, because if depositors expect others to withdraw funds in a hurry, it is rational to follow suit, for fear that the bank will be bankrupt if they wait. The result is a cascading collapse of the bank. Such losses of confidence need not have anything
to do with a fundamental change in the economy. The whims of depositors are enough to lead to collapse.

Calomiris and Kahn (1991), among others, take an alternative view. They argue that bank runs are triggered by depositors who monitor the bank and have good information about its financial health. Because deposits are returned on a first-come-first-served basis, the more diligent depositors are able to withdraw their funds if they suspect that the bank’s loan portfolio is bad. A run can develop if the uninformed depositors see the informed ones deserting the bank. Thus, in this view, bank runs are the natural product of a process in which banks are disciplined by their depositors and need not be associated with any efficiency cost.

Governments in many countries have used the threat of bank runs to justify regulation. Reserve requirements (for example, where a given amount of assets must be held in the central bank) and liquidity ratios are sometimes imposed on commercial lenders—nominally to protect depositors, but quite often in practice to exert monetary control by the central bank or to finance the government’s budget cheaply. Another mechanism for protecting depositors is loan portfolio insurance, often used with agricultural loans.

In the United States federal deposit insurance is designed to protect depositors against bank failures. Opinion is divided about the efficacy of this policy response. According to one view, deposit insurance reduces monitoring of banks by depositors, and the quality of lenders’ loan portfolios may deteriorate as a result. Even if bank runs occur entirely at the whim of depositors, deposit insurance could still bring adverse consequences if insured lenders change their behavior—for example, by increasing their lending toward riskier projects. Trying to relax credit market segmentation is arguably preferable to expanding deposit insurance (Calomiris 1989). The aim is to provide some direct way to shift funds toward regions that have experienced negative income shocks affecting a bank’s clientele. Guinnane (1992) gives an interesting account of how the “Centrals” intermediated funds between credit cooperatives in nineteenth-century Germany, directing funds to those cooperatives in need. In contemporary developing countries, systemic shocks, such as those resulting from fluctuations in commodity prices, may threaten the integrity of a regional financial system if flows of funds are poor.

Providing some assurances to depositors is a prerequisite to building financial institutions that mobilize local savings. Local institutions, such as credit cooperatives, make it relatively easy for depositors to monitor the behavior of lenders and even borrowers (Banerjee, Besley, and Guinnane, forthcoming). Credit programs that are entirely externally financed cannot use this method of accountability. The tradeoff is between avoiding covariant risk and encouraging local monitoring of lender and borrower behavior. The appropriate policy response to the problem of bank runs is far from clear. The U.S. experience suggests that building clearinghouses for interregional flows of funds may have merits, but this approach has the drawback, particularly for developing coun-
tries, of requiring a complex network of institutions that may be costly to build and maintain.

In sum, protecting depositors is an important dimension of government regulation in rural credit markets. The tradeoff is between protecting depositors and blunting their incentives to monitor lenders. Two main types of intervention appear justified on this count. The first is deposit insurance, and the second is building structures to intermediate funds across groups and regions, thereby reducing credit market segmentation.

**Market Power and Intervention in Rural Credit Markets**

Market power may lead to inefficiencies in credit markets if trade is restricted to maximize profits and if goods are not priced at marginal cost. Thus, monopolies are often subject to regulation. There are good reasons to expect market power to develop in credit markets. In a world of imperfect information, those with privileged access to information may obtain some market power as a result. Village moneylenders are a case in point, and they are often held up as archetypal monopolists because of their ability to exploit local knowledge.

Market power may also be important because, as lenders grow larger, their ability to diversify risk improves and their lending activities take on monopolistic tendencies. In effect, this gives a decreasing average cost curve to the industry. One might, therefore, expect a market structure with a few large lenders, each of whom is able to intermediate funds for a large group of borrowers. This scenario may not characterize rural areas of developing countries very well because of the high costs of getting the information needed to operate across many different localities. Experience does suggest, however, that these large lenders in rural areas may attempt to use their market power (see, for example, Lamberte and Lim 1987 on the Philippines).

Monopoly does not always lead to an inefficiency. If the monopolist-lender is able to discriminate in the price charged to each borrower, the lender will be able to extract all of the consumer surplus from each borrower. Monopoly power has no efficiency cost in this case; it pays the monopolist to lend to the point where the marginal value of credit to each borrower is the same (a "discriminating monopoly" outcome). In that case loans will be made efficiently, even though they will be designed to extract all of the surplus from borrowers and the lender may be labeled as exploitative (for a discussion of these issues, see Basu 1989).

The usual monopoly inefficiency, where lenders restrict funds to increase their profits, arises only when loan arrangements cannot be tailored to each individual. In this case an argument for intervention can be made. Direct regulation of interest rates is one obvious option, but village moneylenders who operate informally may be difficult to regulate. Nonetheless, usury laws are common. A second option is to reduce the monopoly power of established

Timothy Besley
sources by providing alternative sources of credit. The system of credit cooperatives established in rural India was motivated this way. To consider the rationale for such policies, one needs to understand why, if moneylenders were making a profit, no one else attempted to enter these markets. One possibility is that moneylenders were effectively able to deter entry in ways that could not be regulated directly; another is that the costs of setting up and running credit institutions in rural areas were prohibitive. One could argue for subsidizing rural credit institutions as an indirect way of reducing market power, but experience has shown that it is very hard to make such schemes function effectively. The moneylenders' ability to collect information and enforce repayment is real and must be replaced by an institutional structure that can fulfill these functions equally effectively.

**Learning to Use Financial Markets**

The operation of financial markets in more developed countries has evolved over a long period and has entailed a learning process whose importance cannot be underestimated. That process can be thought of as a period of acquiring the human and organizational capital that is basic to the functioning of financial markets.

This learning process can be related to the case for intervention in two ways. One is based simply on asymmetric information between citizen and government. A government may have a better sense than its citizens of the pitfalls and problems associated with different financial structures and is arguably in a better position to observe past experience at home and abroad. The intervention called for here, then, is provision of information to potential operators of financial institutions. In practice, providing information can be difficult and costly in comparison with either setting up institutions as demonstration projects or subsidizing successful projects. The scope of arguments based upon the government knowing best is potentially wide, and acknowledging that range may be the thin end of a large wedge. Such arguments may, however, be used to justify intervention on efficiency grounds. The market failure arises because agents are uninformed about what has worked elsewhere, and the aim is to avoid a costly search and learning process.

Another learning-based argument for intervention might hold that individuals learn from the experience of others within a country. An inefficiency might develop if individuals hang back waiting for others to try things out. The slow diffusion of certain agricultural technologies has often been attributed to a reluctance to be the first user. An obvious role for government intervention is to subsidize early innovators. Thus experiments in institutional design, such as the Grameen Bank in Bangladesh, might serve as prime candidates for subsidization. Such arguments appear only to justify subsidizing new ventures, however, and subsidies should be phased out along the way. The creation of vested interests entailed raises tricky political economy issues.
Concluding Remarks

This article has reviewed some arguments associating market failures with the case for interventions in rural credit markets. Enforcement difficulties, imperfect information, protection of depositors, market power, and learning arguments all have implications for government intervention.

Where enforcement is an issue, governments may intervene by strengthening property rights to increase the scope and effectiveness of collateral, although this is not a direct intervention in the credit market. But government might be as much a part of the problem as the solution in this context, because many government-backed credit schemes fail to sanction delinquent borrowers.

Deposit insurance is an obvious option for protecting depositors, but it may blunt the incentives depositors have to monitor the performance of lenders. Measures intended to facilitate the flow of funds across groups and regions may be preferable to deposit insurance schemes.

Monopoly power may create tension because information is concentrated in lenders' hands, but market power (for example, of village moneylenders) is not necessarily socially inefficient, even though its redistributive consequences may be considered repugnant. Providing credit alternatives may be a reasonable response from the perspective of distributional concerns but, again, might have relatively little to do with market failure.

In summary, there may be good arguments for intervention, and some may be based on market failure. But as one unpacks each argument, the realization grows that, given the current state of empirical evidence on many relevant questions, it is impossible to be categorical that an intervention in the credit markets is justified. Empirical work that can speak to these issues is the next challenge if the theoretical progress on the operation of rural credit markets is to be matched by progress in the policy sphere.

Notes

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1. A caveat to this is the case where returns to borrowers are correlated and the lender is not risk neutral. In that case, the break-even interest rate for all borrowers depends on the decision of all borrowers as to effort, and an externality similar to that discussed for the adverse selection case obtains.

2. The argument is really a bit more subtle. Redistribution would still have potential income effects that might affect willingness to bear risk; a rich individual might be more willing than a poor one to undertake a risky project. Such influences could mean that, even without an information problem, individual circumstances could affect the decision of how much to invest in the project. The argument in the text is exactly correct only with risk-neutral individuals.
3. Stiglitz (1990) argues that this could be harnessed in group lending programs that encourage peer monitoring.

References

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