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The effects of financial development in the short and long run: Theory and evidence from India☆

Scott L. Fulford *

Boston College Department of Economics, 140 Commonwealth Ave, Chestnut Hill, MA 02467, United States

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ABSTRACT

Although many view financial access as a means of reducing poverty or increasing growth, empirical studies have produced contradictory results. One problem is that most studies cover only a short time frame and do not consider dynamic effects. I show that introducing credit in a general model of intertemporal consumption creates a boom in consumption and reduces poverty initially, but eventually reduces mean consumption because credit substitutes for precautionary wealth. Using new consistent consumption data that cover a much longer time period than most studies, my empirical findings show that increased access to bank branches in rural India increased consumption initially and reduced poverty, but consumption later fell and poverty rose. The long-term effect is still positive, however, suggesting that credit may have a beneficial role beyond consumption smoothing.

1. Introduction

There are two views of financial development. One holds that financial development is a crucial contributor to growth. This view drove India's efforts to extend bank branches to rural areas in the 1970s and 1980s, the more recent expansion of microcredit to hundreds of millions of households across the world, and the 2006 Nobel Peace Prize to Muhammad Yunus and the Grameen Bank for their work extending financial services to the poor. Yet where credit has long been available a darker and more pessimistic view of the consequences of better financial access also exists. Concerns about over-indebtedness, debt spirals, and farmer suicide mark this view, leading to the worry that credit reinforces poverty rather than alleviating it.

The empirical evidence for whether access to financial services helps the poor is contradictory, despite a strong correlation between financial development and growth across countries.[1] While Burgess and Pande (2005) find that the large expansion of branch banks into rural India in the 1970s and 1980s significantly reduced poverty, Kochar (2005) and Panagariya (2008) disagree. Microcredit has been the subject of a similar debate, with some studies finding benefits for the poor (Khandker, 2005; Pitt and Khandker, 1998), others questioning the evidence (Morduch, 1998; Roodman and Morduch, 2009), and recent experimental and quasi-experimental studies finding only very weak effects of microcredit and low take-up initially.[2] Yet the conflicting evidence has not stopped practitioners from making strong claims about the positive impact of microfinance.

What is missing from most studies is a coherent treatment of dynamic effects. Yet such dynamics are at the heart of credit which is necessarily about reallocating resources over time, so it is unclear whether even the best empirical studies that do not allow for dynamic effects are identifying anything informative about welfare. To understand why dynamic effects are so important, I show that in the buffer-stock model of saving and consumption (Carroll, 1997; Deaton, 1991) the observable effects of gaining access to credit vary in a substantial and fundamental way over time. The model is a useful benchmark since it captures a fully

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* Tel.: +1 617 552 2425; fax: +1 617 552 2308.
E-mail address: scott.fulford@bc.edu.

[1] See Levine (2005) for a critical review of the theoretical issues and empirical questions on the effects of financial development on growth.

[2] A number or recent experiments have examined microcredit of slightly different forms in urban India (Banerjee et al., 2009), rural Morocco (Crépon et al., 2011), and rural Mongolia (Attanasio et al., 2011). In these studies credit seems to have relatively small initial effects both for consumption and investment and relatively low take-up, although the exact results differ from study to study. The same is true for marginal borrowers in Manila (Karlan and Zinman, 2010). A quasi-experiment in Thailand (Kaboski and Townsend, 2012) has found larger effects. Yet the positive anecdotes from the microfinance industry and the vast increase in the number of borrowers suggest that there is demand in some places and for some forms of credit and that microcredit does help at least some people.

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intertemporal savings and consumption problem with uncertainty and yet has very clear predictions about the path of effects.

Within the model credit has large positive effects in the short run, but in the long run access to credit decreases consumption and can increase poverty. Access to credit in the short run allows people to consume more, which explains why it sometimes looks like such an effective way to help the poor. When people save for precautionary reasons, however, credit substitutes for keeping wealth in the long run. Lower wealth means lower income, as farmers mortgage their land, for example, or sell their livestock.

Why do the effects of credit vary fundamentally over time? The intuition comes from thinking about the ultimate consumer, rather than the investments he or she makes.[3] Households keep wealth for many reasons, but an important one is to protect the household from bad events. Indeed, for a long enough lived consumer that is the only reason to keep wealth—at least the only reason that does not lead to unlimited accumulation (Schechtman and Escudero, 1977). In the short term credit allows more consumption, but in the long term households adjust their wealth holdings. Access to credit means they no longer need to keep as much wealth to receive the same level of insurance, which eventually reduces wealth and income.[4] Welfare is unambiguously improved taking into account all of the changes, but looking at any single time period will give a misleading picture of the effects of credit.

So any estimate of the effect of credit will change depending on when it is measured: initially it appears to have very positive effects, but later on credit may look like it has harmed a community, and both views need to be considered in context. In addition, considering wealth as a measure of welfare without taking into account credit can be seriously misleading: higher wealth in some areas may be because financial markets are poor, not because people are better off. One reason for the contradictory empirical results is that since most studies do not collect the evidence necessary to separate out the long term from the short term, the measured effects should vary from study to study even when looking at the same program in the same country. For example, the results from randomized controlled trials may differ solely from the timing of the introduction of credit and the follow-up survey. Valid instruments which work on different local averages may produce opposite results if the timing of access for the groups affected by the instrument varies. The problem cannot be solved by better identification through randomization or instruments, although that certainly matters, but by understanding what is being identified. In practice, I demonstrate through simulation that it is relatively straightforward to allow for dynamics by including time lags.

Allowing for changes over time is not always easy since it requires consistent estimates of consumption and poverty over a long enough time period to convincingly capture dynamics. Perhaps the largest expansion in access to credit took place during the branch building boom in India during the 1970s and 1980s and I use this expansion to examine whether there are important changes over time. The source for Indian poverty and consumption are the National Sample Surveys, but they are not entirely consistent with each other and are not collected every year. The most well known problems are from the 1999–2000 large round (Deaton and Kozel, 2005; Tarozzi, 2007), but other rounds have problems as well. I take a direct approach and reconstruct consistent consumption and poverty estimates from the item level consumption for each household to create regional aggregates. The approach in this paper differs from Burgess and Pande (2005) who rely on suspect data at the state level and seek to instrument for the endogenous placement of branches using social banking policies that targeted less well banked areas.[5] Rather than instrument I use the model to guide the empirics, and look for dynamic effects of branch openings. I find that rural areas in which the branches per capita increased had a boom in consumption and reduced poverty initially but consumption later fell and poverty rose. In the long term, the total effect of the changes is that poverty increased slightly while consumption was unchanged or increased slightly, leaving open the possibility of benefits to production. The dynamic effects of credit matter both theoretically and empirically.

The model and empirical results show that studying the effects of credit or other financial products is hard. Credit is necessarily about moving consumption and savings across time and across people and ignoring that is likely to lead to results that are difficult to interpret at best and likely to vary from study to study. The model in this paper offers a reason for such dynamic effects to be important, but to fully characterize the transition path it leaves out some elements that may be important for understanding the effects of credit. In particular, the investment technology is linear and so there are no investments that credit suddenly makes available. That limits what credit can do to lift income within the model unless it raises the rate of return, a topic that I consider briefly. But including such effects makes the path even more complicated, less general, and understanding the effects of credit even harder, it does not change the conclusion that dynamics matter. The work in this paper therefore complements the recent work of Kaboski and Townsend (2011) and Kaboski and Townsend (2012) which attempts to include such indivisible investments and estimates them structurally and in reduced form following an expansion of credit in Thailand. They find a large short term increase in consumption which then tails off, as well as some more complicated investment dynamics. It seems that the model presented here captures much of the dynamics of the expansion of credit in Thailand.

There is a growing empirical literature on the role of financial development in consumption smoothing by the poor.[6] The theoretical model in this paper clarifies several areas of ambiguity. In particular, credit can be welfare improving, even if it does not increase income, but measuring improvements in welfare may be difficult since the observable benefits are likely to vary over time. Credit may have negative long-term consequences on consumption and poverty as it leads to “booms” in the short term and “busts” in the long term. Finally, while credit aids consumption smoothing initially, in the

[3] This paper complements a large literature which considers the effects of credit on production. The overlapping generation poverty-trap models (Banerjee, 2001; Banerjee and Newman, 1993; Galor and Zeira, 1993) typically allow for non-convexity in some form of investment such as in education or health, but limit the consumption decision. Similarly, Giné and Townsend (2004) fit a model of occupational choice to Thai data. Acemoglu and Zilibotti (1997) and Bencivenga and Smith (1991) emphasize the effects of financial intermediation on diversification in overlapping generations models. Townsend and Ueda (2006) build an infinite horizon intertemporal choice model based on Greenwood and Jovanovic (1990) which they fit to Thai data. In their model financial access allows for diversification and a better rate of return, but not credit.

[4] The mechanism in this paper is distinct from Jappelli and Pagano (1994) who show in an overlapping generation model with no uncertainty that when there are positive externalities from capital accumulation, forced savings by the young may increase income and improve welfare if the externality is large enough. That a reduction in the long term is possible was suggested, but not proved, by Aiyagari (1994). There is also a literature which examines changes in uncertainty, which has a similar effect to changes in credit (Krusell et al., 2009).

[5] That instrument has been much criticized (Panagariya, 2008, pp. 221–228) both for its simplification of the branch licensing rules and for ignoring other inputs into rural areas at the same time (Kochar, 2005). The consistent consumption data used in this paper points to another problem. Burgess and Pande (2005) use state level poverty estimates collected by Datt et al. (1996) from the original publications of the NSS, but these are not available every year, and are not necessarily consistent when they are available. When Burgess and Pande (2005) restrict their sample to years in which the NSS conducted a survey as they do in column 8 of Table 3, close to half of their sample disappears. Since I go back to the original data, I am able to analyze NSS regions which are smaller and more similarly sized than states but relying on the micro data limits the number of years of consistent consumption data available.

[6] Menon (2006) finds that microcredit aids in seasonal smoothing in Bangladesh over 18 months. Gertler et al. (2009) find that microfinance helps families smooth health shocks in Indonesia. That loans, even when ostensibly for productive purposes, may be used for consumption, is highlighted by Dichter (2007).