Multi-Section Article Intro-Conclude Sandbox

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1 Intro Conclude Literature

Abstract

I develop and estimate a dynamic equilibrium model of risky entrepreneurs' borrowing and savings decisions incorporating both formal and local-informal credit markets. Households have access to an exogenous formal credit market and to an informal credit market in which the interest rate is endogenously determined by the local demand and supply of credit. I estimate the model via Simulated Maximum Likelihood using Thai village data during an episode of formal credit market expansion. My estimates suggest that a 49 percent reduction in fixed costs increased the proportion of households borrowing formally by 36 percent, and that a doubling of the collateralized borrowing limits lowered informal interest rates by 24 percent. I find that more productive households benefited from the policies that expanded borrowing access, but less productive households lost in terms of welfare due to diminished savings opportunities. Gains are overall smaller than would be predicted by models that do not consider the informal credit market.
JEL codes: D15, D25, G21, O16, O17

1.1 Introduction

It is well known that in village economies, local informal financial arrangements exist in the absence of external formal credit market options (Udry 1994; R. M. Townsend 1994). As formal borrowing and savings opportunities have expanded, informal credit markets have persisted. But dynamic models that study the effects of financial deepening on development do not explicitly consider informal financial options, and studies that test the fit of informal risk-sharing models to data generally do not consider formal options explicitly.[1] On the other hand, studies which explicitly analyze the interaction of formal and informal credit markets generally do so in non-dynamic settings.[2] It is difficult to fully analyze the effects of financial deepening which determines asset distributions, however, when these distributions are fixed. In this paper, I develop and estimate a dynamic equilibrium risky entrepreneur model that incorporates formal as well as informal borrowing and savings choices. In this model, households are infinitely-lived, risk-averse, and have varying productivity and wealth.

1. See R. Townsend (2010) and Buera, Kaboski, and Shin (2015) for reviews.

2. For example, Gine (2011) and Karaivanov and Kessler (2018) use the initial waves of the Townsend Thai village survey to study how household firms choose between formal and informal borrowing in two-period models. Gine (2011) distinguishes formal and informal borrowing by interest rates, fixed costs, and collateral constraints.

1.2 LITERATURE

The analysis in this paper contributes to several strands of the literature. First, there has been substantial research on the impacts of greater financial access on developing economies (Greenwood and Jovanovic 1990; Banerjee and Newman 1993; Lloyd-Ellis and Bernhardt 2000; Gine and Townsend 2004; Greenwood, Sanchez, and Wang 2010; Kaboski and Townsend 2011; Moll 2014; Buera, Kaboski, and Shin 2012; Dabla-Norris et al. 2018). Despite the importance of informal financial arrangements (Udry 1994; R. M. Townsend 1994), these dynamic models of financial deepening–formal credit market expansion–generally do not explicitly consider informal financial options.[3] Additionally, studies that test the fit of informal risk-sharing models to data do not model formal options explicitly (Alem and Townsend 2014; Karaivanov and Townsend 2014; Kinnan 2017). In this paper, I model risky entrepreneurs' choices over formal and informal credit market options in an exogenous incomplete markets setting.[4] Similar to Kaboski and Townsend (2011), I treat villages as small open economies where formal prices are exogenously determined, but I extend the framework to explicitly consider informal choices and equilibrium interest rates determined within each local informal credit market. My approach here focuses on the *micro-equilibrium* effects of formal credit market expansion on village credit markets. This is different from Buera, Kaboski, and Shin (2012) and Breza and Kinnan (2018), which study the macro equilibrium effects of large microfinance roll-outs on prices, including interest rates and wages, in the aggregate economy.

Second, this paper contributes to works that study the interaction between formal and informal credit markets. Third, there is a significant and growing empirical literature that analyzes separate dimensions of credit market policies. Fourth, there is a literature that studies how the provision of formal insurance could crowd-out informal insurance (Attanasio and Rios-Rull 2000; Krueger and Perri 2011; Chandrasekhar, Kinnan, and Larreguy 2011).

The structure of the paper is as follows. Section **??** develops the model. Section **??** describes model mechanisms and demonstrates the equilibrium effects of shifting various dimensions of formal and informal credit market access costs. In Section **??**, I describe the data and background. Section **??** describes estimation results and counterfactuals. I offer the conclusion in Section **??**. Additional details for the solution and

3. Banerjee et al. (2017) allow households to borrow from formal and informal sectors at exogenous rates to finance within period capital investments, and households can save across periods at an exogenous negative savings rate.

4. While there are different ways for rural households to transfer financial resources, Karaivanov and Townsend (2014) find that a model with exogenously incomplete borrowing and savings options fit consumption and investment data in rural Thai villages better than constrained efficient credit/insurance models. The model in effect augments equilibrium models of risky entrepreneurs (see review: Quadrini (2009)) with additional exogenous borrowing and savings options.

estimation methods are in Sections **??**.

1.3 Conclusion

In recent decades, formal financial services have expanded significantly in developing countries. This paper evaluates the impacts of improving access to the formal credit market on rural households, taking into consideration the impacts of changing formal credit market conditions on the informal credit market.

I built a risky entrepreneur model assuming that villages are small open economies with respect to formal credit market options, but households can also borrow and save in an equilibrium local credit market. I showed that formal credit market expansions through interest rates subsidies, access fixed costs reductions, and collateral constraint relaxations have heterogeneous and non-separable effects on households. These effects differ depending on informal credit market conditions. In the Thai case, villages already had extensive informal borrowing and savings activities, and the effects of formal credit market expansions on household welfare were hence limited.

1.4 Editing

1. ☒ comment one

2. ☒ comment two

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