



## Collateral and its substitutes in emerging markets' lending

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### ABSTRACT

Due to opaque information and weak enforcement in emerging loan markets, the need for collateral is high, whereas borrowers lack adequate assets to pledge as collateral. How is this puzzle solved? We find for a representative sample from Northeast Thailand that indeed most loans do not include any tangible assets as collateral. Instead, lenders enforce collateral-free loans through third-party guarantees and relationship lending, but also through modifying loan terms, such as reducing loan size. Guarantees are the relatively most important substitute, they reduce collateral requirements independently of relationship lending and they are more often used by formal financial institutions.

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### 1. Introduction

Collateral is a regular ingredient of risky lending. It serves to limit potential losses for lenders and serves as an incentive mechanism and commitment signal for borrowers. Because of these functions it plays an important role in loan markets. Accordingly collateral is part of many if not most (business) loan contracts in mature markets (Steijvers and Voordeckers, 2009). Due to opaque information and weak enforcement, theory suggests that the request for collateral is even higher in less developed markets (Bae and Goyal, 2009; Behr et al., 2011; Hainz, 2003; Menkhoff et al., 2006). This high importance of collateral results into a problem for relatively poor borrowers in emerging markets: collateral requirements are expected to be particularly high but their ability to provide collateral is comparatively low. How do borrowers and lenders get along with this problem?

In principle, there may be two possibilities: first, collateral requirements are similar to requirements in mature markets so that poor households or entrepreneurs who lack adequate assets to pledge as collateral will be credit-rationed; second, conventional collateral is not necessary and lenders can issue some credit without collateral. In the latter case, the follow-up question is then how can a lender enforce a collateral-free loan, are there substitutes to

collateral? Is it third party guarantees, pledged savings, other contractual features, close relationships or interpersonal trust that serve as collateral substitutes? As limited access to finance is constraining growth and welfare (Beck and Demirgüç-Kunt, 2008, 2008a) it seems important to learn about possible credit rationing induced by missing collateral and ways to overcome the threatening lack of collateral.

Despite the obvious relevance of lacking collateral for a very large share of the population in emerging countries, there is not much evidence available. Earlier studies documenting the use of collateral concentrate on mature markets. Studies on developing countries, however, are often narrow in their coverage, either with respect to target group, financial institutions or their information about borrowers and lending terms. In order to provide comprehensive evidence we have conducted a household survey in Northeast Thailand in 2007. This survey covers 2186 rural households from which we receive information about household, demographic and in particular financial details; one should note that these households also operate as small entrepreneurs and that loans are accordingly used for production and consumption purposes, respectively. The three provinces of our sample are selected in order to differ in economic conditions. Moreover, Thailand's rural areas are served by a variety of financial institutions (see Kaboski and Townsend, 2005; Siamwalla et al., 1990). All this provides welcome depth and diversity to our data set.

These data allow to empirically analyzing the above introduced "collateral puzzle" in emerging markets: first, we lay foundations

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by documenting the importance of collateral, second, we analyze the determinants of collateral including considering substitutes to collateral, and, third, we examine the use of the most important collateral substitutes. Regarding the importance of collateral we find that only about 15% of the 1671 loans in our sample are secured by various forms of collateral. Although there is some variation in cross-sections, such as household groups or borrowing purposes, the share of collateralized loans is consistently small throughout and does not exceed 25%. Moreover, the share of credit-constrained households is low at 11%, strongly indicating that lenders rely on substitutes to collateral in enforcing their interests.

This empirical research is the first, according to best of our knowledge, to systematically consider several substitutes to collateral in order to fully understand the role of collateral in lending to poor borrowers in emerging markets. We do indeed find that collateral is significantly less often required if there is either a third party guarantee or a case of relationship lending. The use of collateral is also related to other loan terms where collateral obviously serves to reduce the lender's risk: more collateral is required for larger loans, for longer loan duration and for lower interest rates. As a third group of determinants we investigate household characteristics and possible default risk with little success. It is only better education that is related to less collateral requirements.

As the data set unusually covers two important collateral substitutes, i.e. guarantees and relationship lending, we are able to examine their use in the same market. We find that guarantees are relatively more important, that both substitutes work independently of each other and tend to substitute each other, that guarantees are relatively more important at formal financial institutions and that the marginal effect of these substitutes is independent of loan size. These findings extend recent literature emphasizing the importance of either guarantees or relationship lending in less developed markets as means to overcome information and incentive problems.

We are not aware that there is an earlier study on emerging markets where all these determinants of the use of collateral – including substitutes to the use of collateral – were considered within a unified approach. Closest in coverage is Ono and Uesugi (2009) for small firms in Japan where, however, collateral is very widely used and thus plays another role than in our case. Usually, studies rely on a subset of the following determinants: guarantees, relationship, loan term and borrower characteristics. Our study shows, however, that all of these groups of determinants are important in analyzing the use of collateral and thus should not be missed in empirical work.

The paper is organized in four more sections. Section 2 provides an overview of the theoretical and empirical literature which shapes expectations to be examined. Section 3 informs about the data used in this study and the characteristics of borrowers and lenders in the rural areas. In Section 4 we examine the use of collateral by descriptive statistics. The hypotheses on the determinants of collateral are tested by multivariate analyses in Section 5. Section 6 concludes.

## 2. Literature review

Our literature review aims for preparing expectations on the use of collateral in lending in emerging markets. We are thus selective in coverage. Section 2.1 addresses theoretical literature in order to derive hypotheses of interest, whereas Section 2.2 deals with respective empirical work in order to identify gaps in research.

### 2.1. Theoretical literature

The use of collateral has been mostly explained by theories of asymmetric information which show that collateralization reduces

ex ante problems of adverse selection and ex post frictions such as moral hazard. Collateralization thus serves as a means to reduce credit rationing (review in Berger et al., 2011a,b; Coco, 2000). First, it induces a borrower to reveal his or her default risk, acting as a signaling device (Bester, 1985; Besanko and Thakor, 1987). Second, it provides the borrower with an incentive to exert effort and reveal truthfully the state of his project after having obtained the loan (Bester, 1987, 1994). Both arguments apply above all to outside collateral, where the lender has right of access to personal assets outside the firm.<sup>1</sup> The potential loss of personal assets makes a signal more credible and improves the incentive to repay the loan. By contrast, inside collateral, where assets inside the firm are pledged as collateral, serves to reduce conflicts of interest between multiple lenders by providing a priority of debt claims. If the borrower lacks inside and outside collateral, loans may be secured by third party guarantees. They help to reduce the lender's potential loss, but do not solve the moral hazard problem. If the third party is better able to monitor and control the borrower's actions than the lender is, the use of third party guarantees has some economic advantage. Accordingly, these so-called borrower-based theories (Jiménez et al., 2009) predict that the use of collateral varies across loans according to the characteristics of borrowers, loans, and bank-borrower relationships, which affect information asymmetries between both parties about the credit risk of the loan.

Further theories on the use of collateral reach beyond our objective. First, lender-based theories postulate that collateral serves to increase the lender's profit or expected return (Binswanger, 1982). Profits may increase due to a bank's market power (Hainz, 2003) or due to its information advantage over distant lenders in evaluating credit risk (Inderst and Mueller, 2007). As we do not observe local banking market structures, we do not directly test lender-based theories. Second, there are theories predicting the use of collateral due to legal variables and the efficiency of the legal system (La Porta et al., 1998). These theories require cross-country data and are thus also beyond our objective. Third, following the lazy bank hypothesis (Manove et al., 2001), high collateralization weakens the bank's incentive to evaluate the profitability of an investment project. Testing this theory requires time-series data which we do not have.

Collateral may be substituted by other mechanisms to reduce credit risk and informational asymmetry, such as strength of the lending relationship, loan maturity, loan size and covenants. The role of relationship strength in reducing problems of asymmetric information has been extensively discussed in the literature (for an overview see Boot, 2000). The more recent discussion focuses on differences between relationship lending and asset-based lending as two alternative lending technologies (Berger and Udell, 2006; Egli et al., 2006). Relationship lending relies on soft or private information about borrower risk obtained through a close bank-borrower relationship and involves the use of outside collateral. In contrast, asset-based lending, being more transactions oriented relies on hard or public information and uses the assets inside the firm as collateral (Brick and Palia, 2007). Relationship lending dominates in economies where the likelihood of strategic default is high because of an underdeveloped financial system with low transparency and weak legal enforcement (Egli et al., 2006).

As exactly this applies to emerging markets, one expects that relationship lending with its preferred reliance on outside collateral is wide-spread. It follows that the discussion based on different consequences derived from the use of inside collateral (see Longhofer and Santos, 2000) versus outside collateral (see Boot and Thakor, 1994) is less relevant for our case. Potentially very

<sup>1</sup> A personal guarantee represents a more general claim on personal wealth and places fewer restrictions on the guarantee's use of this wealth than the pledge of a specific personal asset (Avery et al. 1998, p. 1026).

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