Determinants of collateralized borrowing

Abstract

Following the financial crisis of 2008, a burgeoning literature on macroeconomics and firm financing have highlighted the role of collateral in amplifying business cycles. However, there is very little empirical evidence, particularly for the developing countries that documents the determinants of collateral. Therefore, in chapter one of this thesis, we begin by providing an overview of the literature on collateralized borrowing along with briefly outlining the main elements of our other two chapters.

In our second chapter, we use the World Bank Enterprise Survey to investigate the determinants of collateral for loans or lines of credit from financial institutions across firms in 122 developing countries. Our dataset allows us to distinguish between bank and nonbank sources of finance. We compare the determinants of collateral across these different sources of finance. We specifically investigate how borrower risk as proxied by firm specific characteristics affects the likelihood of collateral use in loan contracts. Further, the financial crisis of 2008 provides us with a natural event which allows us to study the impact of a crisis on a firm's ability to pledge collateral. Considering the importance of credit constraints for developing economies, we investigate how the constrained status of a firm is related to the likelihood of collateral use, for both bank and non-bank sources of finance.

In this chapter, we employ two different empirical models to study the determinants of collateral. These models are based on the timing of the decision to get a loan. First, we begin by assuming that the decisions are made contemporaneously. We therefore begin by modelling the choice of the firm in obtaining a loan as independent and estimate our equations in a multinomial logit framework. On the other hand, we take seriously the notion that the choice of the firm could actually be sequential. For example, firms that are rejected at one source - say non-collateralized loans at a bank may then subsequently approach the bank again to obtain a collateralized loan. We model this directly using a correlated sequential probit model. We believe that this contribution of our study is important since it provides an alternate way of modelling loan choices that may be a better reflection of the way in which firms make real choices about loans.

Our results from the multinomial logit model indicate that firm size is the most robust and significant predictor of the use of collateral. Interestingly, we find that small firms are less likely to pledge collateral for bank sources of finance. This result is in contrast to the case in developed economies, where small firms are required to pledge more collateral. Further, we

find that small and medium firms are more likely to pledge collateral for non-bank sources of finance. Additionally our results indicate that the constrained status of the firm also plays an important role in determining collateralized borrowing for both bank and nonbank sources of lending. In our sequential probit model, we find that countries with high levels of financial development are more likely to get a non-collateralized bank loan. Further we find that firms that are financially constrained are less likely to get collateralized bank loans. We also find that the financial crisis adversely affected the likelihood of obtaining collateralized non-bank loans.

In the third chapter, we extend a banking model with informational asymmetries and analyse both theoretically and empirically the determinants of collateralized loans in this framework.

Our model is characterized by three equilibria – a) A pooling equilibrium where there is no collateralized borrowing, b) a partial pooling equilibrium where only high quality entrepreneurs get collateralized loans and c) a separating equilibrium where loans are granted solely on the ability to pledge collateral. Our theoretical results suggest that the probability of obtaining a collateralized loan crucially depends on two factors – the project quality effect and the ability to pledge collateral effect. We use the World Bank Enterprise Survey data to empirically test the importance of these two effects.

One of the empirical challenges that confront us in our empirical analysis is the measurement of firm quality. In the firm financing literature, quality is traditionally measured with the help of various firm specific characteristics such as size of the firm, age of the firm, soft information characteristics, the constrained status of the firm etc. Previous literature has treated these firm specific characteristics as separate indicators of quality and empirical results would thus vary depending on which indicator of quality is chosen. In our empirical analysis we show that using these firm specific characteristics as measures of quality gives us conflicting results regarding the impact of quality on collateralized borrowing. This motivates us to use a structural latent variable model, where we model project quality of a firm as a latent variable to predict effects of project quality on obtaining collateralized bank loans. A critical advantage of our approach is the fact that project quality is modelled as a latent variable of which multiple indicators are observed. We next proceed to jointly model project quality and ability to pledge collateral of a firm accounting for potential measurement error.

Our main finding is that both project quality and ability to pledge collateral of the firm have a positive and significant impact on the likelihood of collateralized borrowing. Further, we find that the importance of quality in determining a collateralized loan goes down as the ability to pledge collateral of a borrower increases.