



Credit market imperfections and the power of the financial accelerator: A theoretical and empirical investigation [☆]

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ABSTRACT

We investigate, both theoretically and empirically, the relationship between credit market imperfections and the degree of shock amplification arising from the so-called financial accelerator. We begin by simulating a dynamic stochastic general equilibrium model with two types of financial frictions—costly contract enforcement and anti-creditor bias in the judicial system. Our model builds on the standard financial accelerator framework of [Bernanke et al. \(1999\)](#), to which we add imperfect judicial enforcement in the line of [Krasa and Villamil \(2000\)](#). According to our simulations, the power of the financial accelerator may either increase or decrease with financial frictions, depending on the source and initial level of such frictions. We then turn to the empirical investigation, based on panel data for 62 countries over 1981–1999. We rely on [Djankov et al. \(2005\)](#) and the World Bank's Doing Business Database for proxies of credit market imperfections. According to our results, which are consistent with the theoretical model's main predictions, macroeconomic volatility and the power of the financial accelerator seem to increase with contract enforcement costs, but vary non-monotonically with the degree of anti-creditor bias in the judicial and legal system.

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1. Introduction

The idea that financial conditions may amplify and propagate shocks to the economy, present in classic texts such as [Fisher \(1933\)](#) and [Gurley and Shaw \(1955\)](#) but long ignored by macroeconomists due to the influence of [Modigliani and Miller's \(1958\)](#) capital structure irrelevance theorem, has recently reemerged under the name of the 'financial accelerator'. According to this literature, ² the existence of a 'financial accelerator' derives from various imperfections in credit markets, the basic idea being that: (i) information asymmetries between lenders and borrowers give rise to agency costs that translate into an 'external finance premium' – i.e. an extra cost to firms' investment projects financed with external funds, as opposed to retained earnings; (ii) such agency costs depend negatively on borrowers' financial health, and therefore behave counter-cyclically. As a result, shocks that positively affect economic activity, increasing firms' cash flow and net worth, tend to be accompanied by lower premia on external finance, and therefore better financing conditions in credit markets and higher investment, which reinforces the shock's initial expansionary effects; and conversely for contractionary shocks.

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² Seminal contributions are [Greenwald and Stiglitz \(1993\)](#), [Williamson \(1987\)](#), [Bernanke and Gertler \(1989\)](#) and [Bernanke et al. \(1999\)](#).

As a logical consequence of this basic mechanism, one might expect the magnitude of the amplification effect arising from financial conditions, which we shall term the ‘power of the financial accelerator’, to increase monotonically with the degree of frictions in credit markets. Recently, however, a few authors have challenged this standard presumption. First, according to Bacchetta and Caminal (2000), Beck et al. (2006) and Christensen and Dib (2008), financial imperfections may either amplify or dampen shocks to the economy, depending on the type of shock; more specifically, the analyses by Bacchetta and Caminal (2000) and Beck et al. (2006) suggest that monetary shocks would be amplified and real shocks would be dampened by financial frictions, whereas Christensen and Dib (2008) reach similar conclusions for demand versus supply shocks. Second, even if we confine ourselves to environments (or shocks) for which the presence of financial frictions necessarily has an amplification effect, Aghion et al. (1999) and Aghion et al. (2004) show that it is possible for marginal increases in the level of imperfections beyond a certain threshold to reduce the degree of shock amplification. In fact, higher levels of credit market imperfections must not only generate higher agency costs, and consequently a higher sensitivity of leveraged firms to shocks to their net worth (a ‘sensitivity effect’), but must also imply a smaller mass of leveraged firms in steady-state (a ‘base effect’). For low enough levels of financial frictions, it seems reasonable to assume that the sensitivity effect should dominate, as increasing the level of such frictions would move the economy from a nearly frictionless case – in which the power of the financial accelerator would necessarily be close to zero – towards a situation characterized by more significant frictions – where the financial accelerator would become active; whereas, for high enough levels of financial imperfections, the base effect would dominate, as increasing the level of such imperfections would make the economy approach a creditless case – in which there could be no financial accelerator. In other words, the power of the financial accelerator would reach a maximum at some intermediate level of credit market imperfections.

The nature of the relationship between credit market imperfections and the financial accelerator – in particular, whether such relationship is monotonic or non-monotonic – has important implications for policy and welfare analysis. One implication bears on the expected effect of financial market reform on macroeconomic volatility. If higher levels of financial frictions necessarily imply higher degrees of shock amplification, then we should expect macroeconomic volatility to be, *ceteris paribus*, higher in countries with more imperfect credit markets; as a consequence, institutional reforms aimed at reducing financial frictions in *any* country should necessarily bring about a decline in aggregate volatility. If, however, the relationship between credit market imperfections and the financial accelerator is non-monotonic, then volatility should be highest in countries at intermediate levels of frictions. For countries with sufficiently low frictions, the reduction of such frictions would still decrease macroeconomic volatility; but, for countries with very imperfect financial markets, volatility could actually be expected to *grow* as their economies move towards the other end of the spectrum, at least initially. Another implication has to do with the power of monetary policy shocks. Under the ‘monotonicity’ hypothesis, we might expect the credit channel of monetary policy transmission to be more powerful in countries with higher degrees of financial frictions; on the other hand, in the case of a non-monotonic relationship between credit market imperfections and the financial accelerator, monetary policy shocks would be relatively ineffective both in countries with very high and very low levels of financial frictions.

Despite its relevance for policy and welfare analysis, the relationship between credit market imperfections and the power of the financial accelerator has received relatively little attention in the literature. In this paper we aim to contribute to a better understanding of this question, by focusing on a specific, and so far unexplored, issue of interest; namely, whether different types of imperfections affect the power of the financial accelerator in different ways. There is reason to believe that this might be so: credit supply is driven by financial intermediaries’ expected returns and these, in turn, must vary differently in response to different credit market imperfections; it is therefore possible that equilibria under distinct types of frictions be characterized by different leverage ratios in the economy, with correspondingly distinct relative weights of the ‘sensitivity’ and ‘base’ effects in the determination of the degree of shock amplification.

Our setup is a closed-economy, sticky-price dynamic stochastic general equilibrium model with two types of credit market imperfections: costly contract enforcement and anti-creditor bias in the judicial system. The model builds on the standard financial accelerator framework of Bernanke et al. (1999) (hereafter, BGG), who insert a debt-financing problem under costly state verification, in the spirit of Townsend (1979), in an otherwise standard ‘New Keynesian’ macroeconomic model;³ to this framework, we add imperfect judicial enforcement in the line of Krasa and Villamil (2000), by assuming that courts are unable to extract a fraction of total assets from defaulting debtors – which gives rise to the possibility of strategic defaults on loans.⁴

We find that each type of credit market imperfection has different implications for the financial accelerator mechanism. In particular, the power of the financial accelerator increases monotonically (albeit at decreasing rates) with contract enforcement costs, but non-monotonically with the anti-creditor bias in the judicial system – i.e. with the fraction of total assets that courts are unable to extract from defaulting debtors. The basic intuition for this result is easy to grasp. In our setup, optimal debt contracts specify a positive relationship between loan amounts and lenders’ expected returns. Since contract enforcement costs only reduce lenders’ returns when debtors default on their loans (since otherwise there is no reason to go to court), while an anti-creditor bias implies rent transfers from lenders to debtors in all possible states of the world, finance supply will shrink relatively more sharply in response to increases in anti-creditor bias. As a consequence,

³ The basic New Keynesian model is presented by Woodford (2003), among others.

⁴ For similar approaches, see Aizenman and Powell (2003) and Jappelli et al. (2005).

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