Banking stability, competition, and economic volatility☆

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ABSTRACT

The paper analyzes the influence of banking stability on the volatility of industrial value added using data for 110 countries. Our results confirm the relevance of lending and asset allocation effects because banking stability reduces the volatility of value added more in industries that have greater external financial dependence and intangible intensity when they are located in countries with more developed financial and institutional systems. Moreover, banking stability helps reduce economic volatility more in countries with less bank market competition. We control for recessions, reverse causality problems, and endogeneity of banking stability.

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1. Introduction

Literature on the real effects of finance extensively analyzes the importance of banking development for economic growth and volatility whereas studies on banking stability focus on its impact on economic growth but not on economic volatility (Rajan and Zingales, 1998; Claessens and Laeven, 2003; Levine, 2005; Larrain, 2006; Raddatz, 2006). Although bank-specific shocks reduce economic growth through reductions in lending (Kroszner et al., 2007; Dell'Ariccia et al., 2008) and changes in the type of investments (Fernández et al., 2013b), there is little knowledge on how they impact on output growth volatility, the channels for this influence, and whether country characteristics shape the influence of banking

stability on economic volatility. However, this analysis is relevant because banking stability is one of the main objectives of bank regulators and supervisors, and economic stability is an important requirement for sustained growth (Aghion et al., 2010) and suitable income distribution (Breen and García-Peñalosa, 2005).

This paper aims to provide new direct evidence on how banking stability contributes to the volatility of output growth by analyzing two new research questions: Through which channels does banking stability affect economic volatility? Does the influence of banking stability on economic volatility vary across countries depending on national characteristics? We use an industry-level database from 110 countries over the 1989–2008 period and analyze the impact of banking stability on economic volatility through changes in both the volume of funds available for investment (*lending channel*) and in intangible intensity (*asset allocation channel*). Moreover, we study how differences in bank market competition across countries shape the influence of banking stability on economic volatility through both channels.

To our knowledge, only recently, Ho-Chuan et al. (2014) analyzed the impact of financial development volatility on industrial growth volatility in a sample of 40 countries and found a positive relationship. We extend their evidence to a sample of 110 countries, use more proxies for banking stability, separate the influence through the lending and asset allocation channels, and study how bank competition shapes differences across countries.

Our paper makes several contributions. First, we distinguish between a lending channel and an asset allocation channel in the

influence of banking stability on economic volatility. To our knowledge, only Beck et al. (2006) and Ho-Chuan et al. (2014) empirically analyze the lending effect of bank-specific shocks on economic volatility.[1] Unlike our paper, Beck et al. (2006) use country and not industry-level data, focus on monetary shocks and do not use proxies for overall banking stability. None of these papers consider the influence of banking stability through an asset allocation effect associated with changes in intangible assets. However, the relevance of intangible investments for economic growth during normal periods has been documented by Claessens and Laeven (2003) who find that industries with higher levels of intangible assets grow faster in countries with a strong legal framework. Fernández et al. (2013b) show that banking crises impact more negatively on economic growth by reducing intangible investments to a greater extent in such countries. We analyze the asset allocation effect in the relationship between banking stability and economic volatility and argue that more frequent shocks to banks' balance sheets impact on the volatility of economic growth through changes in intangible assets, especially in institutionally-developed countries.

Second, our paper analyzes how the influence of banking stability on economic volatility through the lending and asset allocation channels varies across countries depending on bank market competition. This analysis expands the empirical evidence showing that bank competition impacts on economic growth during normal periods through relationship lending which affects credit availability (Petersen and Rajan, 1994, 1995; Boot and Thakor, 2000; Cetorelli and Gambera, 2001) and investments in intangible assets or innovation (Herrera and Minetti, 2007). Empirical evidence also shows that relationship lending and less bank competition increase the negative effect of bank distress on growth (Fernández et al., 2013a; Carvalho et al., 2016). However, to our knowledge, there is no empirical evidence analyzing the role of bank competition in the influence of banking stability on economic volatility. We argue that competition may shape the impact of bank-specific shocks on both the volatility of the bank credit supply and corporate asset intangibility through relationship lending.

We use four alternative proxies for banking stability at country level: the Z-score, the ratio of non-performing loans to total loans, the standard deviation of the ratio of private credit to GDP, and the ratio of loan-loss provisions to total gross loans. Moreover, the Z-score is a measure of bank insolvency risk that incorporates several traditional measures of bank risk such as the rate of return on assets, the capital-asset ratio, and the standard deviation of the rate of return on assets. We use the traditional setup of Rajan and Zingales (1998) and Claessens and Laeven (2003) to identify the causality running from banking stability to economic volatility. We therefore focus on sectors that are especially dependent on external finance and have higher intangible intensity as they would be more affected, respectively, by changes in the credit supply and in intangible assets during bank-specific shocks. We additionally control for recessions to better isolate causality from business conditions and to capture the potential influence of banks for amplifying the business cycle. We use direct proxies for bank competition such as the Lerner index and the Boone indicator and indirect proxies such as bank market concentration and countries' regulation on entry requirements into banking. We use legal restrictions on bank ownership and control of non-financial firms to proxy for ownership relationships between banks and their debtors.

We find that banking stability reduces the volatility of industry value added more in industries that have more external financial dependence and intangible intensity when they are located, respectively, in countries with a more developed banking system and more developed institutions. This result indicates that banking stability reduces economic volatility through both a lending channel and an asset allocation channel. We also find that banking stability helps reduce economic volatility more, through both channels, in countries with less bank market competition. The results are robust when we use alternative proxies for banking stability and control for its potential endogeneity and dependence on legal and institutional country characteristics. The empirical analysis uses predetermined values of financial dependence and intangible intensity in each industry, and predetermined values of financial and institutional development in each country to focus on their exogenous components and avoid simultaneity with economic volatility.

The rest of the paper is organized as follows. Section 2 provides a brief review of the related literature and discusses the hypotheses. Section 3 describes the data, methodology, and variables. Section 4 presents the main empirical results and Section 5 describes the robustness checks. Finally, Section 6 concludes.

2. Theoretical background and hypotheses

2.1. Related literature

Our paper is related to several strands of literature. A first strand of the literature focuses on the effects of banking development on economic volatility through the amplification or mitigation of real shocks. This effect has been differently emphasized depending on the type of shock. Banking development reduces the impact of firm-specific shocks on growth volatility because it helps firms with net worth problems to obtain the necessary working capital to finance their operations. Investment by firms would therefore be less dependent on internal funds, and bank funding would help reduce the impact of specific real shocks on economic volatility. In this case, banking development should lead to a relatively larger reduction in volatility in more financially-dependent industries (Easterly et al., 2000; Beck et al., 2006; Larrain, 2006; Raddatz, 2006).

However, studies analyzing the role of financial intermediaries in the business cycle suggest that banking development amplifies the propagation of macroeconomic shocks in imperfect capital markets for several reasons. A macroeconomic shock on a borrower's net worth is amplified by credit market imperfections because information asymmetries and agency costs reduce the borrower's ability to obtain credit following the shock. This balance-sheet effect also reduces banks' net worth and their ability to lend funds. The consequence is that the bank credit market exacerbates business cycles (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997). Braun and Larrain (2005) found that financially-dependent industries in more than 100 countries do relatively poorly during recessions. Asea and Blomberg (1998) and Dell'Ariccia and Marquez (2006) indicate another reason for bank lending amplifying the business cycle when they show that banks tighten their lending standards during recessions and relax them during expansions. This effect is associated with changes in credit demand affecting the severity of adverse selection problems, and also generates a pro-cyclical relationship between broad credit aggregates and aggregate economic activity that amplifies the business cycle. Our study extends the above literature by focusing on causality from bank-specific shocks to the business cycle and controls for banks amplifying the impact of recessions on economic volatility.

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[1] The lending channel has been well-documented by papers analyzing the effects of banking development on economic growth (Rajan and Zingales, 1998; Levine, 2005; Kroszner et al., 2007; Dell'Ariccia et al., 2008), the relationship between bank capital and growth of loans (Sharpe, 1995), and the credit channel of monetary policy (Bernanke and Gertler, 1995).