



Banking market structure, liquidity needs, and industrial growth volatility[☆]



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ABSTRACT

While the existing literature acknowledges the effect of banking structure on industrial growth as well as the effect of financial development on industrial growth and its volatility, we examine whether banking structure, given financial development, exerts any nontrivial effect on industrial growth volatility. We show that bank concentration magnifies industrial growth volatility, but reduces the volatility in sectors with higher external liquidity needs. The reduction in industrial growth volatility mostly reflects the smoothing in the volatility of real value added per firm growth. A variety of sensitivity checks show that our findings remain for different model specifications, banking market structure measures, liquidity need indicators, and omitted variables.

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1. Introduction

In the past two decades, theoretical and empirical work rationalizes and supports the view that financial development exerts a significantly positive effect on economic growth (Levine, 1997, 2005). Rajan and Zingales (1998, RZ) examine external finance as a mechanism through which financial development improves economic growth. They propose a novel specification that they apply to a large panel of cross-country, cross-industry data and find strong evidence that industries more dependent on external financing grow faster in countries with better developed financial systems. In their specification, the growth of new establishments represents the key factor through which financial development enhances industrial growth. Another strand of the literature explores whether financial development plays a role in the determination of growth volatility. For example, Raddatz (2006) applies the RZ specification and finds that financial development reduces growth volatility in sectors that need larger amounts of external liquidity, where the reduction in the volatility mainly

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comes from stabilizing the output growth of existing firms. The effect of financial development on growth volatility remains ambiguous, however.¹

Researchers typically measure financial development by the ratio of claims on the private sector by deposit money banks and other financial institutions to GDP (e.g., [Aghion et al., 2005](#); [Levine et al., 2000](#)). Given their measure of bank (financial) development, [Cetorelli and Gambera \(2001\)](#) investigate whether the market structure of the banking system exerts any influence on economic growth. Specifically, the authors test whether, for a given bank (financial) development, the amount of credit provided by more competitive or concentrated banking industry matters.

The effect of bank concentration on industrial growth is ambiguous. [Pagano \(1993\)](#) argues that any deviation from perfect competition in the banking market leads to inefficiencies that harm firms' access to credit, thus, hindering economic growth. [Mayer \(1988\)](#) and [Petersen and Rajan \(1995\)](#) show that more concentrated banking markets cause a larger incentive for banks to establish lending relationships with their client firms, thus facilitating their access to credit lines and, thus, enhancing their growth. Utilizing the RZ cross-country, cross-industry framework, [Cetorelli and Gambera \(2001\)](#) provide empirical results showing that bank concentration exerts a negative effect on industrial growth as a whole but industries that depend more on external finance grow faster in a more concentrated banking system. [Claessens and Laeven \(2005\)](#), however, show that a higher level of competition in the banking system promotes economic growth in the industries that rely more on external financing. [Deidda and Fattouh \(2005\)](#) argue that a nonlinear relationship exists between concentration and growth. That is, the concentration effect depends on economic development. They find that banking concentration associates negatively with both per-capita real income growth and industrial growth in low-income countries, but no significant relationship emerges in high-income countries.²

Policy makers identify output growth stability as one of the several macroeconomic policy objectives ([Mishkin, 2009](#); [Yellen and Akerlof, 2006](#)). Many adverse effects occur because of higher output growth volatility, such as lower economic growth ([Aghion et al., 2010](#); [Ramey and Ramey, 1995](#)), worsened income distribution ([Breen and Garcia-Peñalosa, 2005](#)), and higher output and employment costs ([Benigno and Ricci, 2011](#)).³ A successful macroeconomic policy to stabilize or reduce growth volatility depends on knowing the sources of that volatility. Intuitively, any mechanism through which financial development affects economic growth may also affect growth volatility. For example, following [Rajan and Zingales \(1998\)](#), [Raddatz \(2006\)](#) finds a larger reduction in growth volatility in industrial sectors with high liquidity needs.⁴ As an extension of [Cetorelli and Gambera \(2001\)](#), we anticipate that banking market structure influences not only growth but also its volatility. That is, bank concentration will stabilize growth for industries with higher external liquidity needs, if banks with more market power will experience more incentives to establish and maintain long-term relationships with firms to alleviate information asymmetry and moral hazard and, thus, provide funds to firms on favorable terms even in bad times as they can extract more rents during periods of economic expansion.

This paper examines how growth volatility compares between a country with an unconcentrated, thus, more competitive, banking sector or with a relatively concentrated banking system where banks exert more market power. To this end, we rely on [Raddatz's \(2006\)](#) specification, augmented with alternative measures of banking market structure (bank concentration or bank competition), to test whether bank concentration leads to an increase or decrease in the volatility of industries with higher liquidity needs, after controlling for the size of the banking sector in a country. As such, this study provides a synthesis of (and/or a complement to) [Cetorelli and Gambera \(2001\)](#) and [Raddatz \(2006\)](#). That is, we consider the effect of bank concentration on the volatility, controlling for bank development.

Using [Raddatz's \(2006\)](#) data on 70 manufacturing industries in 47 countries over the 1981 to 1998 period, we first examine the average effect of bank concentration on industrial growth volatility. That is, we test whether, overall, the growth patterns of industries exhibit more or less volatility if they operate within a more concentrated banking system. Our empirical results show that higher concentration in the banking sector strongly associates with larger industrial growth volatility. Thus, countries with a more concentrated banking market display higher industrial growth volatility. We also confirm that bank development, characterized by a large banking sector, stabilizes industrial volatility. [Cetorelli and Gambera \(2001\)](#) detect that a more concentrated banking sector associates with lower industrial growth while a larger banking sector associates with higher industrial growth. We show that both the market structure and the size of a banking system exert a nontrivial, opposite effect on industrial growth volatility. Additionally, we confirm [Cecchetti and Kharroubi's \(2012\)](#) finding that more finance does not always make things better. The authors report an

¹ Theory offers ambiguous predictions about the effect of financial development on growth volatility. For example, [Bernanke and Gertler \(1989\)](#) and [Kiyotaki and Moore \(1997\)](#) argue that financial constraints on firms can play a key role in the propagation of the business cycle and can eventually lead to higher oscillations. Accordingly, well-developed financial systems, by removing or alleviating financial constraints, can dampen output volatility. [Bacchetta and Caminal \(2000\)](#), [Aghion et al. \(2004\)](#), and [Morgan et al. \(2004\)](#) show that the ultimate (positive or negative) effect of financial development on volatility depends on real or monetary shocks, intermediate versus early and later stages of a country's financial development, and credit supply or demand shocks. Cross-country empirical evidence also produces mixed findings. [Denizer et al. \(2002\)](#) find that countries with better developed financial systems experience smoother fluctuations in per capita output growth. [Acemoglu et al. \(2003\)](#) contend that financial development exerts no significant effect on growth volatility, once they control for institutions. [Beck et al. \(2006\)](#) also show that no robust linkage exists between financial development and aggregate economic volatility. [Bekaert et al. \(2006\)](#) find that financial liberalization leads to smaller (consumption) growth volatility. [Levchenko et al. \(2009\)](#), however, find evidence that financial liberalization increases output volatility. Recently, [Ćorić and Pugh \(2013\)](#) demonstrate that foreign direct investment stabilizes output growth during the era of the Great Moderation.

² Other studies, such as [Cetorelli \(2004\)](#), [Bonaccorsi di Patti and Dell'Ariccia \(2004\)](#), and [Cetorelli and Strahan \(2006\)](#), offer additional evidence that bank competition affects the formation of nonfinancial industries, the creation of firms in the nonfinancial sectors, and the market structure of nonfinancial industries. Recently, [Hoxha \(2013\)](#) shows that industrial firms that rely more on external financing perform better in countries with more concentrated banking markets.

³ Cross-country estimates identify the detrimental effects of macroeconomic volatility on growth. [Imbs \(2007\)](#), however, documents a positive growth-volatility coefficient in sectoral data. [Koren and Tenreyro \(2007\)](#) decompose aggregate volatility into various sources to study why GDP growth experiences more volatility in poor countries than in rich ones.

⁴ [Larrain \(2006\)](#) finds that countries with more bank credit experience lower industrial output volatility.

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