



# The market structure of the banking sector and financially dependent manufacturing sectors

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## ABSTRACT

I explore the effect of the structure of the banking market on the performance of manufacturing sectors. The theoretical papers offer ambiguous explanations regarding the effects of banking market structure on the size of manufacturing sectors, and empirical studies that use cross country data do not reach a consensus on these effects. By using the Panzar–Rosse method to estimate a “*H*-statistic” competition index and conventional concentration indices, I provide evidence that industries that rely more on external financing perform better in countries where the banking competition is lower, and the banking concentration is greater.

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## 1. Introduction

An extensive literature emphasizes the importance of financial intermediaries for economic growth. Banking, as one of the most important financial intermediaries, has received substantial attention in the literature. However, there are still conflicting theories and evidence about how the banking sector affects the size and growth of other industries. In the last two decades, following the consolidation of banking systems, there has been a heated debate in academic and policy circles across the world about whether banking concentration and competition are more desirable for economic growth. In this paper, I provide new evidence on how banking concentration and competition affect the size of manufacturing industries by using a panel data estimation.

I find that more concentration in the banking sector leads to higher performance in the manufacturing sectors that are financially dependent on banks. This finding should not come as a surprise given the previous findings in the economic literature. The consolidation of banks has led to an increase in the market share of the largest banks, and at the same time the price of credit has declined (Cetorelli, 2004; Jayaratne & Strahan, 1998). Another advantage of the higher concentration for the manufacturing sectors is that large banks lend a greater fraction of their assets than do smaller banks, and that large banks focus more on business lending (DeYoung, Hunter, & Udell, 2004).

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Using a measure of competitiveness, estimated as the sum of elasticities of revenue to input prices for individual banks, I find that banking competition does not have a positive effect on manufacturing sectors that are dependent on external financing, instead it might even harm these sectors. While unintuitive at first look, the potential role of information in the relationship between banks and firms can rationalize such an outcome. Because monopolistic banks are better able to absorb the high monitoring costs of firms, they can provide more credit to credit constrained, opaque firms (Petersen & Rajan, 1995). Another possible interpretation of these results is that an increase in banking competition causes banks to screen firms less rigorously, and lend more to “bad borrowers.” This practice can lead to an increase in interest rates and a decreased amount of credit made available to the manufacturing sectors (Marquez, 2002).

There are two main additions to the previous literature in this paper. The first addition is the dynamic approach to banking concentration and competition. So far, the literature has looked at the effects of banking concentration and competition using only static measures of concentration and competition. However, the market power in the banking industry keeps changing frequently, because of mergers and acquisitions of banks. And the competitive environment also changes: new banks starting business, the existing ones offering new services such as internet banking, new transaction lending technologies.<sup>1</sup>

My analysis uses panel data to estimate the effect of banking concentration and competition on the performance of manufacturing sectors as opposed to the pure cross-sectional approach of previous studies. A second addition is using contemporary data for the banking sector and other manufacturing sectors. While previous studies have used cross-sectional data from different points in time for manufacturing sectors and the banking sector to estimate their relationships, this study uses data that matches the exact same periods for all sectors.<sup>2</sup> In a dynamic environment, using data from different points in time for different sectors can lead to biased estimates. My paper comes closer to identifying the true relationship between the banking market structure and the performance of manufacturing sectors in need of external finance.

To investigate the effect of bank concentration on the industries dependent on external finance, I adopt the method used by Cetorelli and Gambera (2001). In contrast to Cetorelli and Gambera (2001), to control for the variation of bank concentration over time, I use five-year moving averages for bank concentration ratios, rather than an average concentration ratio of banks for the entire period. In order to measure banking concentration, I use a five-bank concentration ratio and the Herfindahl–Hirschman Index. Under the assumption that increased credit provision does not have an immediate effect on the manufacturing sectors, I examine the influence of the last five years' annual banking concentration on manufacturing sectors performance, measured as the value added of the industry. Both concentration measures show consistent and positive effects of banking concentration on the performance of manufacturing sectors in need of external finance.<sup>3</sup>

Using the same assumption that the effect of a change in the competitive environment is not felt simultaneously and to the same magnitude in all manufacturing sectors, I build upon the strategy of Claessens and Laeven (2005) by estimating the effect of banking competition on the performance of manufacturing sectors. I estimate a competition index measured as the sum of the elasticities of bank revenue to input prices. Using a panel-data estimation, I find that more competition in the banking sector has a negative effect on manufacturing sectors' value added, contrary to Claessens and Laeven (2005).

The rest of the paper is organized as follows. A brief literature review is in Section 2. Section 3 explains the data and their sources. In Section 4, I describe the methodology used in this paper. Section 5 explains the empirical results, while robustness tests are explained in Section 6. Section 7 concludes the paper.

## 2. A brief review of related literature

The importance of financial intermediaries for growth was not established until the last two decades. Although, Schumpeter (1911) argued that financial intermediaries were essential for technological innovation and economic development; for most of the last century, financial development has been observed as being correlated with economic growth. One of the first studies that established causality between financial development and growth is King and Levine (1993). Later on, Levine and Zervos (1998) argued that bank credit and economic growth are positively correlated.

Once the importance of bank credit for economic growth was established, one of the challenges facing the economic literature was the importance of the banking market structure and its effect on economic growth. The literature is far from having a consensus about the effect of the banking market structure on the availability of credit to firms, which directly affects economic growth.

Rajan and Zingales (1998) is a cornerstone in the research about financial markets and economic growth. They find that industries in need of external financing grow faster in countries with more developed financial markets. They use U.S. firm-level data to estimate the external financial dependence of different manufacturing sectors. Their basic assumption is that financial markets are well developed in the U.S., so the firms can borrow at the desired amount that is determined only by the demand of the firm for external finance.<sup>4</sup>

<sup>1</sup> New transaction lending technologies include asset-based lending, leasing, and small business credit scoring.

<sup>2</sup> Due to limited data availability, many previous studies have used data that have only a couple of years overlapping for the banking sector and manufacturing sectors.

<sup>3</sup> In a related paper, Hoxha (in press) shows that bank concentration leads to stability of growth of manufacturing sectors.

<sup>4</sup> The assumption that lies behind the usage of the same external finance dependence for each industry across countries is that the external dependence is mainly due to technological reasons. This model does not assume that a sector in two countries depends on the external finance equally; it only assumes that the ranking of the external finance dependence is similar across countries.

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