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Banking efficiency in Brazil



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ABSTRACT

This paper analyses efficiency in Brazilian banks from 1998 to 2010 with a Bayesian dynamic frontier model. This model provides a more structural explanation for the variation in bank inefficiency than that has been presented by previous models, and also allows for cost inefficiency effects. On average, the dynamic frontier results, estimated via the Markov Chain Monte-Carlo simulation, indicate that Brazilian banks improved in terms of efficiency over time. Factors found to be important determinants of cost efficiency include public banks and foreign banks that are statistical insignificance, merger and acquisitions, big banks, deregulation and stressed banks that are statistical significant. Big bank and deregulation are the only variables that decrease costs in the Brazil market. Several Policy implications are derived.

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1. Introduction

This paper analyses the efficiency of Brazilian banks in order to investigate the role of public banks, foreign banks, merger and acquisitions, big banks, deregulation and stressed banks. Deregulation has placed Brazilian banks in a much more competitive environment and has increased competition amongst them. As a result, Brazilian banks are now under pressure to increase their

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efficiency relative to their competitors. Moreover, efficiency analysis is one of the ways to drive banks toward the frontier of best practices (Berger et al., 2009). Indeed, efficiency has been the focus of much recent research (Berger and Humphrey, 1992, 1997; Drake et al., 2009; Fukuyama and Weber, 2009a,b, 2010; Barros et al., 2012; Barros and Williams, 2013). The current research on bank efficiency using a Bayesian stochastic frontier model motivates and guides our research study (Assaf et al., 2010, 2011, 2013). The present research compares with recent empirical studies that focus on Brazilian banks; such studies include Silva (2001), Ceretta and Niederauer (2001), Belaisch (2003), Macedo et al. (2005), Ghilardi (2006), Jorge Neto and Wichmann (2006) and Staub et al., 2010. All these papers have adopted DEA-Data Envelopment models. The present paper extends the current research with an alternative approach on bank efficiency by adopting an innovative Bayesian frontier model. Additional motivations for the present research are as follows: Firstly, it aims to analyze the efficiency of the banking industry in a representative emerging economy, Brazil. Insofar as the economy in Brazil is reaching high rates of growth, the analysis of bank efficiency is becoming of increasing importance, as efficient banks are those that deploy their resources with the most accuracy. The present research analysis is based on a representative sample of Brazilian banks that includes all national banks. Secondly, the paper introduces for the first time to the literature on bank efficiency a dynamic stochastic frontier model. The dynamics of the problem of technical efficiency estimation in banking have been overlooked, despite being a more realistic assumption. For example, banks are expected to learn from their mistakes to improve their performance over time. Moreover, the notion that efficiency improves in the long-run, particular in competitive markets, makes the dynamic model more appropriate. Because the dynamic assumption makes the model highly complicated, we need special numerical analysis in a Bayesian treatment. Although the Bayesian stochastic frontiers model has already been adopted by (Assaf et al., 2010, 2011, 2012), the present model innovates in this regard with a focus on Brazil and a dynamic stochastic Bayesian frontier. Third, the present research analysis includes data on Brazilian banks through 2010, thereby enabling an analysis of the economic crisis that started in 2008, as well as the Lula da Silva presidency from January 1st 2003 to January 1st 2011. In the first part of this presidency, Brazil registered a high rate of growth; however, the crisis affected it, and the various contextual trends affected bank efficiency. Finally, several policy variables are taken into account in the present analysis, permitting sound policy implications.

The paper is organized as follows: Section 2 provides an overview of the Brazilian Banking industry. Section 3 provides an overview of the literature. Section 4 presents the methodology. Section 5 presents the data, and finally Section 6 presents the results. Section 8 discusses the research implications and presents the conclusions.

2. Brazilian banking sector

According to Freitas and Prates (2001), the financial crises of 1997 and 1998 revealed the weakness of systems for monitoring the credit risk of each country, and discussions within the Basel Committee pointed to the need for a review of criteria regarding the classification of risk in banking operations. Given the fact that the rules needed to be reviewed, the Committee released a new set of rules in 1999, encompassing all related rules that have been edited before.

Before these events, the Brazilian National Monetary Council (CMN) issued Resolution 2099 of 1994, which ratified the Basel Accord as the minimum requirement for opening operation of financial institutions. This resolution defined the limits of capital and equity for commercial banks, investment, development, real estate credit companies, credit companies, finance and investment and universal banks.

Among the actions taken in order to ensure liquidity and solvency of the financial system was the passage of Resolution 2208 of 1995, the National Monetary Council, supported by Law 9710 of 1998, which established the Program of Incentives to the Restructuring and Strengthening of the National Financial System (PROER). The scope of the program was provided to create a special line of financial assistance; release funds from the reserve requirements on demand deposits for the purchase of Certificates of Deposits (CDB) issued by the participating institutions; ease safeguards applicable

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