



The determinants of commercial banking profitability in low-, middle-, and high-income countries



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ABSTRACT

Using a broad bank-level dataset and the GMM estimator technique described by [Arellano and Bover \(1995\)](#), this paper analyses how bank-specific characteristics, macroeconomic variables, and industry-specific factors affect the profitability of 10,165 commercial banks across 118 countries over the period from 1998 to 2012. Grouping the countries according to three income levels, we show that the determinants of bank profitability included in our model can explain existing profitability differences among commercial banks in low-, middle-, and high-income countries. The profitability determinants vary quite widely across the different levels of income in terms of significance, sign and size of the effect. The level of income has thus an important impact on the determinants of bank profitability.

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1. Introduction

The role of commercial banks and its development has always attracted the interest of academic research, as it is well known that commercial banks play an important role for the economic development of a country, and that an efficient and profitable banking system is a necessary condition for economic growth. As [Beck, Demircug-Kunt, and Levine \(2009\)](#) point out, the financial systems and standard indicators of financial intermediary across the world deepened over the past decades along many dimensions. However, progress has been uneven across income groups. Specifically, the deepening has been concentrated in high-income countries, while there has been no significant deepening in middle- and low-income countries. According to this study, various economic and institutional features are different between low- middle- and high-income countries. In this paper, we investigate if and why profitability of commercial banks varies across these income groups and whether bank profitability determinants depend on the countries' income level and their level of economic development, respectively. The main purpose of our paper is thus to better understand the impact of a country's income situation on bank profitability and its main determinants.

For this purpose, we use a large sample with over 10,000 banks from 118 countries around the world over the time period from 1998 to 2012. We analyze which environmental (external) and management-determined (internal) factors have an impact on bank profitability and whether the determinants vary between banks operating in low-, middle and high-income countries. In addition, we analyze the impact of the recent financial crisis on commercial bank profitability within the context of different levels of economic development.

The existing literature on bank profitability is quite large and provides a comprehensive examination of the effects of bank-specific, industry-specific, and macroeconomic determinants on bank profitability. Most of the papers, however, study this topic within a single-country setup or a small group of countries from either developed or developing countries. The wide range of results from these studies strongly suggests that the income group level has an important impact not only on bank profitability, but also on its determinants.

Only a few papers have analyzed bank performance for a larger sample of countries (e.g., [Demircug-Kunt & Huizinga, 1999](#); [Flamini, McDonald, & Schumacher, 2009](#); [Micco, Panizza, & Yanez, 2007](#)). However, none of these studies has explicitly investigated the impact of the income group level and a country's economic development on bank profitability (determinants). Our paper builds on the work by [Molyneux and Thornton \(1992\)](#), [Demircug-Kunt and Huizinga \(1999\)](#), and [Micco et al. \(2007\)](#). Using methods comparable to those of other scholars (e.g., [Athanasoglou, Brissimis,](#)

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& Delis, 2008; Garcia-Herrero, Gavila, & Santabarbara, 2009; Staikouras & Wood, 2004), we analyze the effect of bank-specific (e.g., capital ratio, operational efficiency, bank size), industry-specific (e.g., ownership and concentration) and macroeconomic determinants (e.g., inflation and cyclical output) on bank profitability. Economies are divided according to the World Bank's classification based on gross national income (GNI) per capita. By grouping the countries depending on their income level and by separately considering these groups, we are able to analyze how the relevant determinants affect bank profitability and how these effects differ between the different income categories.

With this paper, we want to investigate whether the different development levels and the uneven deepening in the financial intermediation industry over the past decade and the various economic and institutional features across the income groups have an impact on bank profitability and the determinants of bank profitability. In order to do so, we use recent data of more than 10,000 commercial banks across 118 countries and for the longest relevant period (from 1998 to 2012). By applying a dynamic GMM technique, we are able to account for profit persistence and potential endogeneity problems. Former papers also using a multi-country-setup, including the study closest to ours from Demircug-Kunt and Huizinga (1999), have used linear OLS methods, which however, lead to inconsistent results (e.g., Baltagi, 2001). Finally, we provide new evidence on how the financial crisis has affected commercial banks in different environments of market development. Until now, only a few papers have analyzed the impacts of the recent financial crisis on the determinants of bank profitability (see, e.g., Beltratti & Stulz, 2011; Dietrich & Wanzenried, 2011). The remainder of the paper is structured as follows. Section 2 surveys the relevant literature on banking profitability. Section 3 outlines our model and the dependent and independent variables used in our analyses. Section 4 describes the data sample and methodology used. Section 5 presents the results of our empirical analysis, and Section 6 concludes.

2. Review of the literature

Bank performance has been extensively studied in the past. Early work goes back to Short (1979) and Bourke (1989), who were followed by a series of papers which attempted to identify some of the major determinants of bank profitability. The respective empirical studies have focused their analyses either on cross-country evidence or on the banking system of individual countries. The studies of Molyneux and Thornton (1992), Demircug-Kunt and Huizinga (1999), Staikouras and Wood (2004), Goddard, Molyneux, and Wilson (2004), Micco et al. (2007), Pasiouras and Kosmidou (2007), and Flamini et al. (2009) investigate a panel data set. Studies of Berger, Hanweck, and Humphrey (1987), Berger (1995), Neely and Wheelock (1997), Mamatzakis and Remoundos (2003), Athanasoglou et al. (2008), Sufian (2009), Alper and Anbar (2011), Dietrich and Wanzenried (2011), Scott and Arias (2011), Javaid, Anwar, Zaman, and Gafoor (2011) and Ramadan, Kilani, and Kaddumi (2011) focus their analyses on single countries. The empirical results of these above-mentioned studies do vary, but given the differences in their datasets, time periods, investigated environments, and countries, this is not surprising. However, there are some mutual elements to further categorize the determinants of banking profitability.

Usually, bank profitability is measured by the return on average assets, return on equity and net interest margin, and it is expressed as a function of internal and external determinants. The internal determinants include bank-specific variables. The external variables reflect environmental variables that we expect to

affect the performance of financial institutions. In most studies, variables such as bank size, operational efficiency and the capital ratio serve as internal determinants of banking profitability (e.g., Bourke, 1989; Demircug-Kunt & Huizinga, 1999; Goddard et al., 2004; Javaid et al., 2011; Pasiouras & Kosmidou, 2007). Besides that, the ownership structure is another bank-specific variable, which is widely accepted to affect bank performance (e.g., Micco et al., 2007).

The external determinants of bank profitability, as presented in the literature, include factors such as the inflation rate, GDP development, GDP per capita, taxation, and variables representing market characteristics (e.g., market concentration). Most studies (Athanasoglou et al., 2008; Demircug-Kunt & Huizinga, 1999) have shown a positive relationship between inflation, GDP growth, and bank profitability and a negative relationship between the tax burden and bank performance (Demircug-Kunt & Huizinga, 1999). A study by Albertazzi and Gambacorta (2009) concludes that the impact of taxation on banking profitability is small because banks are able to shift a large fraction of their tax burden onto depositors, borrowers, or purchasers of fee-generating services.

The market structure in the banking industry is another important factor for bank profitability. According to the structure-conduct-performance (market-power) paradigm, increased market power generates monopoly profits. The results of Bourke (1989) and Molyneux and Thornton (1992) provide empirical evidence for a positive and statistically significant relationship between the bank concentration ratio and the profitability of a bank, and these results stand nicely in line with the traditional structure-conduct-performance paradigm. In contrast, the results of Demircug-Kunt and Huizinga (1999), and Staikouras and Wood (2004) indicate a negative but statistically insignificant relationship between bank concentration and bank profits.

The literature on the impact of the recent financial turmoil on the determinants of bank profitability is relatively sparse. In their analyses of the Swiss market both before and during the financial crisis, Dietrich and Wanzenried (2011) found empirical evidence that loan loss provisions relative to total loans ratio, did not have a statistically significant effect on bank profitability before the crisis but that loan loss provisions significantly increased during the crisis. Furthermore, they found that the yearly growth of deposits has had a significant and negative impact on bank profitability, and that this effect is seen mainly in the crisis years.

A few papers specifically investigate differences in bank profitability and its determinants between developing and developed countries:

Demircug-Kunt and Huizinga (2000) show that financial development has an important impact on bank performance. They provide empirical evidence for higher bank development being related to lower bank profitability, i.e., countries with underdeveloped financial systems often have significantly higher levels of bank profits. Flamini et al. (2009) confirm this result as they show that commercial banks are very profitable in the developing Sub-Saharan African countries. The average return on assets in these countries was about 2% over the last 10 years. That is significantly higher than bank returns in other, more developed, parts of the world. They find evidence that bank-specific and macroeconomic factors are the most important explanatory variables for the high return. Furthermore, market power also influences bank returns. Greater competition among banks lowers profitability and increases efficiency. A larger and more efficient banking sector leads to higher growth on the firm, industry, and country level. Micco et al. (2007) found that whether a bank is privately owned or state-owned affects its profitability and that these results also vary across different income

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