The relationship between revenue diversification and bank performance: Do financial structures and financial reforms matter?

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A R T I C L E   I N F O

A B S T R A C T

This paper contributes to the existing literature by investigating the impact of revenue diversification on bank performance through a broad array of financial reforms, including credit controls, interest rate controls, entry barriers, banking supervision, privatization, and financial account restrictions. This analysis is the first to investigate whether financial structures (bank- or market-based systems) change the effect of diversification on individual bank performance. We use a panel dataset sample from 29 Asia-Pacific countries covering the period between 1995 and 2009, for a total of 2372 banks. Unlike the results of previous studies based on data from the U.S. and Europe, this study confirms the hypothesis of the portfolio diversification effect for the Asia-Pacific banking industry. For bank-based groups, bank performance can be improved through diversification, supporting the "bank-based view" hypothesis. Finally, under different financial systems, the relationships among revenue diversity, financial reforms, and bank performances are multidimensional.

1. Introduction

The previous literature has investigated the effects of diversification, mainly focusing on the U.S. or Europe, but the results are still uncertain regarding both profitability and risk-taking. Some studies using U.S. data offer evidence that revenue diversity improves bank performance (Stiroh and Rumble, 2006), while other researchers do not agree (DeYoung and Roland, 2001; Stiroh, 2004). Utilizing European data, Lepetit et al. (2008), De Jonghe (2010), and Fiordelisi et al. (2011) found that revenue diversification increases banks' risk. On the contrary, Chiorazzo et al. (2008) used European data, reaching the conclusion that banks' risk can be reduced through revenue diversity.

The reason for the lack of conclusive evidence of the relationship between revenue diversification and bank performance may be that little consideration has been given to the detailed revenue accounts and related factors that influence this relationship. However, under the same conditions of diversity,

bank performance may not be identical across countries or regions, prompting further discussion about the reasons behind this heteroscedasticity link. This paper is the first to demonstrate the crucial roles of financial reforms and financial structures (bank- or market-based systems) in explaining the variation across countries and over time from the impact of diversification on various profitability and risk measures, and it presents important policy repercussions.

This study augments the existing literature in the following five ways. First, the literature on banking activities in Asia-Pacific countries is sparse, yet very important (please refer the next section for more discussion). Thus, this study adopts a panel of 29 Asia-Pacific countries as opposed to a smaller set of countries focusing mainly on U.S. or European data. We examine the case of the Asia-Pacific banking industry with a wider range of the latest panel data, totaling 1372 banks over the period between 1995 and 2009, which covers the 1997 Asian financial crisis and the global financial crisis of 2008–2009.

Second, because an increase in commissions would be offset by losses in trading or investment, the final figure of the ratio of net non-interest income to net operating income (NNII) or any single asset proxy may not capture the degree of diversification in a

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bank's non-interest income activities.[1] This study therefore follows Elsas et al. (2010), who dealt with a 380-bank sample over nine European countries, and Trujillo-Ponce (2013), who explored 89 Spanish banks. We implement an adjusted Herfindahl–Hirshman index (HHI) based on types of revenues to measure revenue diversification by considering different types of revenue structures, such as gross interest revenue, net commission revenue, net trading revenue, and all other net revenue. Exploring the various types of revenue sources enables us to clearly identify which revenue types can help banks improve their performance.

Third, previous studies have investigated the impact of revenue diversification on either bank performance or a bank's risk-taking. This study adopts four measures with eight broad variables for financial performance, including profitability, accounting risk, financial stability, and credit risk.

Fourth, some studies on bank regulation have criticized uniform capital ratio regulation for bringing about a moral hazard problem because banks are induced to increase the share of higher yielding assets without increasing equity capital, which may not decrease the probability of bank failure (see Tsuji, 1999 for a detailed discussion). Therefore, because the relationship between diversification and performance may not be linear, this study considers the interaction between diversification and financial reforms. Unlike previous studies that have adopted an aggregated financial reform index (Tressel and Detragiache, 2008), we apply six individual sub-indices of financial reform measures, enabling us to distinguish between different dimensions of financial sector policy.[2] The six different dimensions involve information on directed credit/reserve requirements (credit controls), interest rate controls, entry barriers, banking supervision, privatization, and financial account restrictions (liberalization on international capital flows).

Fifth and finally, by adopting bank-level data, this study analyze whether bank-based or market-based groups change the effect of diversification on individual bank performance. The differences in the relative performances of the Japanese and U.S. economies have led observers to recently conclude that bank-based and market-based financial systems may produce different features of scale and scope (Allen and Gale, 1999; Demirgüç-Kunt and Maksimovic, 2002; Levine, 2002). With traditional intermediation, banks tend to depend on net interest income as their main source of profitability. Therefore, market-based forms of intermediation could be related to larger, more interconnected (both domestically and globally), and more complex financial structures and instruments. Complexity can be detrimental to financial stability if the associated financial products are opaque and cannot be easily priced (IMF, 2012).

This paper is organized as follows. The next section develops the research questions regarding Asia-Pacific countries. Section 3 reviews the relevant literature. Section 4 outlines the methodology and empirical model used in this study. Section 5 provides a description of the data, including the data sources and definitions of the variables. Section 6 reports and analyzes the empirical results of both the benchmark model and extended model. The final section presents our conclusions and a few salient implications based on the empirical findings of this research.

2. Motives and research development

With the current wave of financial liberalization, financial institutions have been encouraged to develop new products with the goal of meeting demand due to market development, increasing competitiveness, expanding the scale of business, and promoting liberalization and diversification. The literature on banking activities across Asia-Pacific countries is sparse,[3] yet very important, because banks are the predominant sources of financing for businesses in this region's private sector. Asia-Pacific-based banks have different institutional setups, including financial markets, legal traditions, bankruptcy codes, and corporate ownership structure (Hsieh et al., 2013; Lee and Hsieh, 2013). In particular, Australia, Bangladesh, Brunei, Cambodia, India, Malaysia, Maldives, and Singapore are members of the British Commonwealth and thus have some common attributes in terms of accounting practices, corporate governance, and corporate control. Economies such as India, Indonesia, Thailand, Malaysia, and the Philippines are emerging markets, whereas Australia, Hong Kong, Japan, New Zealand, and Singapore are more established markets (Deesomsak et al., 2004). This variety throughout the Asia-Pacific region offers an ideal setting in which to assess the effects of banking diversification under different financial systems.

With the collapse of the region's banking sector and economies during the Asian financial crisis, the domestic partners of local banks were unable to participate in the recapitalization of banks. In response, Asian governments raised the foreign ownership limit of joint-venture banks (Manlagñit, 2011). In addition, as members of ASEAN, SAFTA, WTO, and even GATS, some of these Asian countries have had to adopt international standards in banking supervision and regulations and remove prior restrictions on establishing new banks, opening new branches, and allowing the penetration of foreign banks. Such an increased regulatory focus may encourage Asian banks to employ revenue diversification strategies to maintain future cash flows and franchise value.

In particular, reforms in the banking sector impose higher costs to encourage banks to internalize the costs of certain risky activities. Basel III requirements for more and better-quality capital and liquidity buffers should enable institutions to better withstand distress (Lee and Hsieh, 2013). Therefore, financial reforms (such as liberalizing direct credit or interest rate control) refer to more liberalization and more competition, but overall they may bring synergy to diversified banks.

From the view of financial market structures, Kaufmann and Valderrama (2004) specifically compared the behavior of bank lending loans in market-based and bank-based financial systems in Austria, Germany, the Netherlands, and the United Kingdom. They found that the effects from shocks were smoothed over time in bank-based financial systems irrespective of the economic environment and in market-based systems only during periods of subdued economic growth or tight liquidity conditions.

Capelle-Blancard et al. (2008) examined the evolution of changes in Japan's financial market structure with the expected incidences of financial liberalization. They showed that the intermediation ratio based on market value has remained quite stable at approximately 85% between 1979 and 2004. This stability is the result of two opposite trends: a decrease in the share of credits in the external financing of domestic nonfinancial sectors and an increase in financial securities owned by financial (mostly

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[1] Traditionally, a bank's revenue diversification has been measured by the ratio of net non-interest income to net operating income (NNII), as seen in studies by Stiroh and Rumble (2006), Baele et al. (2007), DeYoung and Roland (2001), Laeven and Levine (2007), Chiorazzo et al. (2008), Lepetit et al. (2008), De Jonghe (2010), Fiordelisi et al. (2011), Hsieh et al. (2013) and related studies.

[2] Except Fang et al. (2011) adopted three reform indices, such as legal, bank and enterprise restructuring reforms from the European Bank for Reconstruction and Development (EBRD) to explore 228 banks in fifteen East European countries over the period between 1997 and 2008.

[3] This study follows a broad question on diversification in Asia-Pacific banks and contrasts the relevant global studies with that of Laeven and Levine (2009) and the regional papers of Laeven and Levine (2007), Baele et al. (2007), Lepetit et al. (2008), and De Jonghe (2010). As illustrated by Baele et al. (2007), whether the anticipated gains from diversification can be transposed to other economies and regulatory jurisdictions remains a topic of further scrutiny.