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Bank income structure and risk: An empirical analysis of European banks

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Abstract

The purpose of this paper is to investigate the relationship between bank risk and product diversification in the changing structure of the European banking industry. Based on a broad set of European banks for the period 1996–2002, our study first shows that banks expanding into non-interest income activities present higher risk and higher insolvency risk than banks which mainly supply loans. However, considering size effects and splitting non-interest activities into both trading activities and commission and fee activities we show that the positive link with risk is mostly accurate for small banks and essentially driven by commission and fee activities. A higher share of trading activities is never associated with higher risk and for small banks it implies, in some cases, lower asset and default risks.

JEL classification: G21

Keywords: Bank risk; Interest income; Non-interest income; Product diversification

1. Introduction

In the context of financial deregulation that took place in the seventies and in the eighties, western banking systems faced major changes in the form of increased competition, concentration and restructuring. Banks have reacted to the new environment by adopting a proactive strategy widening the range of products they offer to their clients. These changes mainly implied an increasing share of non-interest income in profits. Non-interest income stems from traditional service charges (checking, cash management, letters of credit...) but also from new sources. With the decline in interest margins induced by higher competition banks were incited to charge higher fees on existing or new services (cash withdrawal, bank account management, data processing...). As a result, the structure of bank income experienced a dramatic change in both the US and Europe. In the eighties, non-interest income represented 19% of US commercial banks' total income. This share had grown to 43% of total income in 2001 (Stiroh, 2004). In Europe, non-interest income has increased from 26% to 41% between 1989 and 1998 (ECB, 2000).

With the adoption of the new universal banking principle, commercial banks can compete on a wider range of market segments (investment banking, market trading...). Numerous studies questioned the implications of this new environment on bank risk. The issue is of importance for the safety and soundness of the banking system and a major challenge for supervisory authorities.

The existing literature, mostly based on US banks, either focused on portfolio diversification effects (risk return profile) (Boyd et al., 1980; Kwan, 1998; DeYoung and Roland, 2001) or on incentives approaches (Rajan, 1991; John et al., 1994; Puri, 1996; Boyd et al., 1998). Few studies were able to show that the combination of lending and non-interest income activities allows for diversification benefits and therefore risk reduction. Conversely, some papers find a significant positive impact of diversification on earnings

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volatility (DeYoung and Roland, 2001; Stiroh, 2004; Stiroh and Rumble, 2006). As noted by DeYoung and Roland (2001), three main reasons may explain this increase in risk. Firstly, income from lending activities is likely to be relatively stable over time because switching and information costs make it costly for either borrowers or lenders to walk away from a lending relationship. In contrast, income from non-interest income activities may suffer from larger fluctuations as it might be easier to switch banks for this type of activities than for lending. Secondly, expanding non-interest income activities may imply a rise in fixed costs (for example, additional staff may be required), which increases the operational leverage of banks. Conversely, once a lending relationship is established, the marginal cost induced by the supply of additional loans is limited to interest expenses. Thirdly, because bank regulators do not require banks to hold capital against non-interest income activities, earnings volatility may increase because of a higher degree of financial leverage. Moreover, as mentioned by Stiroh (2004), cross-selling of different products to a core customer does not imply diversification benefits (more products are sold to the same customer) which may explain why interest income growth and non-interest income growth are highly correlated in his study.

The aim of this paper is to assess the risk implications of the changing structure of the European banking industry which has shifted away from traditional intermediation activities (deposit funded loans) towards activities generating non-interest income. Using individual bank data from 1996 to 2002 for 734 European banks, we start by analysing the link between bank risk and the degree of output diversification measured by three indicators, the income share of: (i) non-interest income, (ii) trading income and (iii) commission and fee income. We hence start by comparing the risk level of banks which have expanded into non traditional activities with the risk level of banks which have not pursued such a strategy. While previous work on bank diversification was essentially dedicated to the US banking industry and mostly on the overall link between risk and portfolio diversification (diversification benefits) we specifically focus on the risk implications of engaging in new commercial activities for European banks. Our results show that higher reliance on non-interest generating activities is associated with higher risk but that higher risk is more strongly correlated with commission and fee income than trading activities. Our findings are more robust for small banks with total assets smaller than 1 billion € which significantly increase their risk exposure when engaging in commission and fee activities. Conversely, for small listed banks a larger share in trading income is associated with a lower risk exposure and lower default risk.

The remainder of the paper is organized as follows. Section 2 reviews the literature on bank risk and product diversification and shows how our study extends the existing work. Section 3 presents our product diversification and risk indicators as well as preliminary univariate tests and Section 4 shows the results of our regression analysis. Section 5 concludes.

2. Existing literature and research focus

Over the two past decades, the combination of traditional and non traditional activities in banking has given rise to a substantial number of studies. Most of the existing literature is dedicated to potential diversification benefits for banks to engage in a broader scope of activities. In general, these studies, which essentially considered US data, provide mixed results. For instance, Boyd et al. (1980), who simulated portfolios of banking and non-bank subsidiaries during the seventies, find a potential for risk reduction at relatively low levels of non-bank activities. The results obtained by Kwast (1989) to determine an optimal risk-minimising combination of banking and non-banking activities for the period 1976–1985 show only a slight potential for risk reduction. Gallo et al. (1996) find, over the 1987–1994 period, that combining bank and mutual fund activities allows for some diversification benefits increasing profitability for moderated risk levels.[1]

Another strand of the literature reports no diversification benefits or even an increase in risk when combining traditional and non-interest income activities. According to Boyd and Graham (1986), expansion by BHCs into non-bank activities during the seventies tended to increase the risk of failure of banks during the less stringent policy period. Demsetz and Strahan (1997) who study the stock returns of BHCs between 1980 and 1993 find that although banks extended their product mixes, no risk reduction could be observed as banks tended to move to riskier activities and to lower their capital ratio. Kwan (1998), who investigated bank section 20 subsidiaries during the 1990–1997 period, underlines the increased volatility of accounting returns despite a non-increase in bank profitability. DeYoung and Roland (2001) look at the impact of fee-based activities on bank profitability and volatility for large US commercial banks from 1988 to 1995. They conclude that fee-based activities, which represent a growing share of banking activities, increase the volatility of bank revenue. A similar result is obtained by Stiroh (2004) who assesses the potential benefit of diversification for US banks engaging in non-interest activities for the period 1984–2001. He shows that net interest income and non-interest income (which is relatively more volatile) are increasingly correlated (lower diversification benefits). Stiroh and Rumble (2006) find similar results while considering US financial holding companies for the period 1997–2002.

[1] Another group of studies simulate mergers between bank holding companies and non-bank financial firms (Boyd and Graham, 1988; Boyd et al., 1993; Saunders and Walter, 1994; Laderman, 1999; Lown et al., 2000; Allen and Jagtiani, 2000; for a survey, see Kwan and Laderman, 1999). Simulations were ran to assess the impact on risk of combining traditional banking activities and securities and/or insurance activities (US commercial banks were not allowed to provide such activities before 1999).