Review of Financial Economics 23 (2014) 182–193

Contents lists available at ScienceDirect

Review of Financial Economics

journal homepage: www.elsevier.com/locate/rfe

Does non-interest income make banks more risky? Retail- versus investment-oriented banks☆

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ARTICLE INFO

Article history:
Received 27 March 2014
Received in revised form 24 July 2014
Accepted 9 August 2014
Available online 16 August 2014

JEL classification:
G 20
G 21
G 28

Keywords:
Banks
Risk-taking
Business model
Non-interest income
Income diversification

ABSTRACT

In this paper, we show that the impact of non-interest income on bank risk differs between retail- and investment-oriented banks. More specifically, while retail-oriented banks such as savings, cooperative and other banks that focus on lending and deposit-taking services become significantly more stable (in the sense of having a higher Z-score) if they increase their share of non-interest income, investment-oriented banks become significantly more risky. They do not only generate a higher share of their income from non-traditional activities, but also engage in significantly different activities from retail-oriented banks. This might limit the potential benefits to investment-oriented banks of diversifying into non-interest income. Overall, therefore, our paper implies that it is important to distinguish between retail- and investment-oriented banks when drawing general conclusions regarding the impact of non-interest income on bank risk.

1. Introduction

In this paper, we analyze how non-interest income affects bank risk. Non-interest income is a mixture of heterogeneous components that generate income other than interest income. It comprises fee and commission income that is closely related to market-oriented activities such as underwriting and securitization, but also income that is related to traditional banking activities such as payment services fees and commission income arising from the sale of insurances and other products. Non-interest income also includes the income banks generate with their trading and market-making activities and other operating income. Because non-interest income is usually more volatile than interest income, it is often held to be more risky. This is particularly the case for trading income as was illustrated by the 2007–8 financial crisis. While large investment-oriented banks with substantial trading activities experienced a large drop in their profitability, smaller, retail-oriented banks were affected much less.[1] Following on from this, the *first hypothesis* tested in this paper is that investment-oriented banks become more stable if they reduce their share of non-interest income. This contrasts with retail-oriented banks. They depend heavily on interest income and might benefit from diversifying into non-interest income. They also engage in significantly different activities from investment-oriented banks, a fact which might also influence the way in which non-interest income impacts on bank risk. The *second hypothesis* postulated in this paper, therefore, is that retail-oriented banks will become more stable if they increase their share of non-interest income. To summarize, hence, we examine in this paper whether the impact of non-interest income on bank risk differs between retail- and investment-oriented banks.

We show that the impact of non-interest income on bank risk indeed significantly differs between retail- and investment-oriented banks. More specifically, while retail-oriented banks such as savings, cooperative and other banks that focus on lending and deposit-taking services become significantly more stable (in the sense of having a higher Z-score) if they increase their share of non-interest income, investment-oriented banks

☆ The author would like to thank Christoph Memmel, Heinz Herrmann, the participants at the Bundesbank seminar, the conference on "Banking, Finance, Money and Institutions: The Post Crisis Era" and the 6th IFABS Conference on "Alternative Futures for Global Banking" and an anonymous referee for their comments and suggestions.

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[1] Laeven et al. (2014) show that large banks performed significantly worse during the 2007–8 financial crisis than small banks. They are characterized by less-stable funding and more market-based activities and are more organizationally complex. For a descriptive analysis of the performance of small, medium-sized and large banks in Europe during the financial crisis, see also Köhler (2014).

http://dx.doi.org/10.1016/j.rfe.2014.08.001
1058-3300/

become significantly more risky. They are not only more active in non-traditional activities, but also engage in significantly different activities from retail-oriented banks. Both might limit the potential benefits to investment-oriented banks of further expanding into non-interest income. Overall, therefore, our paper implies that it is important to distinguish between retail- and investment-oriented banks when drawing general conclusions regarding the impact of non-interest income on bank risk.

Our paper is related to a large body of studies that analyze the impact of income diversification on bank risk and return. Most of these studies find only little evidence of gains from diversifying toward non-interest income and explain this by the higher volatility of non-interest income and the greater complexity and leverage of banks with a high non-interest income share, which offset the benefits of diversifying into non-interest income.[2] This contrasts with more recent papers that make use of data gathered during the financial crisis. Demirgüç-Kunt and Huizinga (2010), for example, highlight some risk diversification benefits at very low levels of non-interest income. Altunbas, Manganelli, and Marques-Ibáñez (2011) likewise find benefits to be had from a better diversified income structure. Both studies are consistent with Köhler (forthcoming), who shows that banks become significantly more stable if they increase their share of non-interest income. In contrast to previous studies, his sample comprises not only listed banks but also a large number of unlisted banks. This is an important detail as many unlisted banks are usually smaller in size and have a more retail-oriented business model. His results suggest that the impact of non-interest income on bank stability depends on banks' business models. While smaller and more retail-oriented banks such as savings and cooperative banks are shown to be significantly more stable if they increase their share of non-interest income, investment banks become significantly more exposed to risk. This is consistent with findings by DeYoung and Torna (2013) who show that it is not non-interest income per se that is decisive for bank stability, but rather the type of non-interest income. More specifically, they find that a large share of income from asset-based non-traditional activities such as investment banking significantly increases the likelihood of distressed banks failing during the crisis. By contrast, a larger share of fee-based non-traditional activities such as, for example, insurance sales is found to significantly reduce the probability of failure. This type of income represents a large share of the non-interest income generated by retail-oriented banks. The risk characteristics of these two types of activities are, hence, fundamentally different (DeYoung & Torna, 2013).

Our analysis concentrates on Germany because not only does its banking sector comprise a large number of savings and cooperative banks but also many banks with other types of business models. Our sample includes, for instance, a large number of other retail-oriented banks such as retail and private bankers but also more specialized institutions such as consumer and car financing banks. There are also several banks in our sample that are more investment-oriented and provide services ranging from corporate and investment to clearing and transaction banking services for wholesale customers. The broad heterogeneity of business models in the German banking sector makes it easier to identify whether the impact of non-interest income on bank risk differs between retail- and investment-oriented banks.

Our paper builds upon an earlier study on income diversification in the German banking sector by Busch and Kick (2009). They find evidence that banks' risk-adjusted returns are positively affected by higher fee income activities. However, they also show that commercial banks have significantly more volatile returns if they are active in non-interest income activities and conclude that heavy engagement in fee-generating activities also makes them more risky. The present paper improves on Busch and Kick (2009) in three important ways. First, we have more recent data encompassing not only the years of financial crisis, but also the post-crisis period. We consider this an important detail as, due to their focus on lending activities, we would expect retail-oriented banks to have been affected more severely by the economic downturn between 2009 and 2012 than by the 2007–8 financial crisis that mainly affected investment-oriented banks. Therefore, while their focus on lending activities might have made retail-oriented banks more stable during the financial crisis, it might also have made them subsequently less stable owing to the economic downturn and the deterioration of their loan portfolio quality. Moreover, owing to the expansionary monetary policy during this period, interest rates have shown a significant decline and depressed net interest margins. Due to their reliance on interest income, retail-oriented banks are particularly affected by this reduction. Secondly, we examine whether the impact of non-interest income differs between fee, trading and other operating income. This is important, since the risk characteristics of these activities differ fundamentally. Finally, and most importantly, we analyze whether the impact of non-interest income on bank risk differs between retail- and investment-oriented banks.

The paper is structured as follows. In the following section, we present the dataset and descriptive statistics on the relative importance and composition of non-interest income and analyze whether bank risk differs between retail- and investment-oriented banks. Our empirical model and results are presented in Sections 3 and 4, respectively. In Section 5, we test the robustness of our results, while Section 6 summarizes our main findings and concludes.

2. Data

We use data from the *Deutsche Bundesbank's* prudential database (BAKIS). The panel includes savings and cooperative banks. However, we have also included the big banks, the head institutions of the savings ("Landesbanken") and cooperative banks as well as several regional banks and other credit institutions.[3] We refer to this last set of banks collectively as "other banks". Unlike savings and cooperative banks, which focus on lending and deposit-taking activities with retail customers, these banks have diverse business models and provide services that range from general banking services such as account management, lending and deposit-taking and advisory services to more specialized services such as consumer credit and car financing for retail customers. Moreover, our sample includes numerous banks which provide more market-oriented services for large customers such as corporate and investment banking and other capital market-related services such as clearing and transaction banking. Since the relative importance and composition of non-interest income significantly differs among these banks, we subdivide the "other banks" into two different groups based on their overall business model.

To this end, we surveyed their websites and analyzed their mission statements. In addition, we hand-collected information on the products offered and the customers served. Based on this information, we split the "other banks" into a group comprising more retail-oriented banks and a group composed of more investment-oriented banks. We consider banks to be retail-oriented if they primarily serve small customers such as households and small enterprises and provide basic retail products and services including transaction and savings accounts, loans and advisory services through a range of distribution channels such as branches, internet sites and call centers. In line with these criteria,

[2] Many studies focus on US banks (see, for example, DeYoung and Roland (2001), DeYoung and Rice (2004), Goddard et al. (2008) and several papers by Stiroh (2004a,b) and Stiroh and Rumble (2006). For Europe, the evidence is also mixed. Lepetit et al. (2008a), for example, show that banks that have expanded their non-interest income activities are more risky than banks that mainly supply loans. Mercieca et al. (2007) obtain similar findings for a sample of small European banks. Chiorazzo, Milani, and Salvini (2008), in contrast, find that Italian banks will have significantly higher risk-adjusted returns. There are also findings which suggest that banks from developing countries benefit from better revenue diversification (Sanya & Wolfe, 2011).

[3] Regional banks are usually smaller in size and mainly operate nationwide or within certain regions of the country. The big banks and head institutions of the savings and cooperative banks, by contrast, are much larger and also do considerable business abroad.