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Non-interest income and bank lending[☆]

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ABSTRACT

This paper examines the influence of non-interest activities on bank lending in terms of loan quality and interest spread. We also investigate the possible existence of profit complementarities between non-interest activities and lending. Using quarterly data on 6921 U.S. commercial banks between 2007:Q3 to 2016:Q3 we find that non-interest activities have no adverse influence on bank credit risk. This is the case for banks of different asset size (including systemically important banks) as well as for distressed banks. There is evidence that banks with assets between $100 million and $1 billion that have a greater share of fiduciary income have lower credit risk. They also have lower interest rates on loans secured by real estate, and higher franchise values, particularly post-crisis. Moreover, banks in the aforementioned size range benefit from synergies in joint production of non-interest income and lending, whereas other banks, in particular smaller banks (below $100 million in assets) suffer from diseconomies of joint production. Larger banks exhibit cross-subsidization between several non-interest activities and lending business.

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1. Introduction

Existing theories have conflicting predictions on the necessity of restricting bank activities. Engaging in different activities may exacerbate conflicts of interest (John, John and Saunders, 1994, Saunders, 1994) and moral hazard problems (Boyd, Chang and Smith, 1998). Moreover it may make banks too complex to be monitored and too big to discipline (Barth, Caprio and Levine, 2004). Alternatively, fewer regulatory restrictions permit banks to realize economies of scope (Claessens and Klingebiel, 2001).

Many works have looked into the risk implications of functional diversification in banking following deregulation in the U.S. and Europe in the 1980's (DeYoung and Rice, 2004; Stiroh 2004, 2006; Stiroh and Rumble, 2006; Lepetit et al., 2008a) and also after the global financial crisis of 2007–2008 (De Jonghe, 2010; Demirguc-Kunt and Huizinga, 2010; Brunnermeier, Dong and Palia, 2012; DeYoung and Torna, 2013; Engle et al., 2014; De Jonghe et al., 2015; Williams, 2016 among others). Such studies show that, combined with traditional intermediation, non-interest activities generally contribute to higher standalone risk and systemic risk of financial institutions. As a result, post-crisis regulatory reforms in the U.S. and Europe (Dodd Frank Act, 2010; Liikanen report, 2012 and the Independent Commission on Banking 2011 – Vickers Report, 2011) recommend restrictions on various banks' non-interest activities (International Monetary Fund, 2011).

While previous work has focused on the broad diversification gains or on internal agency problems of mixing traditional intermediation and non-interest business lines, this paper is the first (as far as we know) to examine how such non-traditional activities affect bank lending quality and pricing. Given that the empirical literature tends to find that diversification into non-interest areas (and particularly in more volatile businesses like investment banking) generally increases risk it is interesting to study whether recent diversification activity has the same influence on bank lending behavior in terms of credit risk and interest spread. It is also of interest to examine whether behaviors have changed post-global financial crisis, as banks have been moving out of the riskier areas of non-interest activities to meet tougher capital requirements dictated by Basel III and Dodd Frank. An analysis of these issues

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may identify whether any noticeable risk shifting has been taking place between non-interest activities and lending business as predicted by the model proposed by John et al. (1994). Boot and Ratnovski (2016) also present a model showing that combining long-term relationship banking and short-term transaction banking can undermine the former. We also investigate whether evidence of profit complementarity between lending and non-interest activities is prevalent in the post-crisis environment again highlighting potential merits or demerits of diversification. This is an area, which surprisingly has attracted little academic attention.

Bank lending can benefit from informational and synergy advantages associated with diverse activities. Moreover, fewer regulatory restrictions may increase banks' charter value and thereby encourage managers to behave more prudently (Barth et al., 2004). Alternatively, getting into different activities may lead to agency problems and loss of focus. Bank loan pricing might also be affected by subsidization across interest-based and fee-based businesses.

Theories of financial intermediation stress that banks can obtain inside information by developing close relationships with clients and thereby mitigate asymmetric information problems (Berger, 1999; Boot, 2000). Petersen and Rajan (1994) and Berger and Udell (1995) show that borrowers with longer relationships enjoy lower collateral requirements and more available credit. The building of such relationships can mitigate risk, as illustrated by Puri et al. (2011) who find that borrowers with prior credit relationships (with German savings banks) default less. By examining 18,000 bank loans to small Belgian firms, Degryse and Van Cayseele (2000) also show that interest rates tend to fall as the scope of the relationship expands. Hellmann et al. (2008) find that prior relationships with early stage venture capital firms increase the chances of bank loan origination. Firms may also benefit from established bank relationships by signaling their quality resulting in lower loan rates. Bharath et al. (2007) document the benefits of bank-borrower relationships from the perspective of the bank. They claim that strong previous lending relationships increase the chances of attracting new loan and investment banking business.

Boot (2000) emphasizes that private customer-specific information is obtained through multiple interactions with the same client over time, often in the form of providing various financial services. The way information is collected and its nature changes when banks engage in more business lines. Banks can obtain information through more channels and have the opportunity to use this information with greater customer interaction. For very large banks, however, the reusability of proprietary information is likely to be limited, because they rely more on hard-information technologies, and provide different financial services through segregated subsidiary corporate structures. The interplay between lending and non-interest activities, therefore, is more likely to be pronounced for smaller banks.

On the basis of extant theories and empirical literature we postulate that engaging in different non-interest activities can affect lending behavior for smaller banks and articulate three arguments in support of the hypothesis that broadening bank businesses can improve loan quality. First, through activity diversification, banks can gather more private information on client quality as well as access a wider array of potential borrowers. Second, information, relationship and reputational factors that can be acquired through various businesses can enhance banks' franchise value and hence increase the potential indirect costs of financial distress, leading to more prudent lending behavior (Marcus, 1984; Keeley, 1990; Demsetz et al., 1996; Gonzalez, 2005 show the negative relationship between banks' charter value and risk-taking). Finally, revenue from other business areas may also enhance lending as it enables banks to lower interest margins by facilitating information collection from clients. Carbo and Rodriguez (2007) show that income from non-traditional activities influence net interest margins through possible cross-subsidization effects. However, the empirical evidence is not conclusive. For instance, Nguyen (2012) finds no clear evidence of a negative link between non-interest income and bank interest margins, whereas Lin et al. (2012) claim that non-interest income mitigates the sensitivity of interest margins to shocks.

Non-interest activities also have various drawbacks. First, most fee-based activities are short-term in nature, and have lower switching costs than traditional banking (DeYoung and Roland, 2001); hence, in order to establish longer-term client relationships, banks may grant loans to cement non-interest income client relationships. Such a policy could, therefore, undermine the delegate-monitoring role of banks. Banks are expected to produce and convey information on the quality of borrowers, which could be biased if non-interest activities provide incentives for weaker loan screening and monitoring. Lepetit et al. (2008b) find that banks may underprice credit risk if they expect to obtain additional fees from borrowers. Second, greater reliance on non-interest activities may increase agency problems. Several studies show that agency costs stemming from exacerbated information asymmetries outweigh the benefits of activity diversification (Laeven and Levine, 2007; Elyasiani and Wang, 2009; Akhigbe and Stevenson 2010; Berger et al., 2010).[1] Third, expanding into non-interest activities could be to the detriment of lending. Boot and Ratnovski (2016) show that engaging in too much market-based activities damages relationship-banking. They highlight diseconomies of scope in combining traditional commercial banking and market-based activities, in particular when financial markets are deeper. Lastly, lower credit exposure may encourage managers to be less conservative in their loan-granting activities.

In contrast to the afore-mentioned cross-country studies, in this paper we focus on the U.S - because of access to more information on the breakdowns of bank non-interest activities - and investigate the relationship between bank lending and diversification in eight major non-interest business lines.[2] These range from activities such as fiduciary where clients entrust funds for asset management by the bank, to loan servicing which is directly attached to lending. We examine the influence of these activities on banks' lending in terms of loan quality and interest spread. We also investigate the possible existence of profit complementarity ((dis)economies of joint production) between non-interest activities and lending.

We use quarterly data on 6921 U.S. commercial banks between 2007:Q3 to 2016:Q3. Since the U.S. banking system is dominated by small banks and business models vary with size, we classify banks into three categories: those with less than \$100 million in total assets (*'Small' Banks*), with total assets between \$100 million and \$1 billion (*'Medium' Banks*) and with more than \$1 billion in total assets (*'Large' Banks*). This is particularly important for our profit complementarity analysis because scope economies may depend on scale of operation, and it may not be achieved for too small banks. De Jonghe et al. (2015) show that the impact of non-interest activities on banks' performance depends on size. However, they attribute the positive impact of non-interest activities on the risk of smaller banks to the opacity of such banks, whereas in this paper, using the three sub-samples, we examine the role of size in the economies of joint production.

Overall, we do not find any significant evidence in favor of an adverse effect of non-interest activities on credit risk for banks

[1] Elsas et al., 2010 find that diversification improves bank value, and provide some evidence against the "*conglomerate discount*" proposed by Laeven and Levine (2007) and Elyasiani and Wang (2009).

[2] Fiduciary, annuity sales, insurance services, loan servicing, loan sale, investment banking, securities brokerage and service charges on deposit accounts.

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