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Back to the basics in banking? A micro-analysis of banking system stability

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ABSTRACT

This paper analyzes the relationship between banks' divergent strategies toward specialization and diversification of financial activities and their ability to withstand a banking sector crash. We first generate market-based measures of banks' systemic risk exposures using extreme value analysis. Systemic banking risk is measured as the tail beta, which equals the probability of a sharp decline in a bank's stock price conditional on a crash in a banking index. Subsequently, the impact of (the correlation between) interest income and the components of non-interest income on this risk measure is assessed. The heterogeneity in extreme bank risk is attributed to differences in the scope of non-traditional banking activities: non-interest generating activities increase banks' tail beta. In addition, smaller banks and better-capitalized banks are better able to withstand extremely adverse conditions. These relationships are stronger during turbulent times compared to normal economic conditions. Overall, diversifying financial activities under one umbrella institution does not improve banking system stability, which may explain why financial conglomerates trade at a discount.

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1. Introduction

The subprime crisis reminds us that, notwithstanding a period of disintermediation, the banking sector remains a particularly important sector for the stability of the financial system. Moreover,

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disruptions in the smooth functioning of the banking industry tend to exacerbate overall fluctuations in output. Consequently, banking crises are associated with significant output losses. It follows that preserving banking sector stability is of the utmost importance to banking supervisors. That is, regulators are especially interested in the frequency and magnitude of extreme shocks to the system which threaten the smooth functioning (and ultimately the continuity) of the banking system. Banking sector supervisors and central banks' main interest is to maintain and protect the value of their portfolio of banks in times of market stress. Thus it is interesting to study the factors contributing to the riskiness of the portfolio.

In this spirit, an extensive literature² reviews banking crises around the world, examining the developments leading up to the crises as well as policy responses. Initial research focussed on macro-prudential supervision and investigates the relationships between macro-economic conditions and banking system stability (see e.g. Demirgüç-Kunt and Detragiache, 1998; Eichengreen and Rose, 1998). Subsequently, attention shifted towards the impact of the regulatory and institutional environment on banking crises (see e.g. Barth et al., 2004; Beck et al., 2006; Demirgüç-Kunt and Detragiache, 2002; Houston et al., 2008). However, not all banks need to contribute equally to the risk profile of the supervisor's portfolio and the stability of the banking system. Nevertheless, research that zooms in at the micro-level and aims to identify bank-specific characteristics of banking system stability is limited. Moreover, almost all evidence is based on analyzing the determinants of outright bank failures in the US (see e.g. González-Hermosillo, 1999 ; and the references in Appendix 1 of that paper; and Wheelock and Wilson, 2002).

This paper investigates why some banks are better able to shelter themselves from the storm by analyzing the bank-specific determinants of individual banks' contribution to systemic banking risk. Our research contributes to the banking literature in a number of ways. First, a crucial addition to the analysis is our measure of individual bank risk during extremely adverse economic conditions. More precisely, we estimate tail betas (Hartmann et al., 2006; Straetmans et al., 2008) rather than analyzing actual defaults. Tail beta measures the probability of a crash in a bank's stock conditional on a crash in a European banking sector stock price index. The choice of this measure is driven by two empirical stylized facts on banking panics. Historically, banking panics occurred when depositors initiated a bank run. In more recent periods, banks face a stronger disciplining role by stock market participants. As a consequence, equity and bond market signals are good leading indicators of bank fragility (Gropp et al., 2006). Therefore, we employ a market-based measure. In addition, Gorton (1988) and Kaminsky and Reinhart (1999) document that most banking panics have been related to systemic and macroeconomic fluctuations rather than 'mass hysteria' or self-fulfilling prophecies. Therefore, we look at the conditional rather than the unconditional probability of a crash in a bank's stock price. By measuring the tail beta for all listed European banks over different time periods we document the presence of substantial cross-sectional heterogeneity and time variation in the tail betas of European banks.

Second, we contribute to the debate on the scope of financial firms by analyzing the impact of revenue diversity on banking system stability. In recent years, one of the major developments in the banking industry has been the dismantling of the legal barriers to the integration of distinct financial services and the subsequent emergence of financial conglomerates. In Europe, the Second banking Directive of 1989 allowed banks to combine banking, insurance and other financial services under a single corporate umbrella. Similar deregulating initiatives took place in the US by means of the Gramm–Leach–Bliley Act of 1999. These deregulations resulted in an expansion in the variety of activities and financial transactions in which banks engaged. Most of the existing research addressing the issue of the economies of scope in financial corporations takes an industrial organization approach and analyzes whether financial conglomerates create or destroy value (see e.g. Laeven and Levine, 2007; Schmid and Walter, 2009). Recent studies also analyze whether functional diversification reduces bank risk by investigating functional diversification from a portfolio perspective (see e.g. Baele et al., 2007; Stiroh, 2006). We contribute to the empirical literature on revenue diversity of financial corporations by addressing a third perspective, that of financial stability. Our results establish that the

² Cihák and Schaeck (2007) provide an excellent overview of the empirical literature on the determinants of banking system stability.

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