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Leverage, wholesale funding and national risk attitude

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ABSTRACT

This study examines the procyclicality of leverage among financial institutions using international evidence. Procyclicality occurs when financial institutions actively manage their balance sheets and use non-equity funding to finance change in assets. Since wholesale funding allows financial institutions to adjust their financial leverage quickly, we investigate whether financial institutions that rely more on wholesale funding (traditional deposit funding) show a higher (lower) degree of leverage procyclicality. Using balance sheet data for financial institutions of 49 countries, this study identifies a positive link between assets growth and leverage growth. In addition, we show that the positive impact of wholesale funding on procyclicality varies across market condition and national risk attitude.

1. Introduction

The severity of the 2007–2009 financial and ensuing economic crisis is a testament of the intertwined nature of the credit cycle and business cycle (Borio and Lowe, 2004; Hume and Sentance, 2009). The financial crisis started with an abrupt drop in liquidity impacting financial institutions and quickly propagated to the real sector and stalled many economies. The speed and depth of this propagation have attracted extensive scrutiny, in particular from regulatory bodies across the globe, in an effort to stave off future shocks. These studies have revealed that the severity of the crisis stemmed from historically high levels of leverage, increased maturity gap between assets and liabilities, and riskier portfolios among financial institutions.

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In this study, we empirically examine the factors that contribute to the increase in leverage of financial institutions over time using international evidence. Although higher levels of leverage can be viewed as a natural consequence of a steady growth period in the early 2000s – financial institutions actively adjusted their balance sheets in response to the growth of their assets and sought new capital to fund these real opportunities (Brunnermeier, 2009; Geanakoplos, 2010) – we argue that deregulation and financial innovations, in particular, the development of the wholesale funding markets (such as institutional deposits and commercial papers), have played an important role in facilitating these leverage adjustments and led to exacerbated growth in leverage as these short term non-deposit funds allow institutions to meet their funding needs in a timely manner. Moreover, this abundant supply of funds leads to erosion of caution and movement into lower credit quality investments (Huang and Ratnovski, 2010). Consequently, not only did economic growth facilitate leverage increase but the new environment exacerbated the attending leverage adjustments. In truth, using evidence from U.S. investment banks, Adrian and Shin (2010) empirically document that the procyclicality of leverage ratios (i.e., the positive correlation between asset growth and leverage growth) of investment banks is closely related to their use of repos and not their use of long-term debt.

In seeking the international evidence of leverage procyclicality, we use firm-level data from 49 countries. We follow Adrian and Shin's (2010) methodology and empirically examine the link between assets growth and leverage growth. We find a generally positive relationship between the changes in assets and the changes in leverage, illustrating the existence of leverage procyclicality across countries. Moreover, our results illustrate leverage procyclicality of financial institutions in Emerging countries, revealing that leverage procyclicality is not a phenomenon unique to financial institutions in Advanced countries.

We further investigate the implications of wholesale funding to the capital structure of financial institutions by documenting both the "bright side" and "dark side" of the role of wholesale funding in capital management. We first examine the impact of wholesale funding strategy on the *level of leverage* and document that the use of wholesale funding leads to an overall decline in general level of leverage, as the "bright side" of the use of wholesale funding in banks' capital management. We then switch our focus on the *changes in leverage* and examine whether the degree of procyclicality is related to the usage of wholesale funding by financial institutions. The reason that the use of wholesale funding may be related to leverage procyclicality is that wholesale funding is typically market driven and can be readily available at short notice for quick balance sheet adjustments in response to changes in assets prices. We find evidence of the "dark side" of wholesale funding in deepening the degree of procyclicality: higher levels of wholesale funding ratio increase the positive relationship between assets growth and leverage growth, illustrating the important role of banks' funding strategy in determining the intensity of leverage procyclicality. This "dark side" of wholesale funding is also not limited to our sub-sample of Advanced economies as Emerging countries financial institutions' use of wholesale funding also leads to increased procyclical tendencies. We further find that this effect is limited to expansionary periods. This is cause for caution: whereas wholesale funding facilitates a tactical rise in leverage, it is not an effective tool for de-levering for financial institutions. Finally, while there is no evidence that institutions in countries that are more risk averse have increased procyclical tendencies via their use of wholesale funding, there is strong evidence that institutions in more masculine countries make aggressive use of wholesale funding, that is, the dark side of wholesale funding appears to be self-inflicted by cultures that are more materialistic and more prone to seek returns by taking risk.

This paper contributes to the financial literature in several ways. First, we extend the analysis of financial institutions' leverage procyclicality to a large sample of countries. To the best of our knowledge, existing studies on the leverage procyclicality largely use single-country evidence. For example, Afonso et al. (2011) study the financial institutions in the U.S., Jeong and Jung (2011), Damar et al. (2011) and Lee and Haque (2011) provide such evidence for Korea, Canada, and Kazakhstan, respectively. We are the first to conduct a cross-country study and our sample includes both Advanced and Emerging economies. Second, we focus on the impact of the use of wholesale funding on the level of procyclicality in these countries. Third, we examine how the level of market development, market