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Leverage pro-cyclicality and securitization in US banking



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ABSTRACT

This paper investigates the role of off-balance sheet securitization on US bank leverage pro-cyclicality. Effective leverage (taking into account off-balance sheet securitization) is especially relevant for the US, where GAAP accounting rules for securitization allowed until 2009 a underestimation of on balance sheet items. Over 2001–2010, we document that US BHCs which are more involved in securitization have a more pro-cyclical leverage. We also show that in the pre-crisis period securitization dominates the business model in determining the leverage pro-cyclicality to the point that even commercial banks highly involved in securitization had a pro-cyclical behavior. We document that the period-long relation between securitization and capital ratios was weak. The effect on leverage pro-cyclicality of the 2004 changes in regulation (the new SEC net capital rule and the exemption from the FASB directive on consolidation of SPVs) was absent for investment banks, and mixed for commercial banks highly involved in securitization. The evidence of this paper supports the view of the Basel III committee that macro-prudential regulation must include constraints on effective leverage.

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1. Introduction

In the aftermath of the 2007 financial crisis, the high level of leverage of financial intermediaries has commonly been identified as the main source of weakness in the financial system and, consequently, as one of the major causes of the crisis ([Financial Stability Forum, 2009](#)). Many observers pointed at leverage pro-cyclicality – i.e. the increase (decrease) of leverage following an increase (decrease) of total assets value – as an amplification mechanism of business cycles upturns and downturns ([Adrian and Shin, 2010b](#)). The pro-cyclicality of leverage may fuel a supply side financial accelerator complementing (or substituting for) the demand side financial accelerator pioneered by [Bernanke and Gertler \(1989\)](#), [Kiyotaki and Moore \(1997\)](#) in explaining business cycle's booms and recessions.

Formally, leverage (L_t , defined as the ratio of total assets A_t to total equity E_t) is pro-cyclical if:

$$\begin{aligned}\Delta L_t &= f(\Delta A_t) \\ f' &> 0\end{aligned}$$

[Adrian and Shin \(2010a\)](#) argue that pro-cyclicality of leverage is a consequence of banks targeting their capital to a fixed proportion of their own VaRs,¹ joined with the widespread practice of market value accounting, which makes the value of banks assets strongly depend on the price changes of assets traded in financial markets. In short, the mechanism may be described as follows: ensuing an increase in the price of securities – for a given value of debt – leverage goes down. However if banks perceive that their value at risk (VaR) has also decreased they have room for increasing their holdings of securities more than needed to just restore the initial leverage. An upward pressure on asset prices follows, which in turn feeds back in higher leverage, generating an upward spiral. To the opposite, any negative shock to banks' balance sheets would trigger a downward spiral of leverage and asset prices.

[Adrian and Shin \(2010a\)](#) find that US commercial banks had an a-cyclical leverage between 1997 and 2008, whilst the five major “pure” investment banks have a strongly pro-cyclical leverage. Those banks account only for 11.7% of total equity of US banks. One might argue that – given the high degree of interconnectedness of today's banking systems – even a small fraction of banks with a pro-cyclical leverage can have such a large systemic impact as to give rise to a supply side accelerator. It may reasonably be said, however, that any kind of supply side financial accelerator may be better justified if a large proportion of a country's banking sector does substantially react to fluctuations in asset prices, making leverage pro-cyclical.² It is thus interesting to check whether it is possible to prove that pro-cyclical leverage characterizes a broader set of US financial institutions.

A burgeoning literature has attempted at verifying pro-cyclicality along different lines. [Kalemli-Ozcan et al. \(2012\)](#) document that the leverage ratio is pro-cyclical not only for US investment banks but also for *large* commercial banks (over the period 2000–2009). [Huang and Ratnovski \(2011\)](#) attempt at theoretically highlighting the dark side of bank wholesale funding in the presence of costless but noisy signals on the quality of bank projects. [Damar et al. \(2013\)](#) highlight the interaction of leverage pro-cyclicality with the use of wholesale funding, using Canadian data. They show that the degree of pro-cyclicality is not constant across different types of financial institutions and with respect to the changes in macroeconomic and market environments. Financial institutions that use wholesale funding display high degrees of pro-cyclicality as these market-based funds are readily available at short notice for quick adjustments to leverage. [Gropp and Heider \(2010\)](#), for a large sample of US and European banks between 1991 and 2004, focus on the behavior of bank leverage through time and find that banks' target leverage is time-invariant and bank specific. Instead [Baglioni et al. \(2013\)](#), for a sample of 77 European banks over 2000–2009, show that pro-cyclical leverage appears to be well entrenched in the behavior of those European universal banks for which the investment banking activity prevails over the more traditional commercial banking activity.

¹ This may be justified by considering the solvency regulation (1996 Market Risk Amendment to the Basel Accord).

² As [Hanson et al. \(2011\)](#) write “If a large fraction of the financial system is in difficulty, a simultaneous attempt by many institutions to shrink their assets is likely to be more damaging to the economy” (p. 5).

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