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Bank dividends, risk, and regulatory regimes

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ABSTRACT

This paper investigates the relation between bank dividends and bank risk over the period 1984–2011, and assesses the existence of risk-taking and risk-shifting in the US commercial banking sector subject to regulatory regime changes. The introduction of PCA in 1992 and TARP in 2008 constitute significant regulatory regime changes, and provide the necessary framework to explore whether regime-dependent risk-shifting or risk-taking is present. We find strong evidence of risk-shifting and risk-taking over the post-PCA regime spanning the period 1992–2008. We interpret this evidence as indication of ineffectiveness of PCA in controlling risk-taking and risk-shifting. The finding of risk-taking just prior to the recent financial crisis suggests that risk-taking may be a factor contributing to this crisis. As risk-taking and risk-shifting are important aspects of bank behavior (Basel Committee on Banking Supervision, 2009), these results are of interest to bank regulators and important to Basel III.

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1. Introduction

Commercial bank dividend payouts have recently received great attention especially over the recent banking and financial crisis which started in 2007. Anecdotal evidence suggests that banks were reluctant to cutting dividends or even reducing their amount. For instance, Citigroup cut its dividend only in November 2008. In addition, JPMorgan and Wells Fargo, while recipients of the Troubled Asset Relief Program (TARP) capital in fall 2008, cut dividends as late as February and March 2009, respectively. At an aggregate level, the amount of dividends paid at the end of the third quarter of 2007 was approximately \$28 billion, and as late as 9 months into the crisis this amount was \$18 billion.¹ In line with this evidence, it has been suggested that restrictions on dividends should be included in a set of sanctions for banks that do not satisfy certain regulatory requirements in terms of solvency and liquidity (Brunnermeier et al., 2009). Such measures are also relevant to the Basel III framework (Caruana, 2010, p. 3). In addition, bank dividend policy and capital adequacy constitute two important pillars for sound and prudent management and are closely entwined (Onali, 2010).

The present paper unveils the role of dividends in exploring risk-taking and risk-shifting in the US commercial banking sector over the last three decades. This period is characterized by two important changes in the US regulatory framework. In late 1991, the Federal Deposit Insurance Corporation Improvement Act (FDICIA) is enacted and the Prompt Corrective Action (PCA) scheme is introduced. This is the most important banking legislation act since the Banking Glass-Steagall Act of 1933 and following its introduction, regulatory frameworks are classified as pre-PCA and post-PCA regimes (Akhigbe and Whyte, 2001). The second important change, which is initiated due to the recent crisis, is the introduction of the Troubled Asset Relief Program (TARP) capital in fall 2008, a way of providing direct equity infusions to the banking sector. In addition, in October 2008 the Federal Deposit Insurance Corporation increases the deposit insurance cap from 100 thousand dollars to 250 thousand dollars.

In the present study, we concentrate on dividends, which constitute an important mechanism for managing bank risk under PCA (US Treasury, 1992, p. 44878), and seek to address two important research issues. Firstly, we examine whether risk-taking and risk-shifting behaviors are present. Secondly, we explore whether they have been affected by regulatory regime switches and whether PCA was effective in controlling them. Dividends are a relevant mechanism through which one can examine these issues, as they relate to both risk-shifting and risk-taking. Dividends are related to risk-taking as they affect the ability of a bank to build

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¹ This observation is in contrast to the dividend policy followed by 61 firms in the S&P 500 index, which drastically cut their dividend in 2008, and led economists to argue for a stop on bank dividends.

a solid capital buffer (Acharya et al., 2009; Onali, 2010), and risk-shifting from banks to the deposit insurer as they are a determinant variable of the deposit insurance premium (Duan et al., 1992).

We explore risk-shifting and risk-taking by simultaneously modeling bank dividends and risk using a Vector Autoregressive (VAR) system which has the important feature that it allows for regulatory changes. Our findings are as follows: We reveal strong evidence of regime-dependence in the dynamic and the contemporaneous link between dividends and risk. One regime corresponds to the post-PCA period, and the other to the pre-PCA and the recent financial crisis periods. Whilst there is no evidence of risk-shifting and risk-taking in the pre-PCA regime, there is strong evidence of both in the post-PCA regime. This finding suggests that PCA is not effective in eliminating risk-taking and risk-shifting, and is in line with the theoretical conjecture by John et al. (2000), and with Laeven and Levine (2009). The contemporaneous link is again more pronounced during the post-PCA regime, with the correlation between default risk and dividends being nearly double compared with that in the pre-PCA regime. As risk-taking and risk-shifting are important aspects of bank behavior (Basel Committee on Banking Supervision, 2009), these results are of interest to bank regulators and important to the Basel III framework. They also carry policy considerations as, according to Calomiris and Mason (2003), risk-taking has implications for financial fragility. Our finding that risk-taking is present during period leading to the recent financial crisis suggests that risk-taking may be a factor contributing to this crisis, and in line with the anecdotal evidence on the recent behavior of dividends presented above. Finally, the present results highlight the existence of regime-dependent moral hazard problems in the US banking sector.

The remainder of the paper is as follows. The next section provides a literature review and a contextual setting. Section 3 discusses the theoretical background for risk-taking and risk-shifting. Section 4 explains variables selection, discusses the estimation methodology, and reports preliminary results. Section 5 discusses the main results, draws implications on the ability of PCA to control risk-shifting and risk-taking, and provides robustness checks. The final section concludes.

2. Related literature and contextual framework

Numerous influential studies explore risk-taking and risk-shifting, including Dahl and Spivey (1995), Hovakimian and Kane (2000), Laeven and Levine (2009), Acharya et al. (2009), and Onali (2010). Hovakimian and Kane (2000) focus on risk-shifting by addressing risks being passed from banks to the deposit insurer. Laeven and Levine (2009) look at risk-taking by analyzing the power of shareholders within the governance structure of banks. Importantly, Acharya et al. (2009) and Onali (2010) emphasize the role of dividends as a risk-shifting mechanism that impinges on the capital structure of the firm, whilst Dahl and Spivey (1995) fail to confirm the role of dividends in bank recovery.

In terms of the effects of bank capital adequacy regulation on risk, related literature comprises studies by Keeley (1990), John et al. (2000), Akhigbe and Whyte, (2001), Aggarwal and Jacques (2001), and Barrios and Blanco (2003). Keeley (1990) argues that deposit insurance regulation may reduce risk-taking if it results in higher charter value for insured banks. John et al. (2000) illustrate that if bank regulation concentrates on bank capital ratios then it may be ineffective in controlling risk-taking if banks have high leverage ratios. Akhigbe and Whyte (2001), addressing the link between bank returns and risk, find that FDICIA's passage resulted in a significant decline in bank risk. Aggarwal and Jacques (2001) focus on credit risk and document that FDICIA is effective in that, subsequent to its passage, US banks increase their capital ratios without offsetting increases in credit risk. Finally, Barrios

and Blanco (2003) develop theoretical models which show how banks reach optimal capital ratios under the two scenarios that banks are and are not affected by capital adequacy regulation.

To put things in context, we refer to risk-taking as the causal link from bank dividends to bank risk. As dividends affect the ability of a bank to build a solid capital buffer, a dividend payment depletes safer capital assets, leaves riskier assets on banks' balance sheets, and thus increases risk. In addition, an increase in dividends is likely to increase bank risk through the positive impact of risk on the value of deposit insurance, which encourages further risk-taking (Onali, 2010). Thus, risk-taking implies a positive link from dividends to risk (Laeven, 2002). If PCA is effective in controlling risk-taking, then this relation should be weakened or eliminated, and vice versa. Evidence of this link leads to the conclusion that PCA is ineffective in controlling risk-taking. It also highlights the existence of moral hazard problems, carries implications for financial fragility (Calomiris and Mason, 2003), and echoes the need for regulation on dividends.

We refer to risk-shifting as the opposite link, namely from risk to dividends. Dividends transfer wealth from the bank to its owners, thereby reducing the negative impact of a potential default on personal wealth of bank owners. They represent an asset substitution that favors equity-holders over debt-holders, and lead to violation of the priority of debt over equity. Risk-shifting thereby suggests a positive link from risk to dividends. Importantly, PCA may affect risk-shifting, as capital requirements force banks to internalise a significant amount of negative externalities of a default. Banks with poor asset quality, other things being equal, tend to have relatively high capital ratios. In this case, capital requirements imply a trade-off between investment growth (loans growth) and dividends: given a targeted loans growth ratio, the lower the capital ratio the higher is the opportunity cost of paying dividends (as dividends reduce the ability of a bank to increase its capital ratio to a level compatible with the investment policy objectives). Thus, while banks with higher default risk may attempt to shift this risk to debt-holders by paying dividends, capital requirements should impose costs on dividend-paying banks in terms of potential growth reduction (John et al., 2000). If capital requirements are effective in controlling risk-shifting, the benefits of risk-shifting will be offset by the opportunity costs triggered by capital requirements.

3. Theoretical background

The theoretical link between bank risk and dividends is based on the methodology examining the value of deposit insurance developed by Merton (1977), and Duan et al. (1992). Merton (1977) points out that the risk-adjusted value of insurance on debt can be modeled as a put option on a bank's assets.² Insured depositors receive the following payment at the maturity date, T :

$$\min \left[FV(B_1), \frac{V_T B_1}{B_1 + B_2} \right] \quad (1)$$

where $FV(\cdot)$ is the future value operator, B_1 is the face value of insured deposits, B_2 is the face value of uninsured deposits, and V_T is the value of bank assets at time T . Under the assumption of bank insolvency, the Federal Deposit Insurance Corporation (FDIC) (who is the effective writer of the option) pays insured depositors the difference between the proportional share of assets and the face value of deposits. This implies that the value of the deposit insurance at time T is

$$\max\{0, FV(B_1) - [V_T B_1 / (B_1 + B_2)]\} \quad (2)$$

Merton (1977) illustrates that the above insurance payment can be valued as a put option, following the assumptions of Black and

² Under liquidation, federal law requires that depositors receive a proportional claim against the value of the bank's assets at time T .

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