South African Bank Regulation: Basel III, Default Risk and Contagion

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1. Background to the Study

Basel III Framework

- ✓ Following the 2007/09 financial crisis, various bank supervisory and regulatory measures were introduced by the Bank for International Settlement's Basel Committee on Bank Supervision in order to enhance banks' overall resilience to systemic risk and its associated contagion effects (SARB, 2013). The new accord implements improvements upon banks' maturity mismatches and pro-cyclicality, capital base consistency, risk coverage and limits banks' liquidity risk (Barko, 2011). Of the Basel III regulations, this study focuses on the Tier 1 capital ratio, the short-run liquidity coverage ratio (LCR) and the long-run net stable funding ratio (NSFR).
- ✓ Basel's Tier 1 capital ratio is computed by taking bank capital over total assets. The recent Basel III accord advocates that banks should retain a Tier 1 ratio of 3% (Barko, 2011). The reasoning being to ensure that banks manage to cover an appropriate fraction of their total assets using their own reserves, plus, it also reigns-in pro-cyclicality by constraining excessive leverage build-ups.
- ✓ Underpinning the LCR, is the rationale that banks' can improve their capacity to deal with both market liquidity risk as well as short-term liquidity requirements. Its computation entails taking the stock of High Quality Liquid Assets (HQLA) and then dividing them by the net cash outflows which are expected to inflate in the event of temporary economic and/or financial instability.
- ✓ The NSFR measures the risk of maturity mismatch with the goal to encourage the acquisition of more medium- to long-term funding for bank assets (Barko, 2011). Therefore, the NSFR has the effect of lessening the funding-liquidity risk exposure of banks. It requires that the Available Stable Funding (ASF) amount be more than or the same as the Required Stable Funding (RSF) amount.

SA Banks Act, 1990

- ✓ In South Africa (SA), the South African Reserve Bank's (SARBs) Bank Supervision Department (the Department) forever strives at ensuring that the SA legal framework for bank supervision and regulation stays abreast with both domestic and international regulatory trends. The latter implies compliance with all applicable global supervisory and regulatory principles, and best practices. As a result, the Department reviews all banking codes and then makes recommendations to the SA Minister of Finance to effect amendments thereto (SARB, 2013). For instance, following the 2007/09 financial crisis, SA sort to align itself with the latest Basel III recommendations by effecting amendments to its Regulations, so that they may be able to address risks which are specific to both banks as well as the broader financial system. Such Regulations entail:

i. Increasing the quality of capital, whilst concentrating on the quantity of capital as well as common equity and to enhance the ability of banks to finance their own shortfalls.

ii. Improving the regulatory framework's risk coverage, with the inclusion of exposures associated with counterparty credit risk and/or contagion risk.

iii. The introduction of capital buffers which are to be built up in times of affluence so that they may be relied on in times of distress.

iv. Introducing a backstop leverage ratio so as to contain capital requirements which are based on risk as well as to limit unwarranted leverage within the financial system.

v. Improving supervision and risk management standards (Basel Pillar 2), as well as public disclosures (Basel Pillar 3).

vi. The introduction of the tracking of recommended minimum liquidity benchmarks to enhance the resilience of banks' to severe short-run distress and to increase long-run financing.

vii. The introduction of additional capital buffers aimed at global systemically important financial institutions (G-SIFIs) so as to combat these institutions' issues of being "too-big-to-fail".

2. Aims and Objectives

Central Objective

- ✓ This study's central objective is to investigate whether the Basel III macro-prudential policy recommendations as incorporated into the recent amendment of the Banks Act (1990) of SA, are in fact relevant and significant determinants/predictors of the DTD (financial health) of SA banks.

Specific Aims

- ✓ In particular, this study's three aims are: firstly, to investigate whether the Basel III bank supervisory and regulatory recommendations, i.e. Tier 1 capital ratio, LCR and NSFR, find support as predictors of the DTD of SA banks; secondly, to assess the degree of cross-border contagion risk between the SA and the United States (US) banking sectors; and thirdly, to determine which other potential micro- and macro-economic variables find support as determinants of the DTD of SA banks.

3. Data and Methods

Data

- ✓ This study's sample includes 5 SA retail banks with the largest market capitalizations over the period of 2004-2015. The sample further comprises 28 US banks, selected based on the same criteria as that of the SA banks' sample. The key sources of this data are: the Bloomberg Terminal; McGregor; the SARB; and the Federal Reserve Economic databases. Moreover, the outcome variable for this study represents the weighted average values of the DTDs of SA banks. Whereas, its independent variables include the outcome variable at $t-1$; the US DTD pre-, mid- and 3 year post-crisis interaction terms; the simple leverage and Tier 1 capital ratios; liquidity (a proxy for the LCR); the market betas of banks; the SARB repo rate; the gross market value (GMV) of derivatives; liquid assets and wholesale funding (a proxy for the NSFR).

Methods

- ✓ A panel-data estimation technique is used in order to explain the variations in the SA banks' DTD values over the period of 2004-2015.
- ✓ This study uses a hybrid model which incorporates the KMV-Merton DTD metric and a linear dynamic panel-data estimation technique by Arrellano and Bond (A-Bond) (1991).
- ✓ This hybrid model is estimated twice, once including the simple leverage ratio and excluding the Basel Tier 1 capital ratio; and once including the Basel Tier 1 capital ratio and excluding the simple leverage ratio. First, the regression results are produced as arguments tested individually using bivariate estimation techniques. Furthermore, these bivariate estimations are followed up by a multivariate model which is believed to be a superior simulator of reality, since it controls for the influences of other variables upon the DTDs of SA banks.

4. Results and Discussions

Excerpt of Key Results: Determinants of SA Banks' DTDs (Multivariate Regression)

	Alternative Capital Ratios	
	Basel Tier 1 Capital Ratio	Simple Leverage Ratio
Simple Leverage Ratio	-	-.0559**
	-	(.0278)
Basel Tier 1 Capital Ratio	.0046***	-
	(.0016)	-
Liquidity (*LCR*)	.8563***	.5799*
	(.0875)	(.3235)
Wholesale Funding (*NSFR*)	-2.1610**	-2.0461
	(.9282)	(1.4003)
SARB Repo Rate	-.1121**	-.1052***
	(.0461)	(.0352)

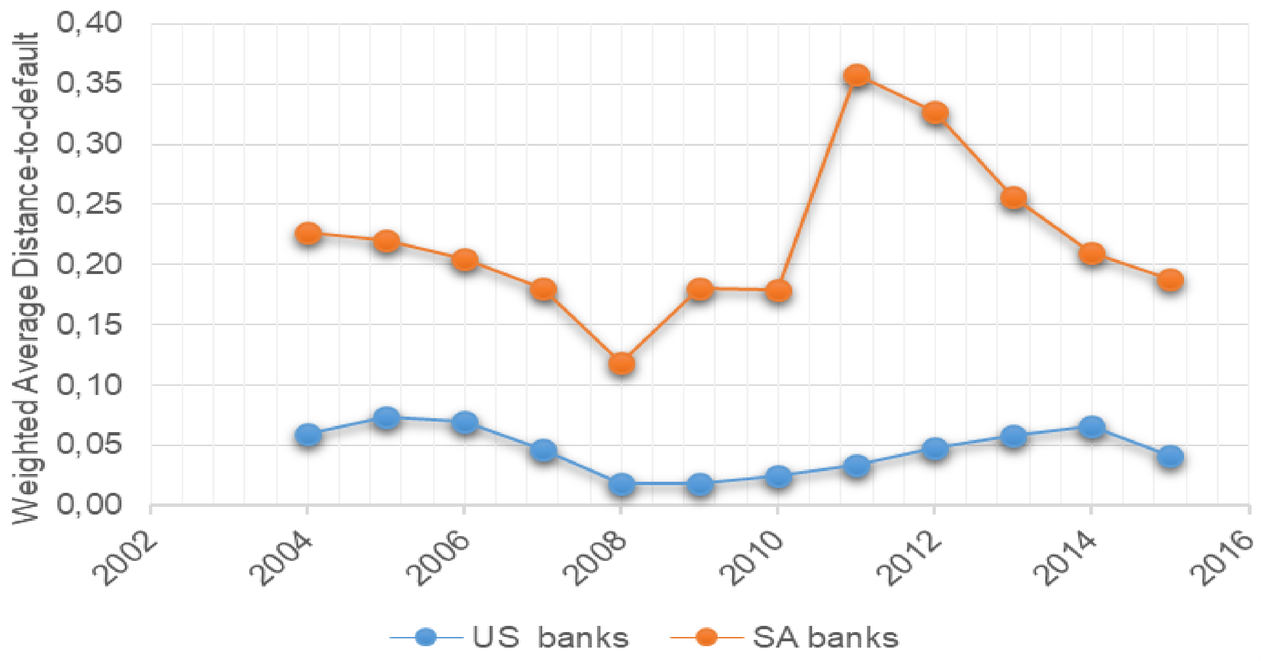
Note: Source: Author's own calculations. The above table presents the multivariate regression results using a balanced panel-data sample of the 5 largest SA retail banks over the period of 2004-2015.The A-Bond linear dynamic panel-data estimation technique is used. In parentheses are the SEs; and *, ** and *** denote statistical significance at the 0.1, 0.05 and 0.01 levels, independently.

Correlation Matrix: Basel III and the Simple Leverage Ratio

	Leverage	Basel Tier 1 capital ratio	Liquidity (*LCR*)	Wholesale funding (*NSFR*)
Leverage	1			
Basel Tier 1 capital ratio	-0.65	1		
Liquidity (*LCR*)	-0.62	0.20	1	
Wholesale funding (*NSFR*)	0.29	-0.26	-0.05	1

Source: Author's own calculations

SA and US Banks' Weighted Average DTDs



Source: Bloomberg and author's own calculations.

5. Conclusion

- ✓ The determinants of the DTD whilst controlling for the market betas of banks included: the Basel Tier 1 capital ratio, the short-run LCR and long-run NSFR proxies, the SARB repo rate, the three US DTD pre-, mid- and 3 year post-crisis interaction terms and the simple leverage ratio.
- ✓ Of the variables which found no support as predictors of the DTD of SA banks, were the GMV of derivatives and liquid assets.
- ✓ The findings seem to endorse the approach to policy that concentrates on the adoption of the Basel III recommendations for SA retail banks, and on the involvement of the SARB as a supervisory authority through the use of the repo rate.

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