Risk and Capital Adequacy. A preliminary examination of ECCU Indigenous Banks

Presented by Shernnel J Thompson (Mr)

Eastern Caribbean Central Bank

Disclaimer:

The Eastern Caribbean Central Bank (ECCB) strongly supports academic freedom and a researcher's right to publish and encourages such activity among its employees. However, the ECCB as an institution does not endorse the viewpoint of an employee's publication or guarantee its technical correctness. The views and opinions expressed in this paper are solely those of the author(s) and do not necessarily state or reflect those of the Eastern Caribbean Central Bank. No part of this publication shall be used for advertising or product endorsement purposes.

Outline of the Presentation

- Background
- Literature Review
- Data and Methodology
- The Model
- Results and Analysis
- Conclusion

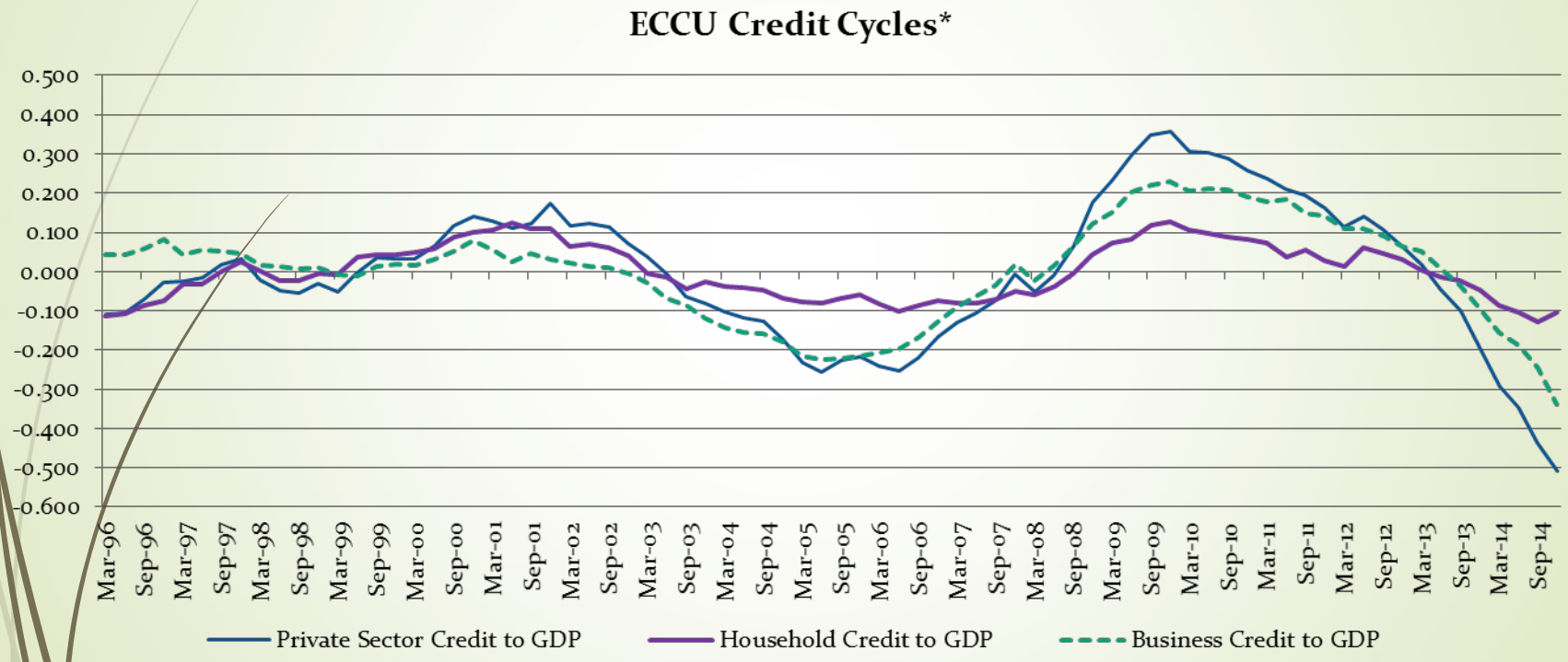
Background

- Adoption of a risk based capital standard in 1988 by the Basel Committee on Banking Regulation.

- Since then, the ECCU has experienced:
  - Shocks associated with the global financial crisis
  - Several recessions
  - Bank interventions
  - Unwinding of credit in all member states

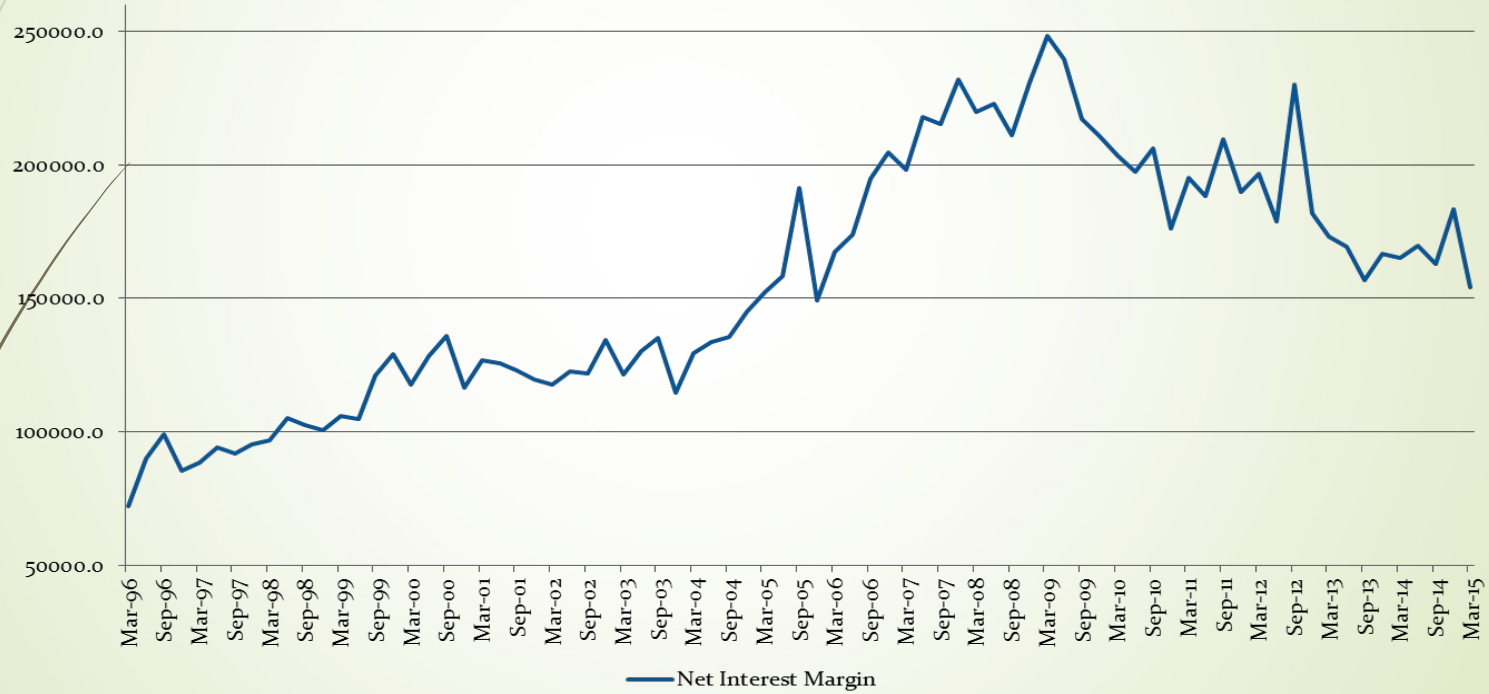
- The Banking Act 2015

Background, cont'd

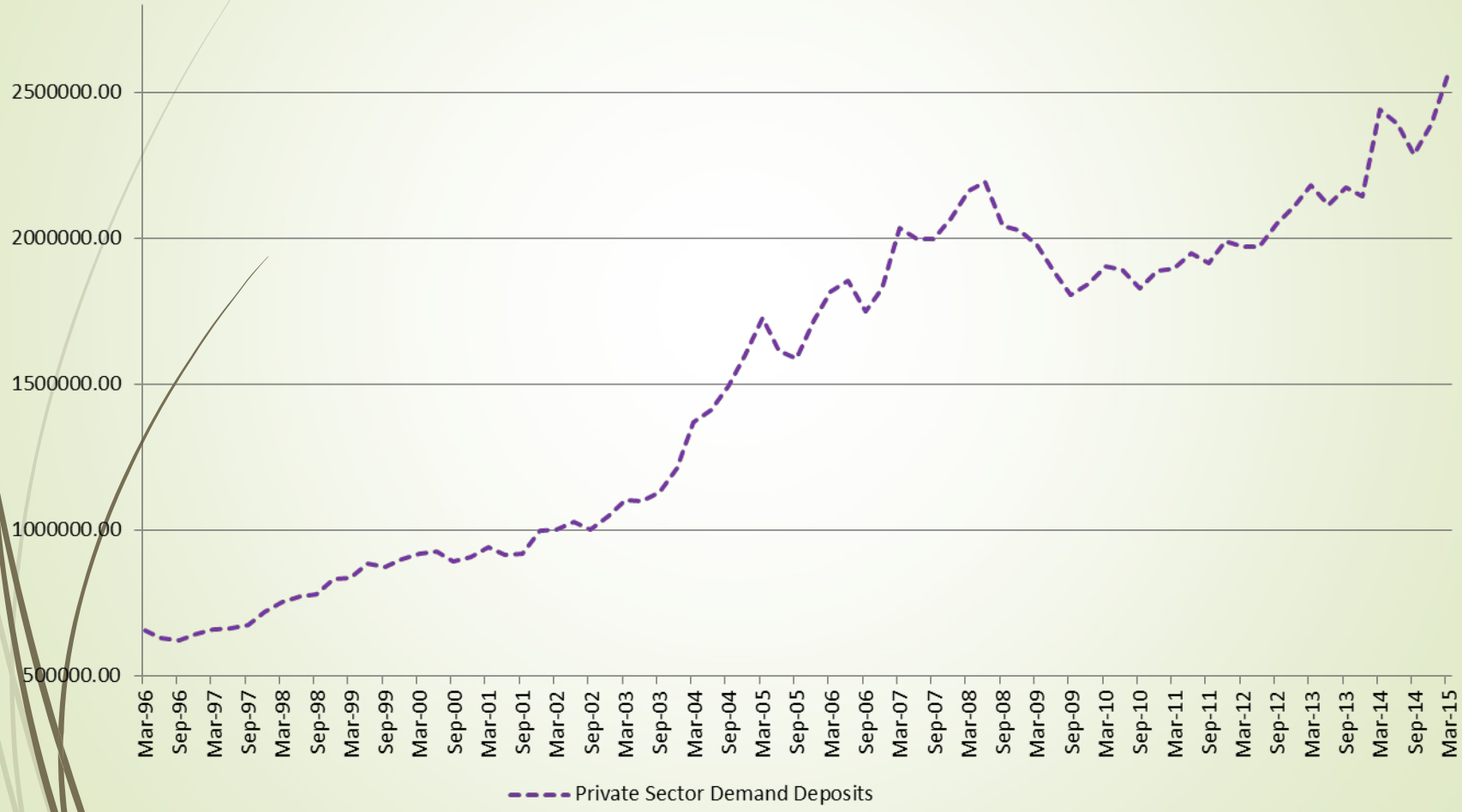


*The credit cycle was defined by the Hodrick-Prescott filter application to the ratio of credit to GDP in the ECCU. A lambda of 400,000 was applied to this data set consistent with the methodology of (Anundsen, et al., 2014). Quarterly GDP was estimated using the method established by (Chow & An-loh, 1971) in EVIEWS.

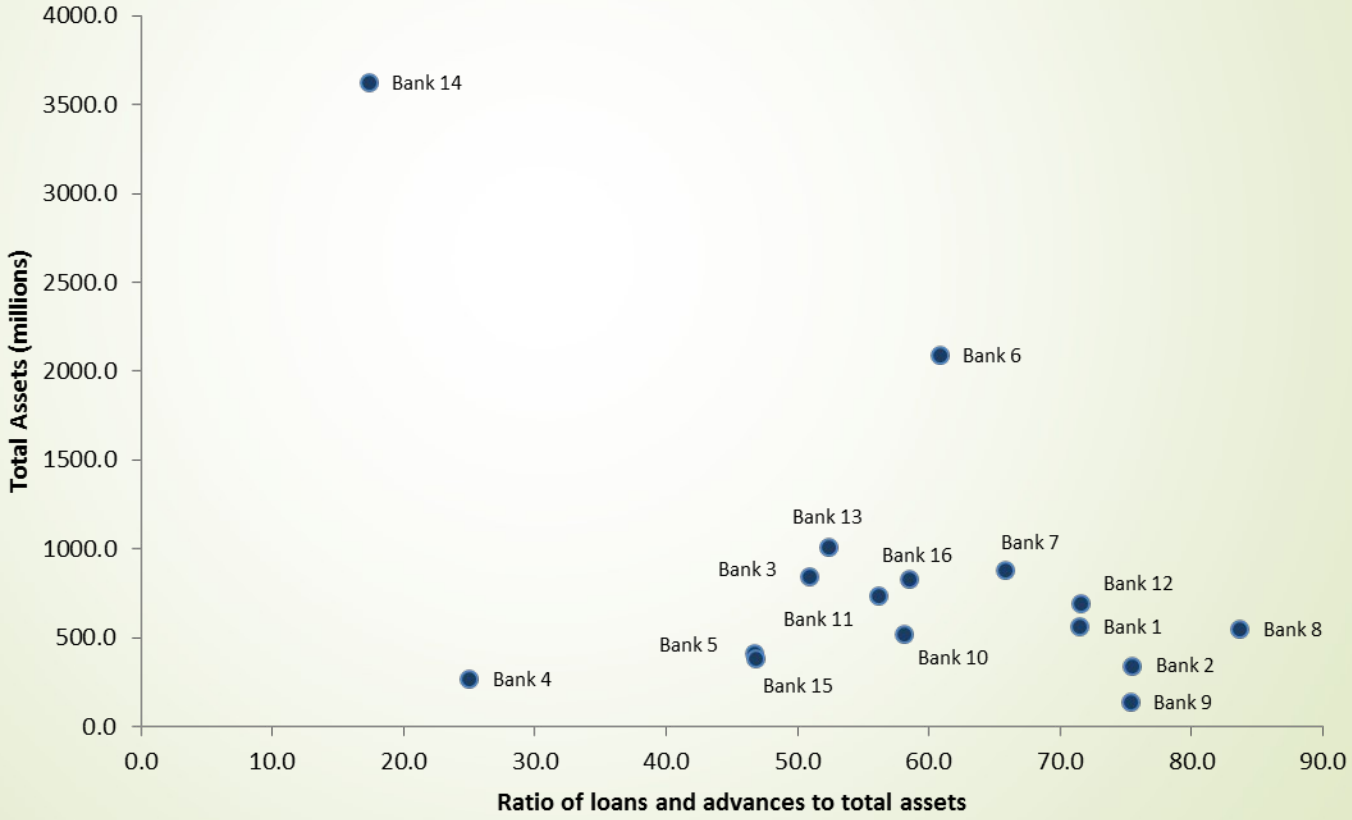
Background, cont'd



Background, cont'd



Commercial Banking in the ECCU



Literature Review

- Diamond & Rajan (2000) provided researchers with a *theory on bank capital* and showed how capital and its structure affects *liquidity, credit creation and stability.*
- Cooke (1949) *capital provides a reasonable margin of protection against losses.*
  - Low capital ratios may be indicative of unsound practices in banks.
  - May be due to high costs associated with holding capital (Rime,2001).
- Banks with lower CARs are expected to be poor stewards of borrowed funds (Ghosh and Das, 2005).

Literature Review, cont'd

- Shrieves and Dahl (1992) argued that there was a positive relationship between key variables and the effects of capital requirements.
- Rime (2001) and Heid, et al. (2004) examined the relationship between a bank's regulatory capital and its willingness to undertake risk.
- Moussa (2015) evaluated a panel of 18 banks in Tunisia found that there was a negative relationship between capital and bank risk.

Data and Methodology

- Unbalanced panel of fourteen (14) commercial banks in the ECCU.
- The banks are located in the various territories and with the exception of three (3) institutions, each would have been in existence during the length of the series (1996 to 2015).
- Data points which were not produced as a ratio were divided by total assets to arrive at a relatively common base for estimation.

Data and Methodology

Table 1: Summary Statistics

	Mean	Median	Std. Dev.	Observations
Risk	212.28	81.12	979.69	1149
Operating Expenses to Gross Income	45.94	39.25	122.88	1150
Cash to Total Assets	1.23	1.10	0.66	1150
Total Loans and Advances to Total Assets	58.24	61.15	14.79	1150
Excess CAR	10.99	8.99	16.76	1150
Deposits to Total Assets	79.35	80.64	9.67	1150
Total Assets	549,175.00	406,735.00	514,385.90	1150
Real GDP	425.18	444.36	250.61	1248

The Model

- The model being used in this study estimates the relationship between risk and excess CAR amongst commercial banks.
- The model is defined initially in its panel regression form and makes use of effects in its estimation.
- $$Y_{it} = X\beta_{it}^{1} + C_i + \varepsilon_{it}$$
- To examine the relationship between risk and excess CAR we build a model based on the specifications set forth by (Shrieves & Dahl, 1992) and (Rime, 2001), and (Moussa, 2015).

The Model

- We assume a basic linear relationship such that:
  - $Risk = f(stewardship, profitability, liquidity, business\ mix, excess\ CAR, Size, GDP)$
- The regression is built slowly.
  - Two variables are entered at a time.

Data and Methodology

Table 2: Regression Variables and Definitions

Determinants of Risk in ECCU Commercial Banks

Variable	Expected Sign	Interpretation
Bank specific variables		
Stewardship (Operating Expenses over Gross income)	+	This variable reflects management's ability to minimize expenses relative to gross income.
Profitability (ROA)	+	The variable return on assets is used as a measure of overall bank profitability.
Liquidity	+	Liquidity is defined as the ratio of cash to total assets of each commercial bank.
Business Mix	+/-	This variable is defined as the ratio of loans and advances to total assets. The bank may engage in either mostly lending services or investment services.
Excess CAR	+/-	Prudential minimum (CAR) less Actual CAR.
Size		
Total Assets	+/-	The change in total assets of each commercial bank.
Deposits	+	Total deposits of each commercial bank as a share of total assets
Macroeconomic characteristics		
Real GDP (the percentage change in Quarterly Real GDP)	+	Quarterly real GDP was interpolated using the method established by (Chow & Lin, 1971)

Models and Results

Table 3: Models and Results

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	472.130 [2.629]***	3052.226 [9.129]***	3362.457 [8.363]	3226.495 [7.451]***	340.895 [0.655]
Business Mix	-4.316 [-1.441]	-3.661 [-1.242]	-5.074 [-1.582]	-5.788 [-1.774]*	1.327 [0.410]
Liquidity		-89.035 [-1.371]	-97.771 [-1.696]*	-82.549 [-1.406]	-76.177 [-1.346]
Deposits		-31.551 [-8.792]***	-33.206 [-8.548]***	-32.846 [-8.212]***	-4.015 [-0.812]
Total Assets			0.000 [-0.828]	-5.330 [-0.383]	0.000 [1.299]
Real GDP			-0.052 [-0.145]	-0.080 [-0.230]	-0.326 [-0.924]
Stewardship				-0.288 [-1.236]	-0.245 [-1.093]
Profitability				128.475 [1.891]*	-15.649 [0.232]
Excess CAR					25.780 [9.304]***
Summary Statistics					
R-Squared	0.124	0.184	0.185	0.190	0.248
Adjusted R-Square	0.111	0.170	0.170	0.173	0.232
Durbin Watson	1.647	1.772	1.779	1.793	1.937
F-statistic	9.911	13.232	12.064	11.323	15.292

*** Indicates significance at a level of 0.01
** Indicates significance at a level of 0.05
* Indicates significance at a level of 0.10

Conclusion

- The results do match somewhat the results seen in several pieces including Moussa (2015) and Ghosh, et al. (2004). The positive relationship between capital and risk in this instance cannot be ignored.
- The results of this work suggest that there exists a postive and significant relationship between excess capital held by commercial banks and risk (as measured by the standardized Z score).
- Are there variables which may exist (on or off the balance sheet) which have a more significant relationship than the ones contained within this study?
- Are the commercial banks sufficiently heterogeneous in their banking activities to produced differentiated behaviour which can be easily analysed?

Conclusion

- The paper provides some guidance to policy. In early 2015, the ECCB produced the Revised Banking Act which was meant to address several areas such as corporate governance and bank capital requirements.
- The result of this would be an increase in the CARs of commercial banks and consequently, excess CARs for those institutions over and above the prudential minimum of 8.0 per cent.
- From the results above, we can infer that an increase in CAR is likely to influence risk associated with commercial banks in the ECCU.

Thank you!