Macro-Financial Linkages in the ECCU

Garfield Riley

Research Department

Eastern Caribbean Central Bank

Prepared for Annual Monetary Studies Conference

18 November 2014

Roadmap

- Motivation

- Overview of the Literature

- Methodology and Analysis

- Main Results

- Policy Discussion and Conclusion

Motivation

- Vulnerabilities in ECCU banking system exposed by global economic and financial crisis;

- Favourable economic conditions pre-2008…reduction in NPLs;

- Contraction in real GDP growth and credit…sharp increase in NPLs – 18.3 per cent in December 2013;

- What determines NPLs...any significant feedback loops?

Overview of the Literature

- Extensive literature on determinants of NPLs;

- Theoretical contributions: Diamond and Rajan (2001), Allen and Gale (1998, 2004);

- Empirical literature: interplay of macro-economic and bank-specific factors;

- Macro-factors: Keeton and Morris (1987); Berge and Noye (2007).

Overview of the Literature

- Macro and bank specific factors:- Quagliariello (2007), Louzis, Vouldis and Metaxas (2011);

- Macro-financial feedback loop:- Espinoza and Prasad (2010); Nkusu (2011); Love and Ariss (2013);

- Caribbean literature:- Chase et al (2005); Greenidge and Grosvenor (2010); Belgrave, Guy and Jackman (2012); Guy and Lowe (2012); Khemraj and Pasha (2009); Jordan and Tucker (2013).

Methodology and Analysis

- Annual bank level data 1995 – 2013;

- Macroeconomic variables: real GDP growth, lending rate;

- Bank specific variables: efficiency, riskiness, size, and profitability;

- Bank efficiency: - cost/income ratio;

- Risk appetite:- loans/total assets;

- Size:- logarithm of total assets;

- Profitability:- net interest income/average earnings.

Methodology and Analysis Cont'd

- Panel regression:- $npl_{it} = Y'_{it}\beta + \theta_i + \lambda_t + \varepsilon_{it}$

- Pooled OLS, Fixed Effects, GMM;

- Bayesian Panel VAR: - allows cross-sections to be "similar", but not the same;

- Classical VAR: - Corrected for "Nickel bias", a la Love and Zichinno (2006).

Main Results

|	Pooled OLS	Fixed Effects	Difference GMM	System GMM
$npl_{(-1)}$	0.674***	0.491***	0.654***	0.651***
loan/asset	0.202***	0.433**	1.015***	0.234***
cost/income	0.194***	0.107*	-0.147	0.154**
size	0.006	-0.030	-0.467**	-0.009
profitability	-0.318***	-0.413***	-0.981***	-0.352***
gdp growth	-0.022***	-0.017**	-0.019**	-0.015***
interest rate	0.043**	0.039**	-0.087*	0.034
Observations	645	645	608	645
R-squared	0.57	0.55		
Number of instruments			35	54
Hansen test p-value			0.70	0.92
A-B AR(1) test p-value			0.00	0.01
A-B AR(2) test p-value			0.35	0.19

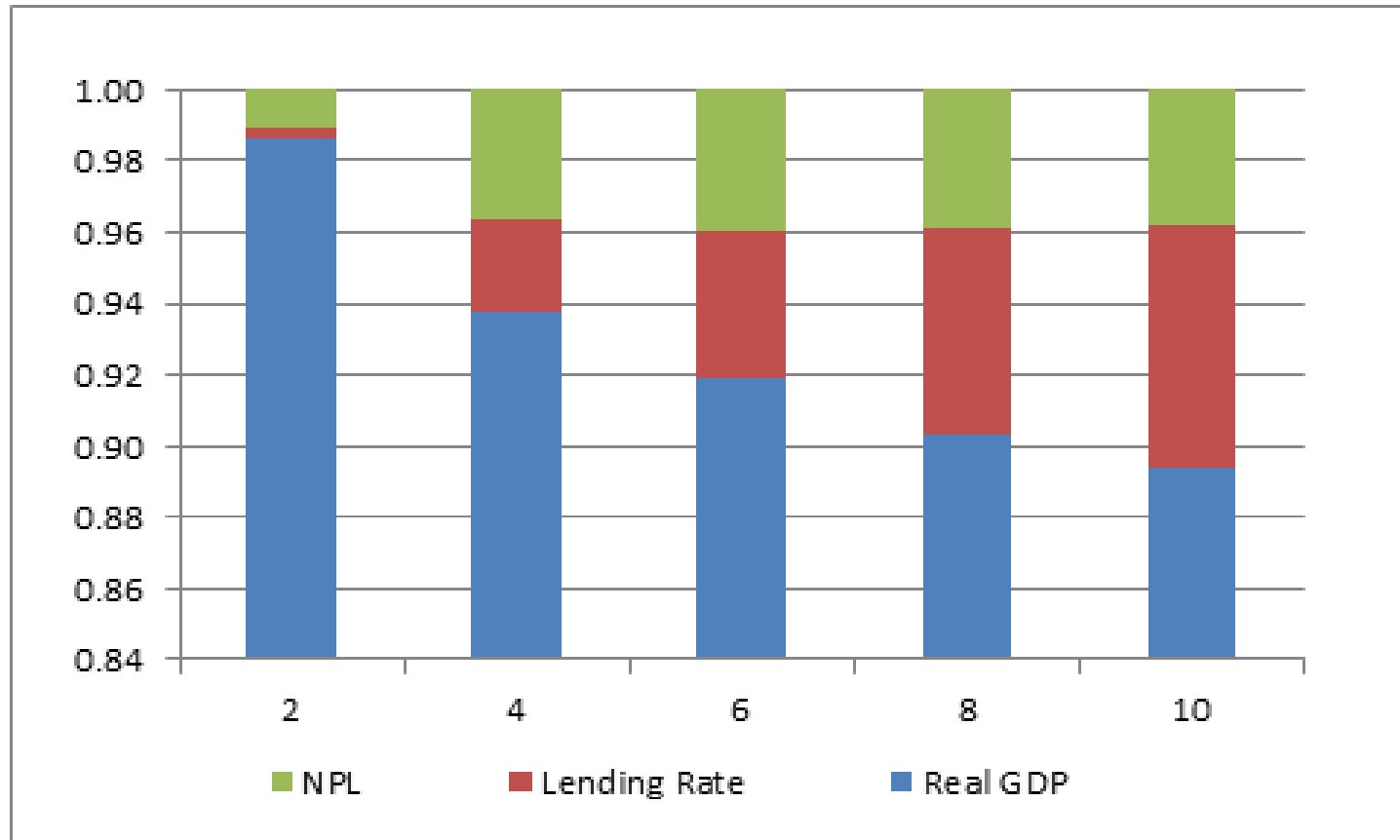# Main Results Cont'd – Bayesian PVAR
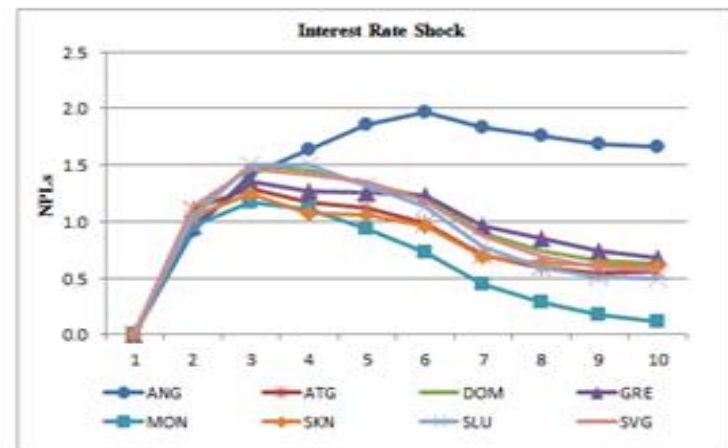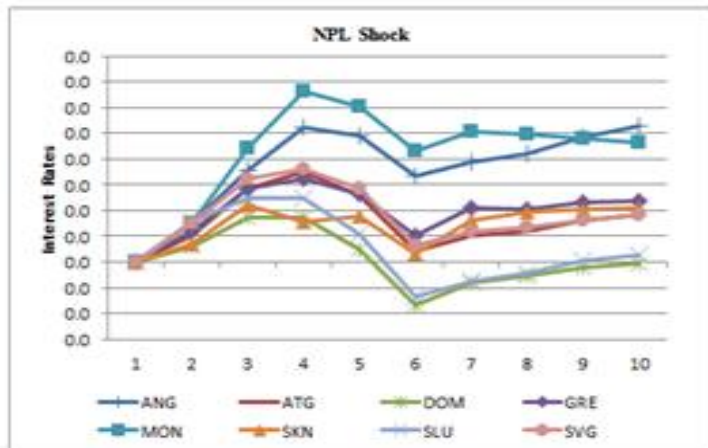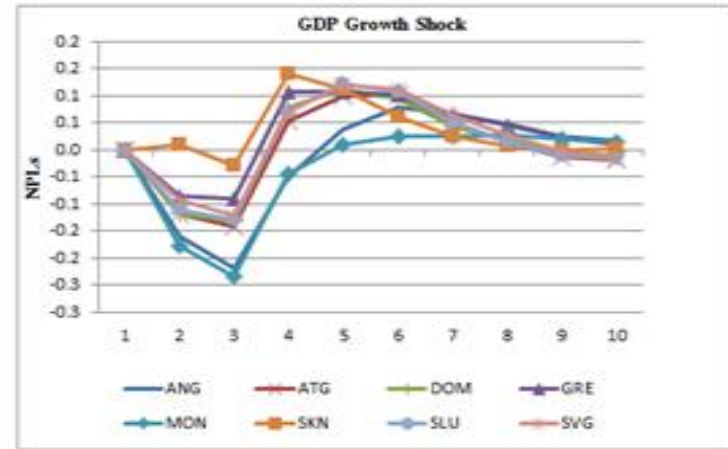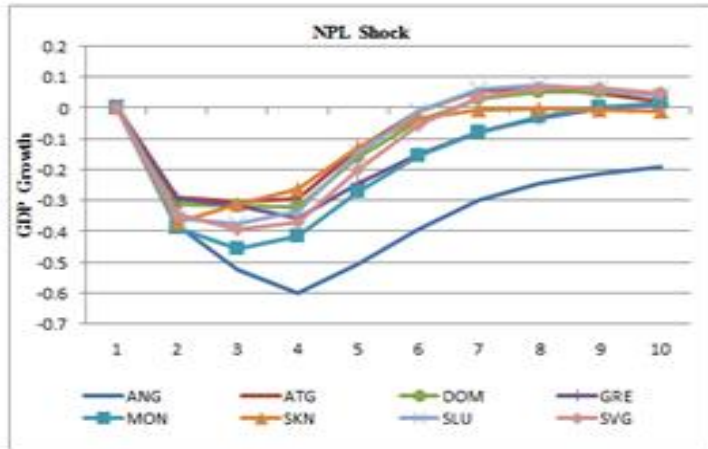
Main Results Cont'd – Standard PVAR
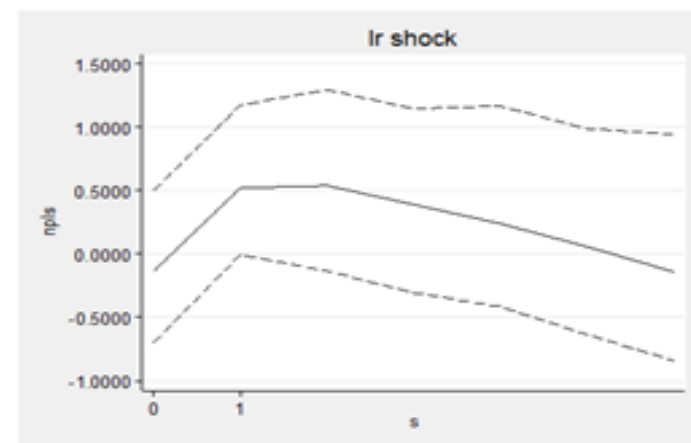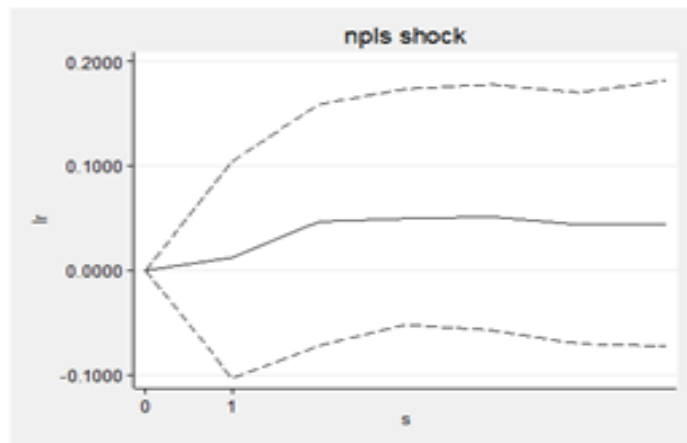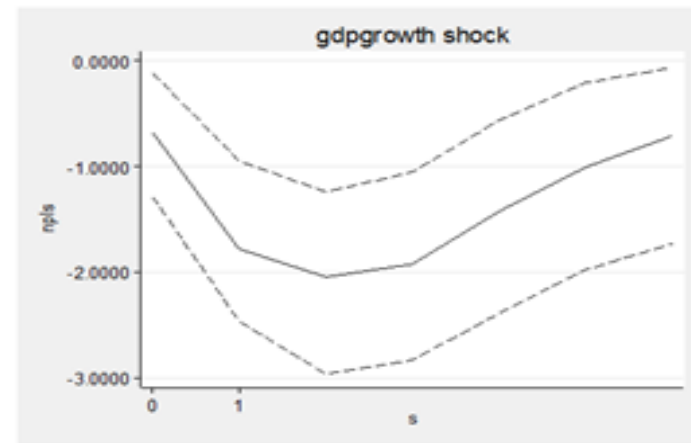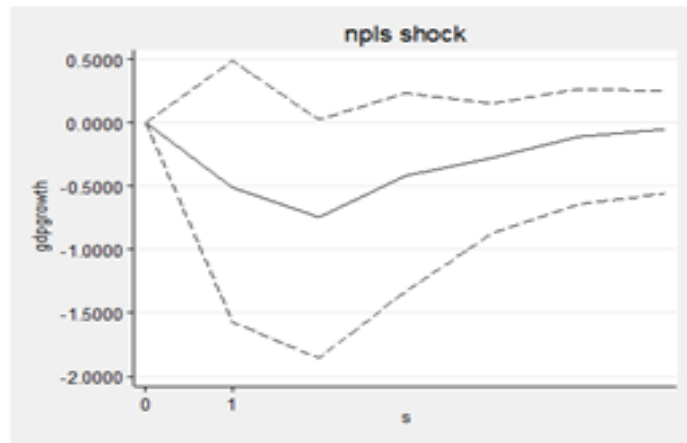
Main Results Cont'd – Variance Decomposition

Conclusion and Policy Discussion

- NPLs determined by macro-economic and bank specific factors;

- Panel VARs suggests significant feedback effects between macro-economic performance and NPLs;

- Models can be used in macro-stress testing exercises;

- Pro-cyclicality of credit and NPLs…feedback effects...added focus on macro-pru: - loan to value ratios, leverage ratios, dynamic provisioning.

Thank You for Listening!