Financial Stability in the ECCU: Developing Early Warning Systems and a Financial Stability Index

Prepared by
Kamilah Anderson

Research Department
Eastern Caribbean Central Bank

Outline

- Introduction/Background
- Objective
- Stylized Facts
- Data/Methodology
- Descriptive Statistics
- Results
- Conclusion/Limitations

Introduction/Background

- Financial Stability…
  - In a developing economy
  - In a monetary union

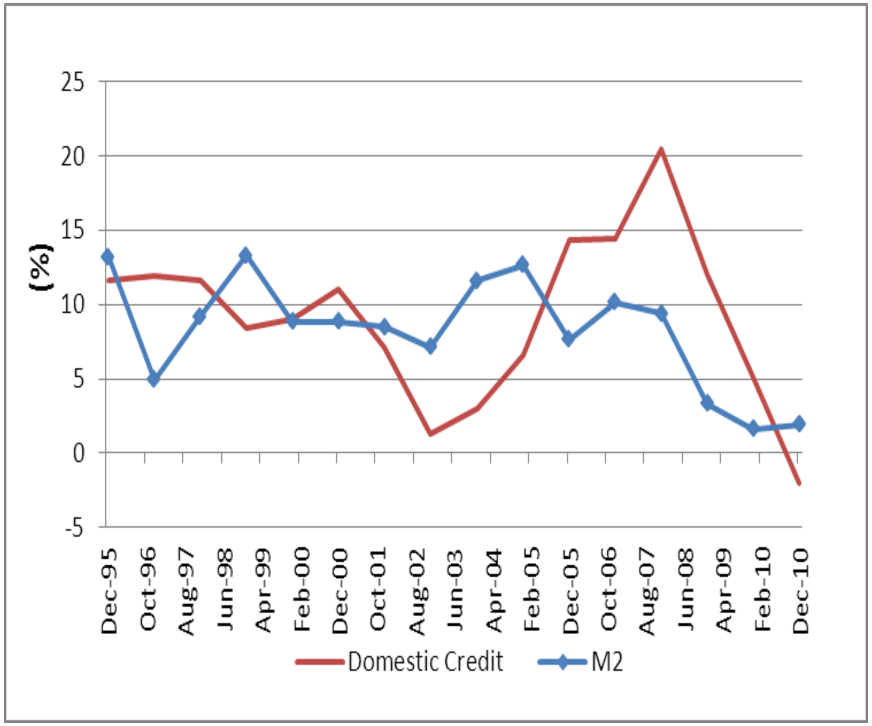
- An Early Warning System …
  - "Prevention is better than cure"….
  - rule-based approach to supervision; reducing the reliance on discretion

Objective of the Paper

- Identify thresholds for prime indicators
- Develop a vulnerability index as a diagnostic tool
- Continuation of risk profiling system project for early detection of problem banks

Stylized Facts I

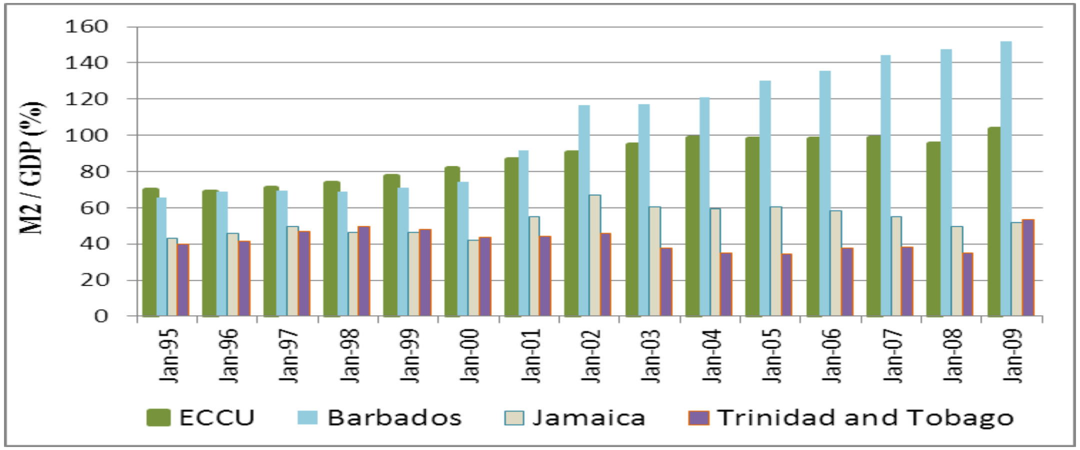
<u>Figure 1: Growth in Monetary Aggregate and Credit</u>

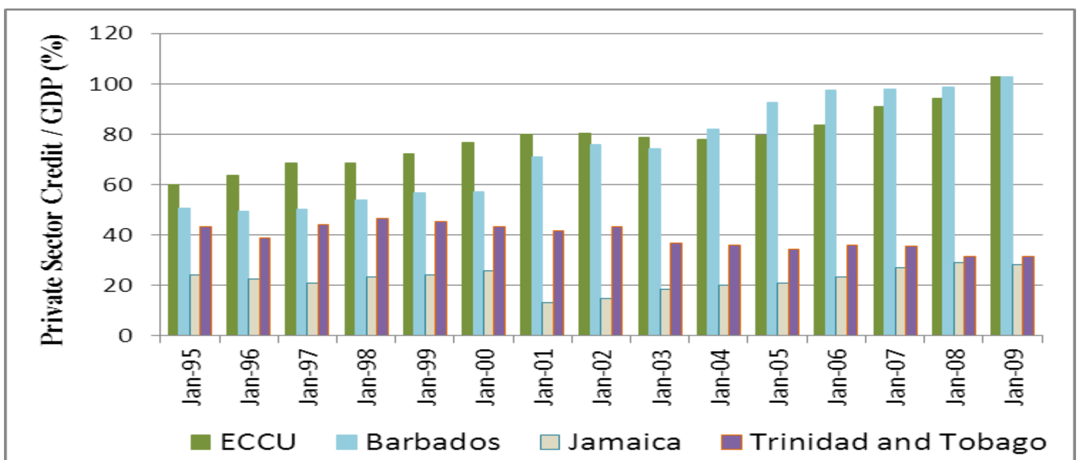


- The size of the banking sector, M2/GDP, rose from 70% to 94% in the latter half of 1990's and 2000-2011 respectively.
- Domestic credit growth peaked in 2007 at 20% while contracting by 1.9% in 2011.
- Lending rates declined gradually averaging 10.9% over the sample.
- Inflationary pressures were minimal (below 1%)

Stylized Facts II

Figure 2&3: Indicators of Financial Depth





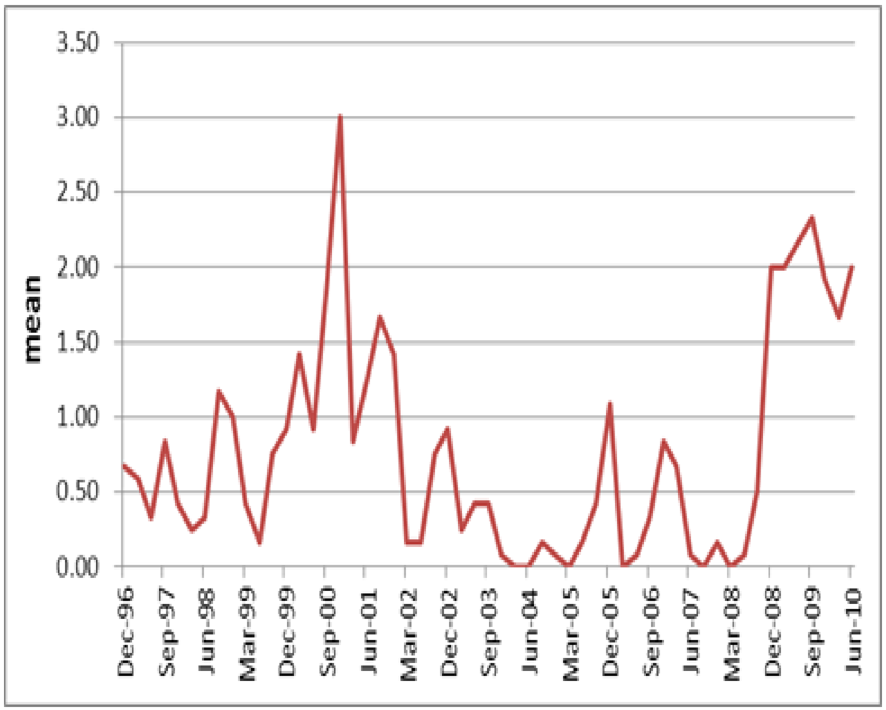
- Financial development in the region is at varying stages.
- The financial sector in Jamaica saw significant growth during 1991 to 1995 prior to the sample period.
- Financial sector deepening is more pronounced in Barbados during this period;
- However credit allocated to the private sector is similar to the level in the ECCU.

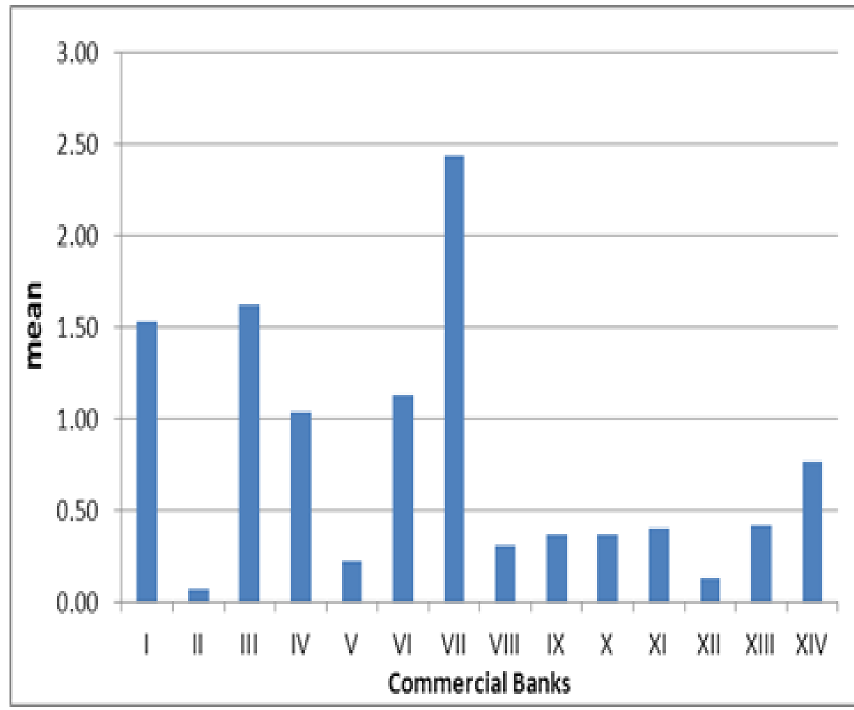
Methodology/Data

- Dataset:
  - Quarterly from 1996Q4 – 2010Q2
  - Covers all 14 indigenous banks
  - Indicator of distress: violation of weekly 6% reserve requirement
  - Variables included:
    - Capital adequacy ratio (benchmark: 8%)
    - NPL ratio (tolerable limit: 5%)
    - ROA (benchmark: 2%)
    - Net Liquid Asset ratio (benchmark: 20%-25%)
    - Other macro-economic variables

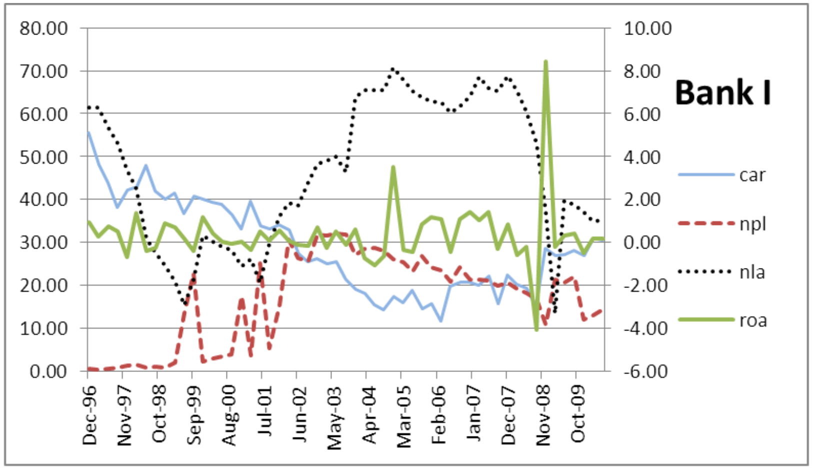
Descriptive Statistics I

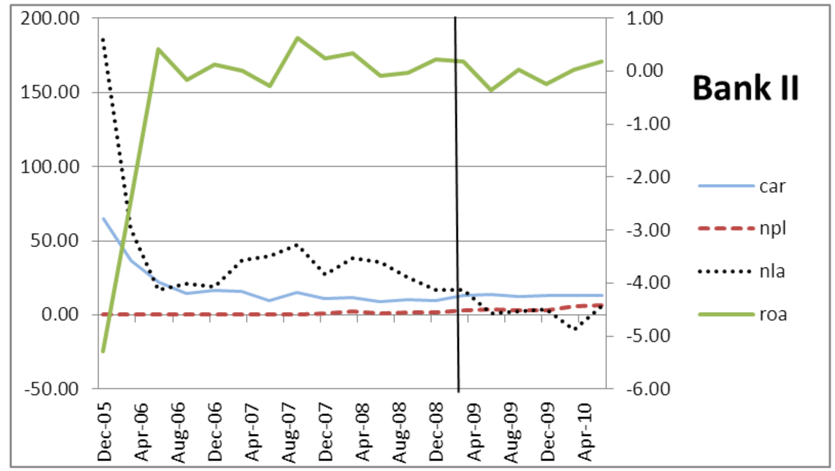
Figure 4&5 : Average Distress Events

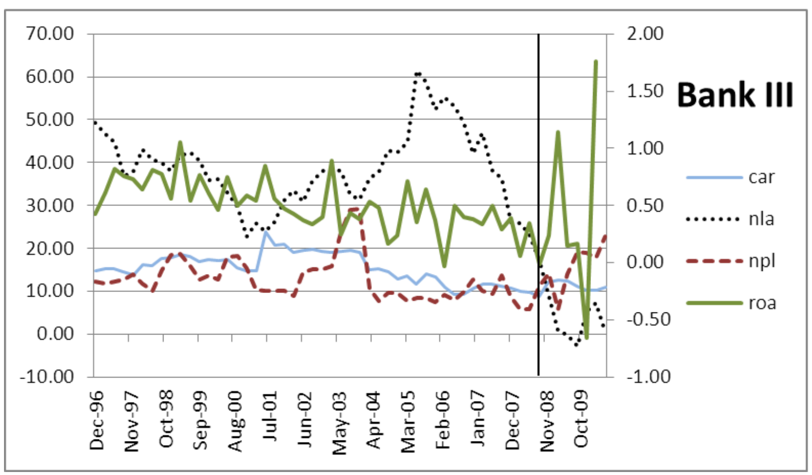


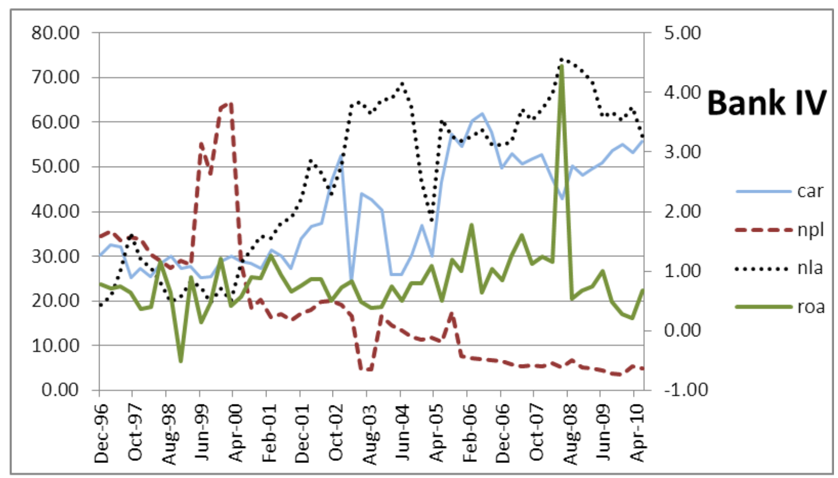


Descriptive Statistics II









Results I

- Summary of Results
  - NPL ratio, ROA and the Net Liquid Assets ratio were most significant indicators of distress;
  - Deterioration in all 4 significant variables was associated with an increased probability of bank distress;
  - Probability of distress was most *responsive* to changes in ROA;

Results II

- Summary of Results cont'd
  - Probability of distress was least responsive to changes in the indicator of managerial quality; and
  - The baseline model captured the most relevant indicators
  - Predicted distress events were recorded at the beginning of (actual) consecutive quarterly infraction periods.
  - The thresholds estimated were similar to the prudential benchmarks used internationally

Results III

- Table 3: Actual vs Predicted Distress Periods

Banks	Consecutive Infractions -Actual Distress	Predicted Distress
Bank I	2008 q4 – 2010 q2	2008 q4
Bank II	2005 q4 & 2006 q2	2005 q4
Bank III	2008 q4 – 2010 q2	2009 q1 & 2010 q2
Bank IV	1999 q3 – 2001 q4	1999 q4

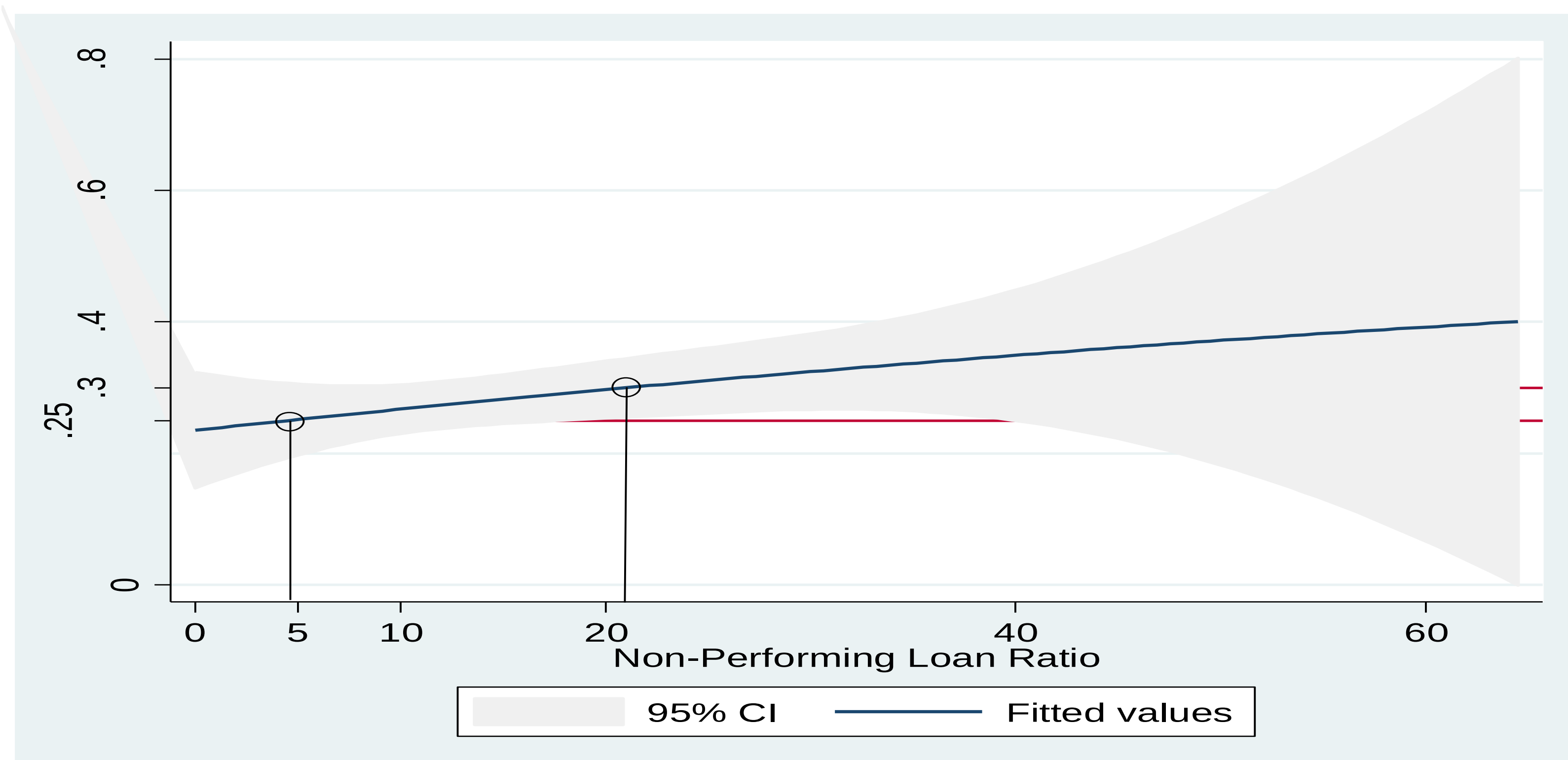
Results IV

- Table 1: Summary of Trigger Points

Indicators	First Trigger (0–30%PD[1])	Second Trigger (30–50%PD)
Non-Performing Loan ratio (%)	> 5	> 20
Return on Assets ratio (%)	>1.5	> 5
Net Liquid Assets ratio (%)	>80 <50[2]	>128

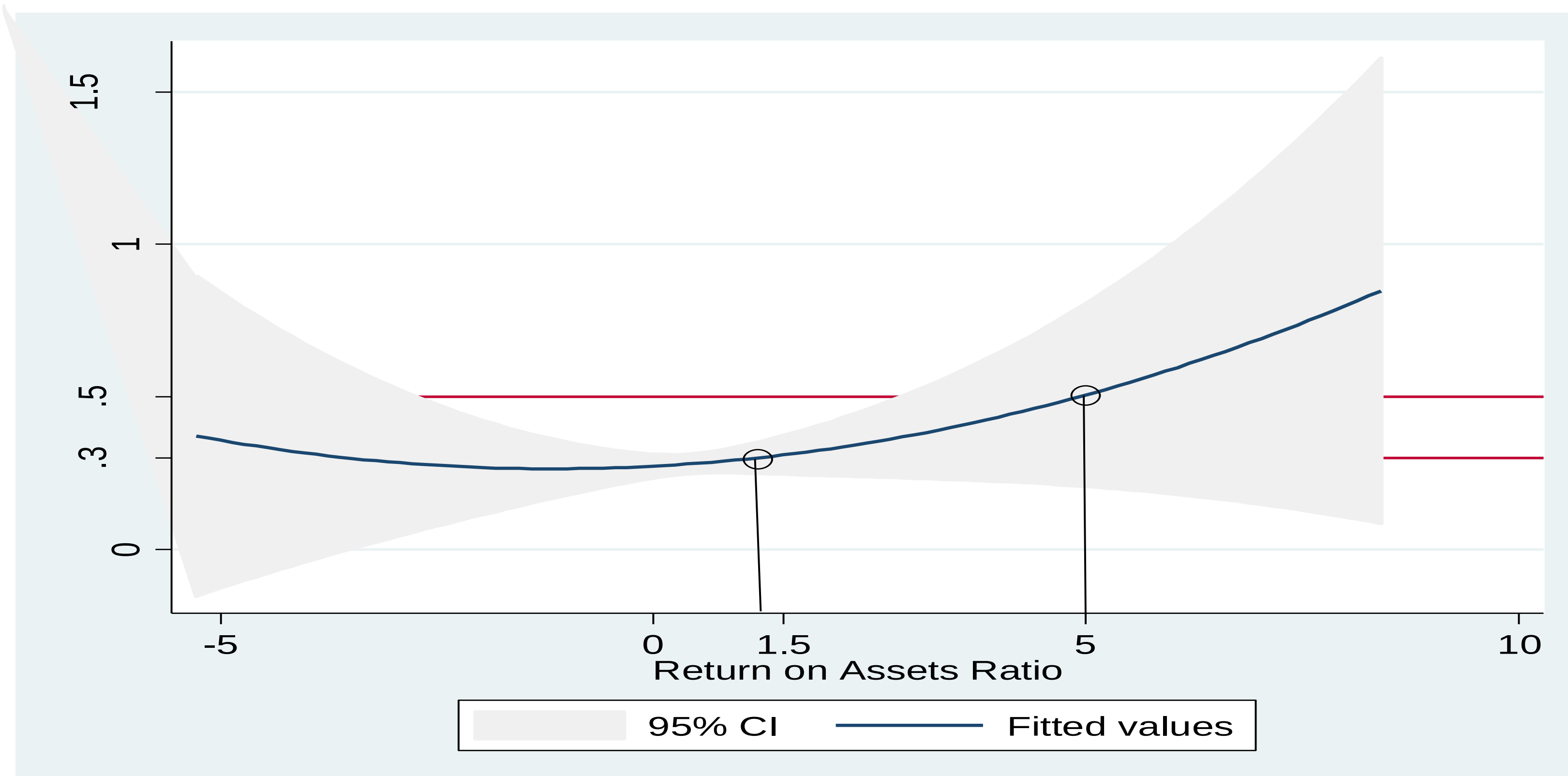
Results V

- Figure 1: Threshold Analysis - Non-Performing Loan Ratio



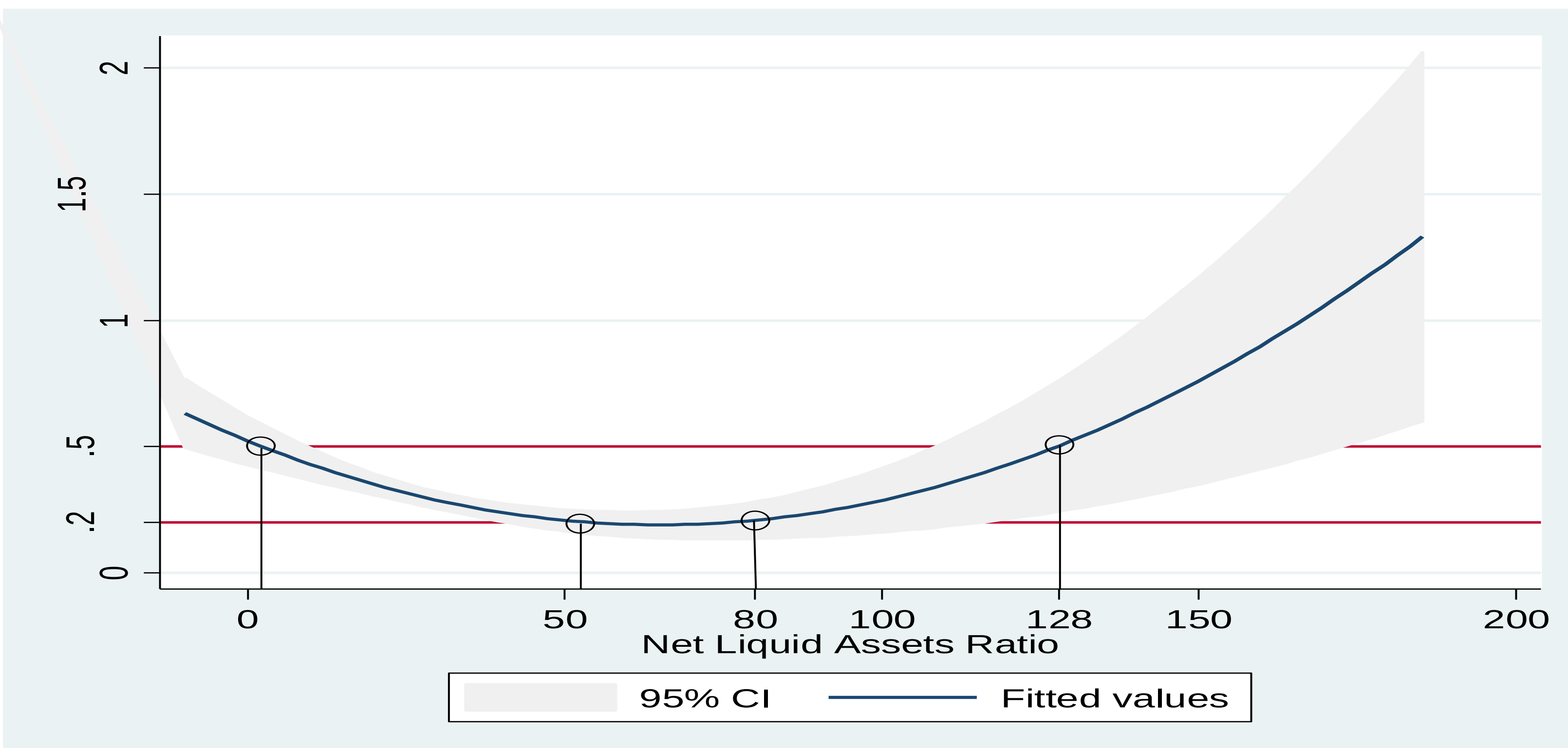
Results VI

- Figure 2: Threshold Analysis - Return on Asset Ratio

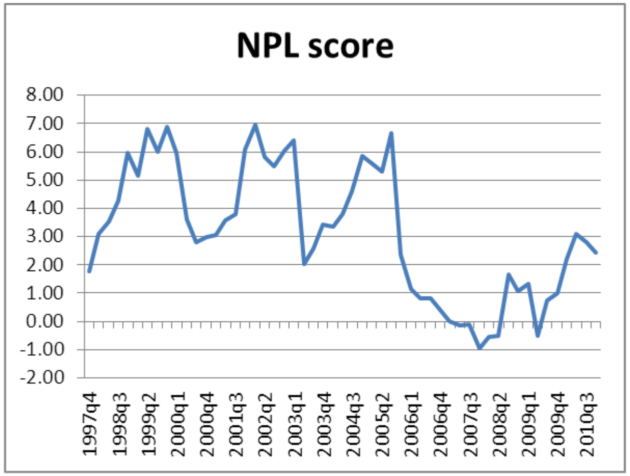


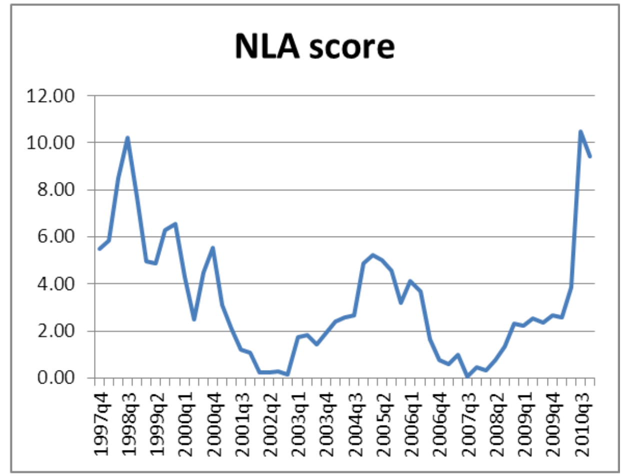
Results VII

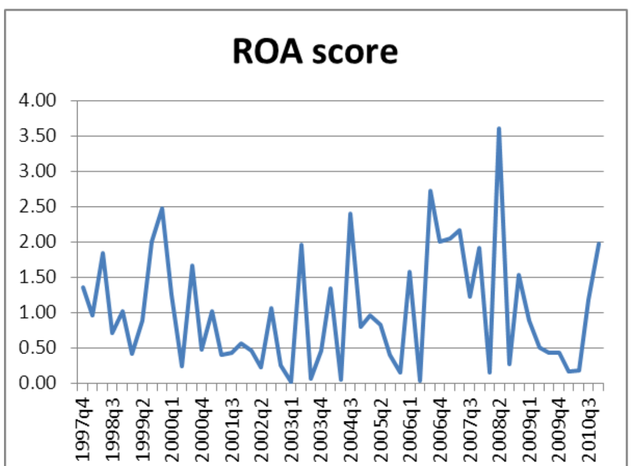
- Figure 3: Threshold Analysis - Net Liquid Asset Ratio

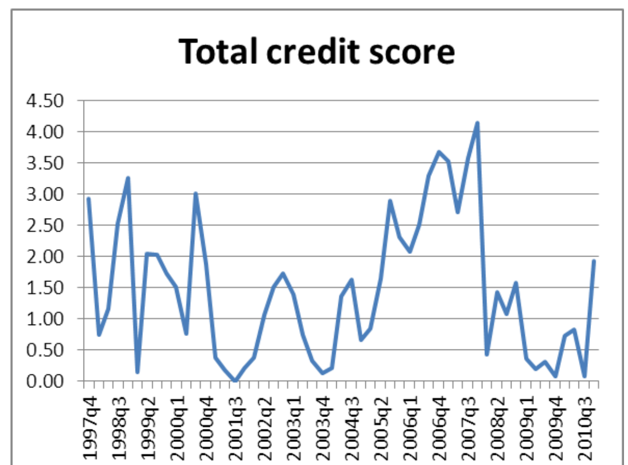


Results VIII

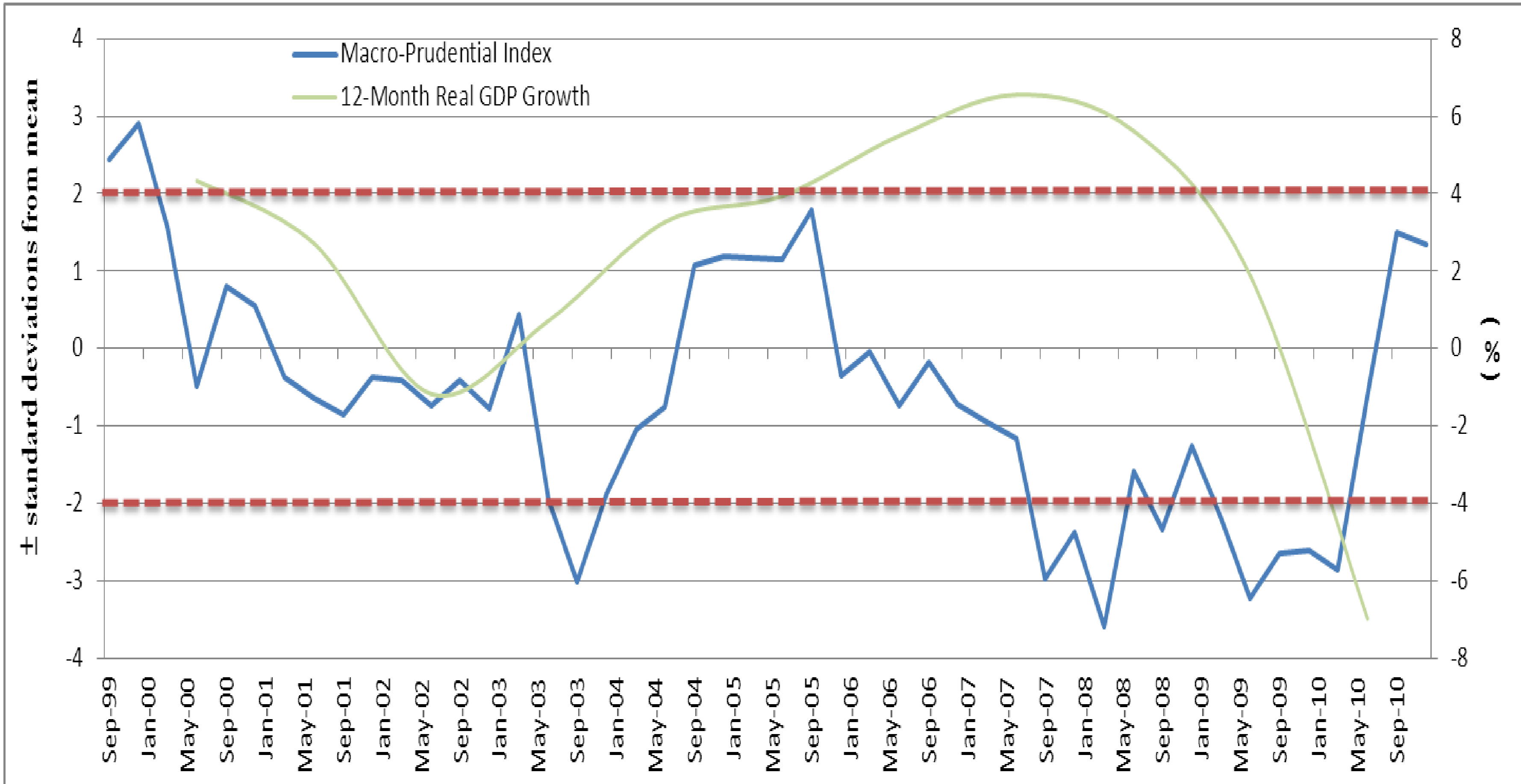








Results IX



Macro-Prudential Index
12-Month Real GDP Growth
± standard deviations from mean
(%)
4
3
2
1
0
-1
-2
-3
-4
8
6
4
2
0
-2
-4
-6
-8
Sep-99 Jan-00 May-00 Sep-00 Jan-01 May-01 Sep-01 Jan-02 May-02 Sep-02 Jan-03 May-03 Sep-03 Jan-04 May-04 Sep-04 Jan-05 May-05 Sep-05 Jan-06 May-06 Sep-06 Jan-07 May-07 Sep-07 Jan-08 May-08 Sep-08 Jan-09 May-09 Sep-09 Jan-10 May-10 Sep-10

Limitations of the Study

- Results should not be applied mechanistically.
- Model is prone to the following critiques:
  - Backward-looking data; limit usefulness for predicting *future* distress or crises; and
  - The definition of what constitutes a crisis is equivocal: just 2 states – “distress” or “no distress”. What about banks that can be weak and near crisis without displaying outward signs characteristic of a crisis?

Thank you!