CENTRAL BANK OF TRINIDAD & TOBAGO

ASSESSING THE RESILIENCE OF THE BANKING SECTOR IN TRINIDAD AND TOBAGO: A VECTOR AUTOREGRESSION ANALYSIS

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[1]The views expressed in this paper are those of the author and do not necessarily represent those of the Central Bank of Trinidad and Tobago

OVERVIEW

- Introduction
- Literature Review
- Stylized Facts
- Methodology and Estimation
- Innovations Accounting
- Conclusion

INTRODUCTION

- In recent years, financial stability has been at the forefront of research and policymaking.
- Resilience of the banking system to macroeconomic shocks has been assessed through the use of the Financial Sector Assessment Programs (FSAP) by the IMF.
- Vector Autoregressive (VAR) models are commonly used in assessing the impact of macroeconomic variables on the banking system since it allows for interaction between the variables.

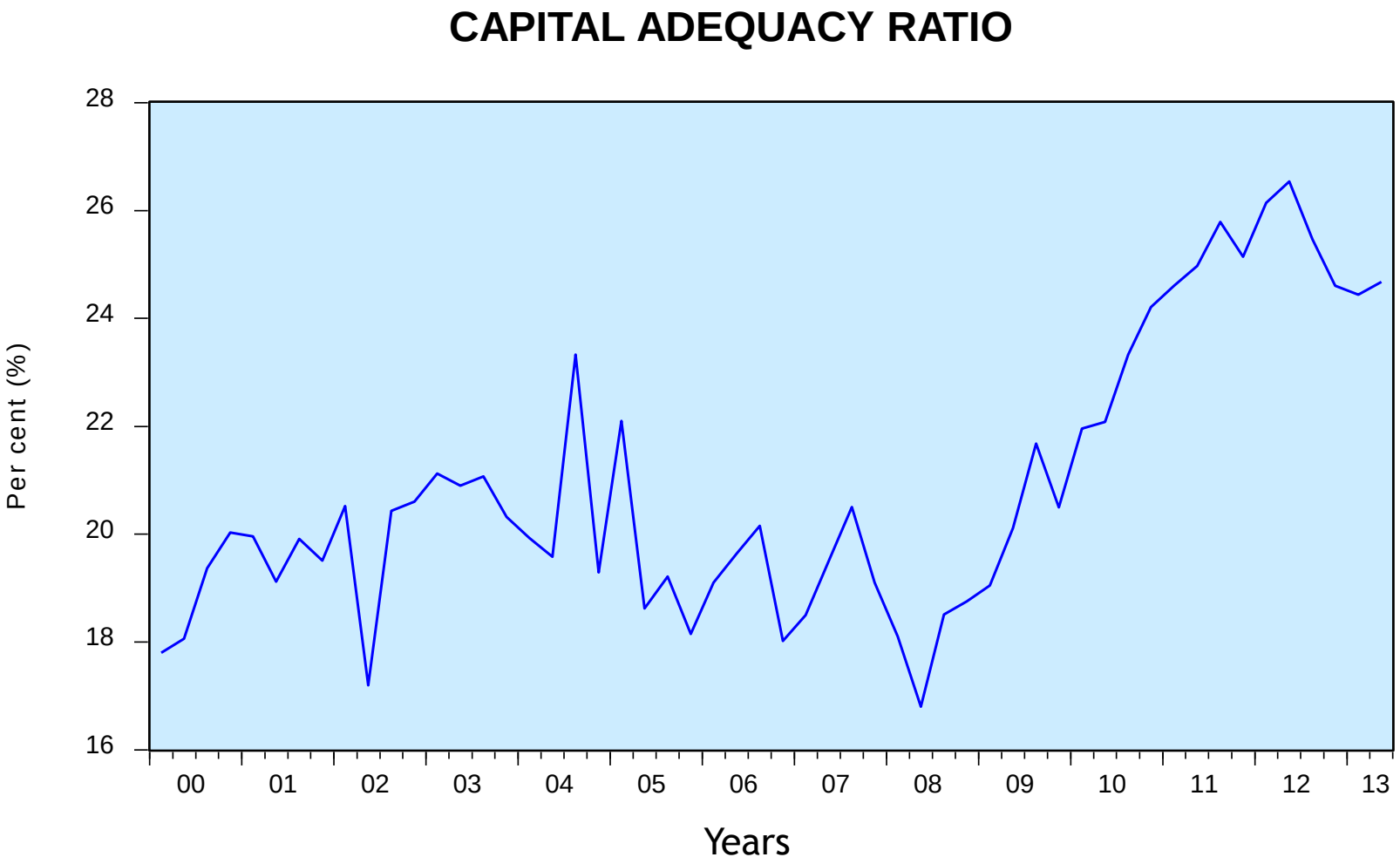
LITERATURE REVIEW

- Filosa (2007) used a VAR model to analyze the resilience of the Italian banking system to endogenous or policy induced monetary conditions.

- Similarly, Hoggarth et al. (2005) assessed the impact of macroeconomic variables on the loans to write off ratio in the UK banking system.

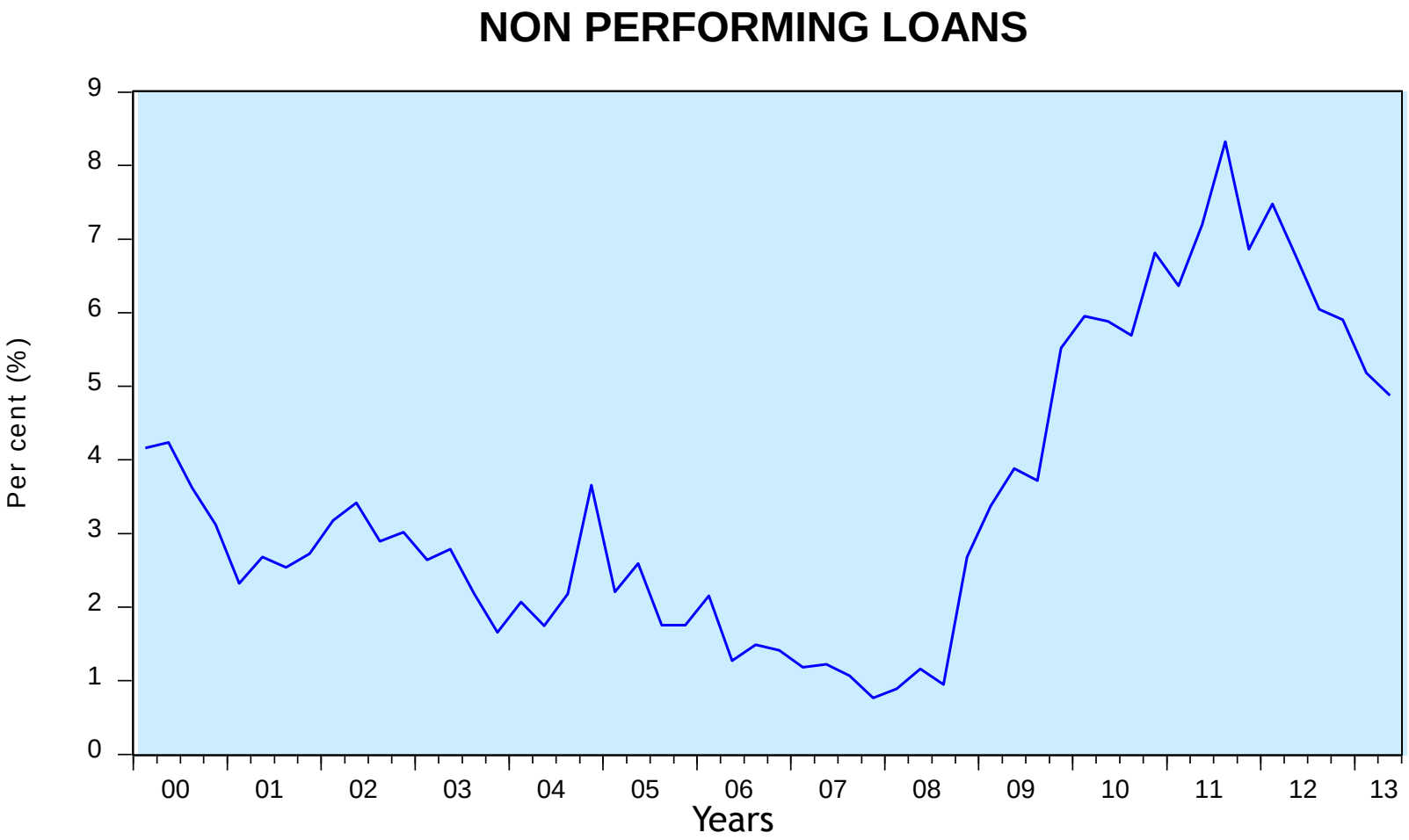
- Albert and Hee Ng (2012) assessed the resilience of the banking sector in the ASEAN using the same estimation technique.

STYLIZED FACTS



Source: Central Bank of Trinidad and Tobago.

STYLIZED FACTS CONT'D



Source: Central Bank of Trinidad and Tobago.

Variable	Definition
Capital Adequacy Ratio (CAR)	The capital ratio is calculated using the definition of regulatory capital and risk-weighted assets.
Nonperforming Loans (NPL)	Non-performing loans are usually those past due in excess of 3 months.
Production Index (PI)	This is an index of the various productive sectors.
Interest Rate (IR)	This is the lowest rate on loans granted to customers.
Retail Price Index (RPI)	An index of consumer prices which measures changes in the prices of goods and services bought for household consumption. Base year 2003= 100
Exchange Rate (ER)	The rate at which the TT dollar is exchanged for the 1US dollar.
Composite Stock Market Index (SMI)	This is an index of the prices of all the stocks traded on the Trinidad and Tobago Stock Exchange, with the weights based on the volume of the transaction.

METHODOLOGY AND ESTIMATION

VAR methodology proposed by Albert and Hee Ng (2012):

$$Y_t = \alpha + \gamma_1 Y_{t-1} + \cdots + \gamma_p Y_{t-p} + \varepsilon_t$$

$$Y_t' = [CAR_t, PI_t, RPI_t, IR_t, ER_t, SMI_t] \quad \text{(Model One)}$$

$$Y_t' = [NPL_t, PI_t, RPI_t, IR_t, ER_t, SMI_t] \quad \text{(Model Two)}$$

Model One will examine the impact of the macro economy on the CAR whilst Model Two examines the impact of macroeconomic variables on NPL.

ESTIMATION CONT'D

- All of the variables used to estimate the model were differenced stationary.

- A lag length of two lags was selected for both models.

ROBUSTNESS

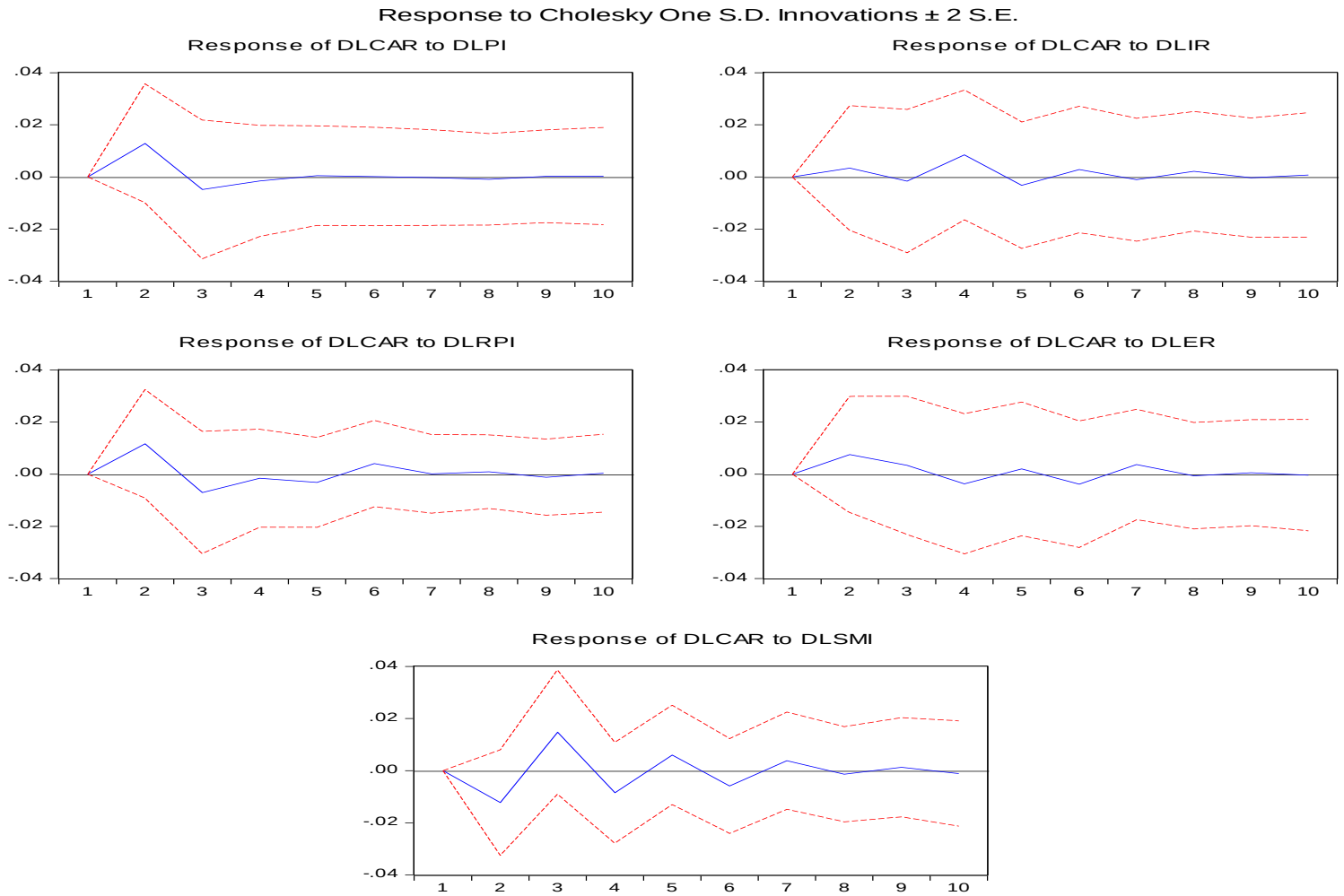
Test Statistic	CAR (Model One)	NPL (Model Two)
Serial Correlation LM	26.86***	32.91***
Portmanteau Autocorrelation	62.77***	92.71***
Normality	81.23	91.31
Heteroskedasticity	516.73***	503.91***

*** represents the non-rejection of the null hypothesis at the 10 per cent level of significance. Both Serial Correlation LM test and the Portmanteau autocorrelation test statistic were taken at 4 lags

Models are confirmed to be stable since the roots have modulus of less than one and lie inside the unit circle. This insures that the impulse response standard errors are valid.

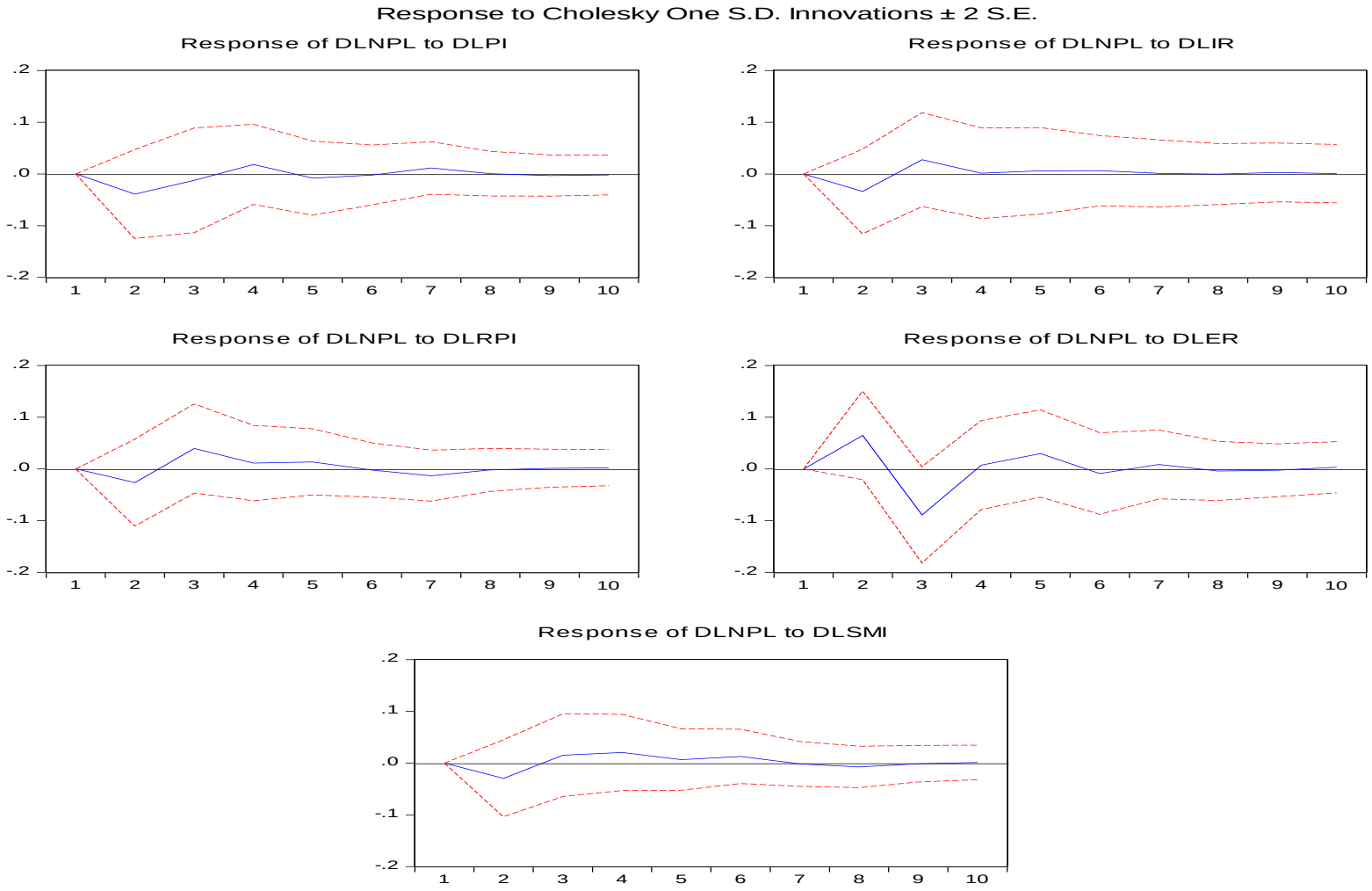
INNOVATIONS ACCOUNTING: IMPULSE RESPONSE FUNCTIONS

- Response of CAR to macroeconomic shocks



IMPULSE RESPONSE FUNCTIONS CONT'D

- Response of NPL to macroeconomic shocks



VARIANCE DECOMPOSITION

- CAR (Model One)

Period	S.E.	DLCAR	DLPI	DLIR	DLRPI	DLER	DLSMI
2	0.075718	90.92824	2.889855	0.200766	2.375238	0.995853	2.610046
5	0.083335	84.91682	2.758385	1.377748	2.845617	1.245049	6.856384
8	0.084397	83.71153	2.702007	1.538501	3.022797	1.620196	7.404965
10	0.084453	83.65401	2.700401	1.545807	3.039171	1.624222	7.436385

- NPL (Model Two)

Period	S.E.	DLNPL	DLPI	DLIR	DLRPI	DLER	DLSMI
2	0.266198	88.14405	2.142366	1.611361	0.997058	5.871474	1.233691
5	0.298751	76.29417	2.331495	2.172652	2.868852	14.57785	1.754981
8	0.300483	75.73756	2.454895	2.191032	3.038695	14.59655	1.981266
10	0.300581	75.69914	2.469652	2.198216	3.043132	14.60617	1.983689

POLICY RECOMMENDATIONS

- Mitigate and prevent excessive credit growth.
- Limiting excessive exposure concentrations.
- The expectations of bailout should be limited.

SUMMARY AND CONCLUSION

- It was found that the composite stock market index had the biggest impact on the CAR whilst other variables had little impact. However, the impact of the stock market index eventually decayed after 6 quarters.

- Only a shock to the exchange rate had any real impact on NPL. However, this reverted to zero after just 4 quarters. All other variables had relatively little impact on NPL.


THANK
YOU!


Suggestions
Comments?