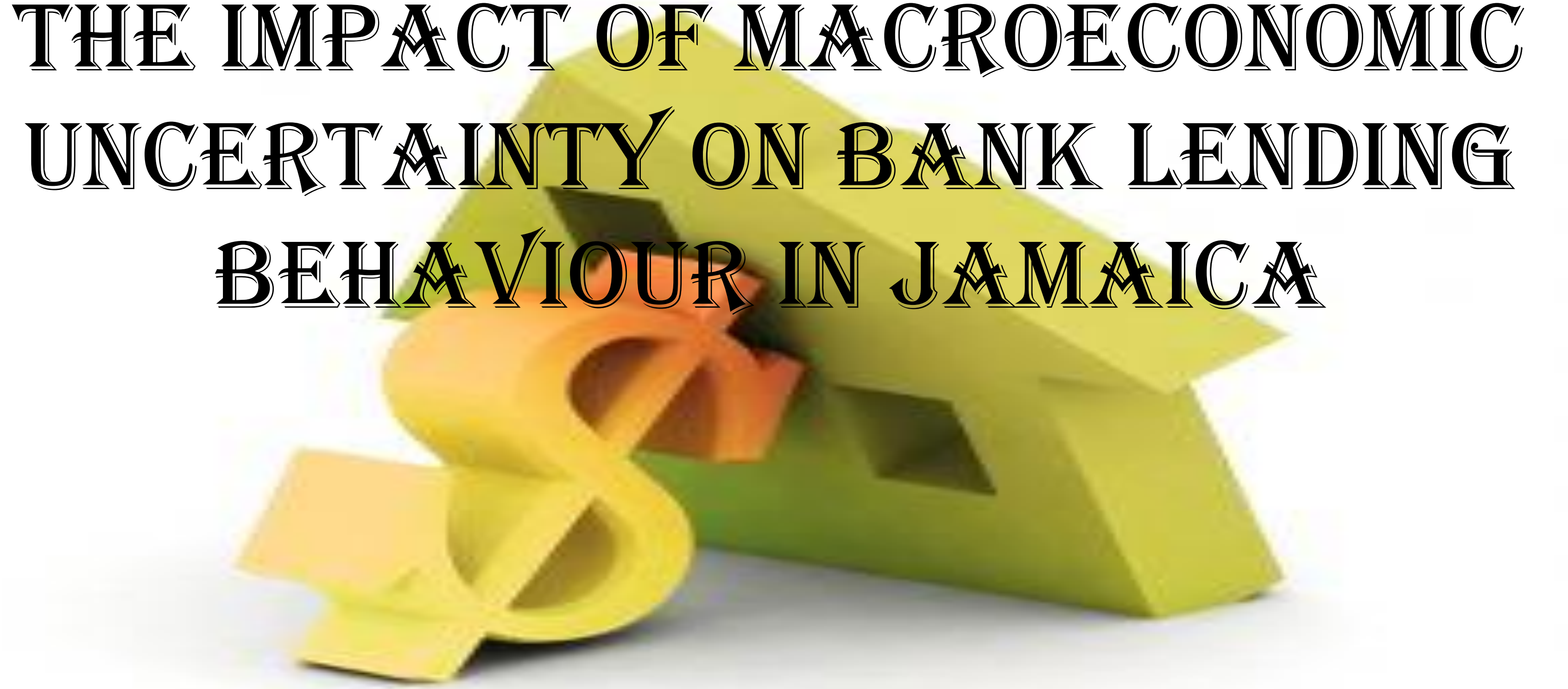
The Impact of Macroeconomic Uncertainty on Bank Lending Behaviour in Jamaica



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MOTIVATION

- During the global financial crisis in 2009 credit to the private sector declined, at the same time there were increases in the interest rates. As a result of these occurrences this study seeks to:
  - examine the linkages between banking system lending behaviour and the macroeconomic environment.
  - Ascertain whether issues stemming from asymmetric information induced by macroeconomic volatility is a major determinant of the banking sector's lending behaviour.

INTRODUCTION

- The volume of loans granted by a bank is typically thought to be a function of its internal characteristics such as size, deposit base, liquidity, credit policy and other internal factors.

- However, theory purports that banks will make more loans during periods of boom and reduced level of macroeconomic uncertainty and curtail lending when the economy is in recession.

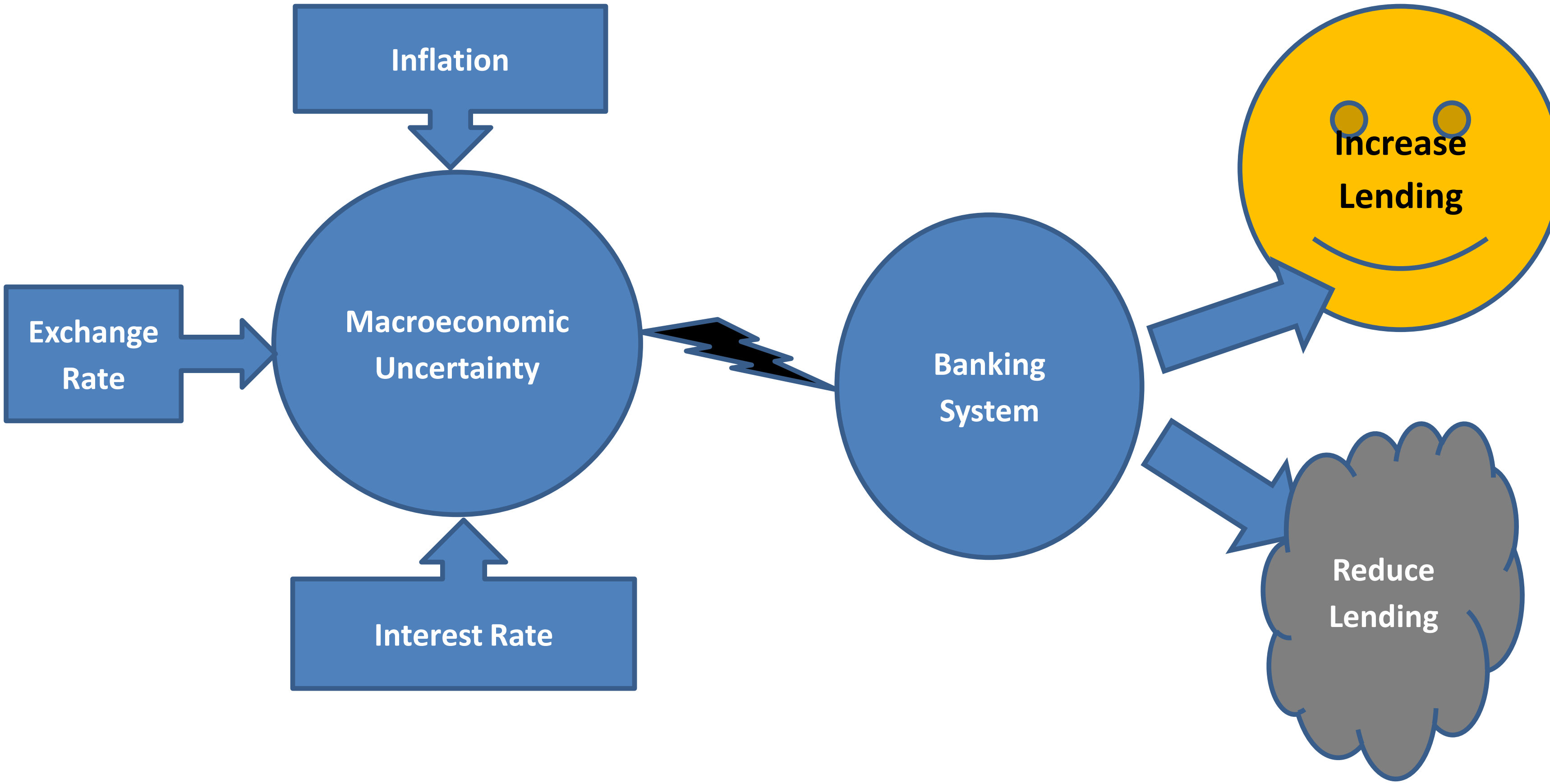
- Bank specific factors are to a large extent influenced by the general macroeconomic environment.

INTRODUCTION CONT'D

- The state of the macroeconomic environment is usually measured by macroeconomic aggregates, which include the gross domestic product (GDP), employment, industrial capacity utilization, inflation, money supply and changes in the exchange rate.

- As uncertainty increases, bank lending should decline as greater economic uncertainty increases the risk associated with the returns on lending.

INTRODUCTION CONT'D



LITERATURE REVIEW

- **Talavera, Tsapin and Zholud (2006) - Ukraine.**
- **Somoye and Ilo (2009) – Nigeria.**
- **Urquhart (2008) – Jamaica.**

MODEL CONT'D

- Model of the relationship between macroeconomic uncertainty and bank lending:

$$LTA_{it} = \alpha + \beta_t X_t + \Theta_t \Gamma_t + u_t$$

Where: $LTA_{i,t}$ - loan-to-asset ratio at time t;

X_t -vector of the bank specific variables

NPL - measure of the credit/default risk faced by banks;

D/K - shows the extent to which a bank relies on deposits for funding;

H - measure of market concentration and is calculated as the sum of the squares of market shares for each firm.

β_i - parameters of bank specific factors to be estimated.

Γ_t - vector of indicators of macroeconomic uncertainty evaluated at time t;

Θ_i -parameters of macroeconomic volatility factors to be estimated

u_t - the error term.

Model -Description of Variables

Bank Variables	Mean	Maximum	Minimum	Standard Deviation	Kurtosis	Correlation with LTA
Loans to Asset	32.46	45.82	18.21	8.92	1.85	1
Deposit to Capital	578	777.79	445.03	79.09	2.57	-0.93
Herfindahl Index	2694.98	3160.51	2294.972	249.22	2	-0.85
NPL	4.57	13.97	1.99	3.23	4.63	-0.69
Inflation	0.84	4.04	-0.33	0.79	5.25	0.46
Ex. Rate	63.25	89.73	41.27	14.45	2.24	0.96
Tbill	16.12	33.47	7.99	4.46	5.29	0.29

Estimation

- An ARDL error-correction model & Pesaran and Shin (2001) bounds test.

MODEL

- The model is estimated in the ARDL framework as follows:

$$\Delta lltasa_t = a_0 + \sum_{i=1}^{m} a_{1i}\Delta lltasa_{t-i} + \sum_{i=0}^{m} a_{2i}\Delta \ln plsa_{t-i} + \sum_{i=0}^{m} a_{3i}\Delta ldtksa_{t-i} + \sum_{i=0}^{m} a_{4i}\Delta lhsa_{t-i} + \sum_{i=0}^{m} a_{5i}\Delta lstdxr_{t-i}$$
$$+ \sum_{i=0}^{m} a_{6i}\Delta lstd\inf_{t-i} + \sum_{i=0}^{m} a_{7i}\Delta lstdtbill_{t-i} + a_8 lltasa_{t-i} + a_9 ldtksa_{t-i} + a_{10}\ln plsa_{t-i}$$
$$+ a_{11} lhsa_{t-i} + a_{12} lstdxr_{t-i} + a_{13} lstd\inf_{t-i} + a_{14} lstdtbill_{t-i} + \varepsilon_t$$

- Where: α_{1i} to α_{7i} represents the short-run coefficients.

  α_8 to α_{14} are the coefficients on the level variables

  ($\alpha 9$ to $\alpha 14$)/ $\alpha 8$ give the long run coefficients, and

  ε_t represents the error term

RESULTS

- The results of the unit root test shows that all the bank specific variables are I(1).

- In line with expectations, the macroeconomic uncertainty variables are I(0).

Variables	ADF	PP
Llta	-1.115167	-1.128553
Δllta	-12.99566***	-12.89580***
ldtk	-1.242665	-1.056636
Δldtk	-10.06524***	-13.77629***
lnpl	-2.446834	-2.575352
Δlnpl	-3.827995***	-10.35680***
lh	-1.625123	-1.504943
Δlh	-14.38989***	-14.42580***
lstdxr	-5.011438***	-4.145367***
lstdinf	-5.093698***	-5.104364***
lstdtbill	-3.218458***	-4.656950***

RESULTS

Variable	Coefficient
constant	0.395
Δllta	0.021
Δldtk	-0.485
Δlnpl	0.322
Δlh	0.311
$\Delta \text{lstdxr}_{t-1}$	0.0049
$\Delta \text{lstdinf}_{t-2}$	0.0056
$\Delta \text{lstdtbill}_{t-4}$	-0.0041
llta_{t-1}	-0.0017
lnpl_{t-1}	-0.022

Long Run Elasticity

$lnpl = 1.300$

- The speed of adjustment indicates that approximately 0.2 per cent of the disequilibrium from shocks to bank lending is corrected each month.
- The ratio of nonperforming loan to total loan is the most important bank specific variable .

RESULTS CONT'D

Variable	Coefficient
constant	-3.676
Δlltasa	0.074
Δldtk	-0.688
Δlnpl	0.165
Δlh	0.387
$\Delta lstdtbill_{t-4}$	-0.0039
Δlgdp	-2.959
$llta_{t-1}$	0.059
$lnpl_{t-1}$	-0.014
$lgdp_{t-1}$	-0.351

- After controlling for aggregate demand, only uncertainty from the bench mark interest rate affects bank lending in the short run.
- Also GDP and NPL are the only variables that affect bank lending in the long run.

$$Long\ Run\ Elasticity$$
$$lnpl = -0.239, lgdp = 5.89,$$

CONCLUSIONS

The assessment of bank's lending behaviour suggests:

- Non performing loan is the most important bank specific variable.

- Macroeconomic uncertainty does not have a long run impact on bank lending in Jamaica.

- Uncertainty emanating from domestic inflation and exchange rate increases bank lending in the short run.

- Uncertainty from the 180-day T-bill have a negative short run impact. This is in-line with expectations.

Policy Implication

- The significance of concentration and non-performing loans in the results points to the importance of initiatives such as the establishment of a Credit Bureau that would facilitate risk assessment and as such boast lending.

- Given the importance of the bank specific variables as well as the results for the volatility in the interest rate, initiatives aimed at bank specific variables should be accompanied by policies that will enhance confidence about macroeconomic stability.