



# DO JAMAICAN DOMESTIC SYSTEMICALLY IMPORTANT FINANCIAL INSTITUTIONS HAVE A DEPOSIT RATE ADVANTAGE?

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# OUTLINE

- Motivation
- Objective
- Overview of Literature
- Data & Methodology
- Results
- Conclusion & Recommendations

# MOTIVATION

- The significant impact that the failure of large banks can have on the domestic system
- The realization that risks can be exacerbated when large institutions have funding cost advantages.
- This advantage comes from creditors' belief that banks will receive a bail out from the Government, known as a 'too-important-to-fail' (TITF) problem.

# OBJECTIVES

- Confirm the existence of Domestic Systemically Important Banks (D-SIBs) and also if these D-SIBs have a deposit rate advantage and possess TITF characteristics.
  - The paper adds to the literature by extending the D-SIB framework to assess banking groups.
- The possible need for policy action to minimize the cost to taxpayers and in the event that there is a failure of TITF banks.

# LITERATURE

- ❑ Bramer and Gischer (2012) used the BCBS' indicator-based approach to determine the systemic risk of domestic banks in Australia and found that there were high levels of systemic risk for 4 major banks.
- ❑ Noss and Sowerbutts (2012), provided evidence that creditors reduced their required compensations from UK banks that they considered TITF.
- ❑ Acharya et al, (2013) found that larger banks enjoyed lower credit spreads on bonds despite being riskier.
- ❑ Kumar and Lester (2014) found that large banks had funding costs advantages of more than 30 bps on uninsured money market deposit accounts (MMDAs) before 2010 which then declined to 20 bps by end 2012

# DATA: D-SIBS FRAMEWORK FOR JAMAICA

Categories	Description
Size	focuses on a bank's interaction with the domestic sector and looks at its 'total resident assets'
Interconnectedness	looks at 'loans to financial corporations' and 'deposits from financial corporations'
Non-substitutability	assesses whether it will be difficult for customers, outside of the financial industry, to find an alternate supplier should a bank cease providing a service, with indicators such as credit to households, non-financial corporations, general government, community service organizations, and non-profit institutions
Complexity	assesses the impact on systemic stability from the failure of banks with more complex business structures by looking at 'trading securities', which includes speculative short-term assets and 'investment securities', which includes 'financial assets available for sale' and 'assets held to maturity'.

# METHODOLOGY

- The score for bank  $i$  for period  $j$  is computed as follow:

$$\begin{aligned} SCORE_{ij} &= \frac{A_{ij}}{\sum_i^n A_{ij}} + \left( \frac{(LFC_{ij} + DFC_{ij})}{(\sum_i^n LFC_{ij} + \sum_i^n DFC_{ij})} \right) + \left( \frac{(LH_{ij} + LNFC_{ij} + LGG_{ij} + LCS_{ij})}{(\sum_i^n LH_{ij} + \sum_i^n LNFC_{ij} + \sum_i^n LGG_{ij} + \sum_i^n LCS_{ij})} \right) \\ &+ \left( \frac{(TS_{ij} + IS_{ij})}{(\sum_i^n TS_{ij} + \sum_i^n IS_{ij})} \right) \end{aligned}$$

where,

- $A$  represents total resident assets,
- $LFC$  represents loans to financial corporations,
- $DFC$  represents deposits from financial corporations,
- $LH$  represents loans to households,
- $LNFC$  represents loans to non-financial corporations,
- $LG$  represents loans to the general government,
- $LCS$  represents loans to community service and non-profit organizations,
- $TS$  represents trading securities
- $IS$  represents investment securities.

**Results: Table 1 Systemic Importance of Jamaican Banks (December 2013)**

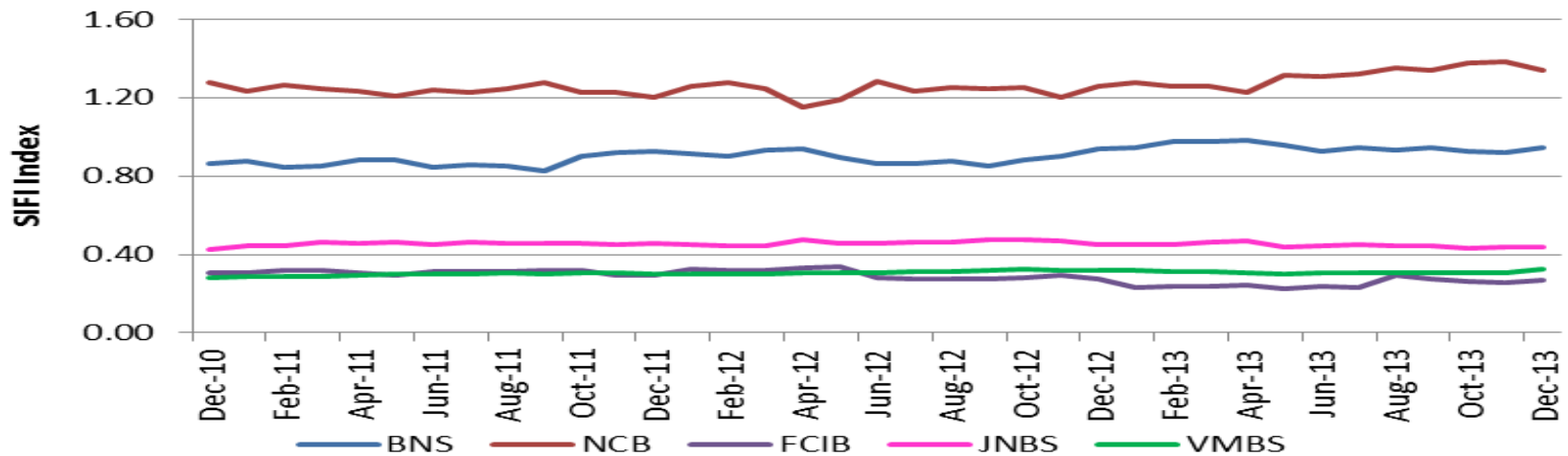
Rank	Institution Name	Size	Interconnectedness	Non-Substitutability	Complexity	TOTAL SCORE
1	NCB	0.32	0.32	0.32	0.38	1.34
2	BNSJ	0.27	0.32	0.29	0.14	1.02
3	JNBS	0.12	0.04	0.11	0.16	0.44
4	VMBS	0.08	0.07	0.06	0.12	0.33
5	FCIB	0.06	0.11	0.07	0.02	0.27
6	RBC	0.05	0.05	0.07	0.02	0.19
7	FGB	0.04	0.01	0.03	0.05	0.13
8	CBNA	0.02	0.06	0.01	0.02	0.10
9	JMMBMB	0.02	0.00	0.01	0.06	0.10
10	SBJ	0.02	0.01	0.02	0.03	0.08
11	MFG	0.00	0.00	0.00	0.00	0.01
<b>Total Sum</b>		<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>4.00</b>

indicates importance within a category

\*includes data on DTIs only

indicates overall systemic importance

**Figure 1: Domestic Systemic Importance of Jamaican DTIs**



# RESULTS FOR DTI FINANCIAL GROUPS

**Table 2 Systemic Importance of Jamaican Banking Groups (December 2013)**

<i>Rank</i>	<i>Institution Name</i>	<i>Size</i>	<i>Interconnectedness</i>	<i>Non-Substitutability</i>	<i>Complexity</i>	<i>TOTAL SCORE</i>
1	NCB Group	0.27	0.33	0.31	0.28	1.19
2	BNS Group	0.22	0.30	0.29	0.17	0.97
3	JNBS Group	0.09	0.04	0.11	0.08	0.31
4	Sagicor Group	0.11	0.05	0.02	0.14	0.33
5	JMMB Group	0.09	0.04	0.03	0.12	0.27
6	VMBS Group	0.05	0.05	0.06	0.04	0.20
7	FCIB Group	0.03	0.09	0.07	0.01	0.20
8	RBC Group	0.03	0.04	0.07	0.01	0.14
9	FGB Group	0.04	0.02	0.03	0.05	0.14
10	GLI Group	0.03	0.01	-	0.05	0.09
11	Other	0.04	0.05	0.01	0.04	0.15
<b>Total Sum</b>		<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>4.00</b>

indicates importance within a category

indicates overall systemic importance



# DEPOSIT RATE ADVANTAGE OF D-SIBS

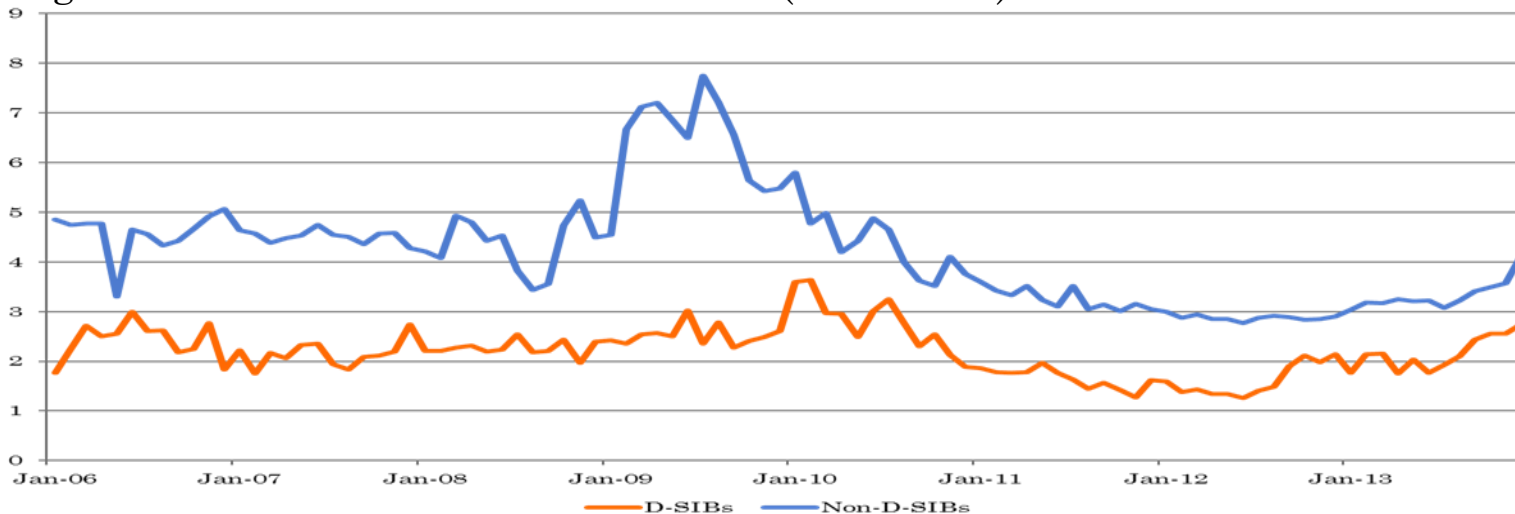
# INTRODUCTION

- In order to investigate whether the identified D-SIBs have a cost advantage relative to non-D-SIBs, the study assesses the risk premium paid by banks (see Figure 2):

## *Weighted Average Time Deposit Rate – Savings Rate*

- Control variables include indicators related to liquidity, capital and asset quality as well as profit & loss and other balance sheet indicators.

Figure 2: AVERAGE RISK PREMIUM (2006-2013)



# METHODOLOGY

- Model specifications:

$$rp_{i,t} = a + \beta_k \text{BankControls}_{kit} + \gamma \text{DSIB}_i \times \text{time}_t + \varepsilon_{i,t}$$

- *DSIB* denotes systemic institutions (dummy variable)
- *i* denotes individual banks
- *t* denotes time
- *time* is a vector of dummy variables representing each year of the data set
- $\beta$  denotes the coefficient on bank controls to capture bank level risks
- *BankControls* denotes the control variables which are income, volatility in asset growth, liquidity and deposit growth
- $\gamma$  denotes the coefficient on the interaction term to capture deposit pricing for D-SIBs
- Generalized Method of Moments (GMM) was used to estimate the equation.

# SUMMARY OF VARIABLES

Variables	Description	Expected Sign
<b>Dependent Variable</b>		
$R_{p,i,t}$	Difference between the savings rate and average weighted time deposit rate for institution $i$ at time $t$	
<b>Control Variables</b>		
$Eq_{i,t}$	Equity to total assets for institution $i$ at time $t$	
$Inc_{i,t}$	Pre-profit income to total assets of institution $i$ at time $t$	-ve
$Liq_{i,t}$	Liquid funds, including Treasury Bills, BOJ securities, other government securities, other public sector securities less items in course of collection and pledged assets for institution $i$ at time $t$	-ve
$Np_{i,t}$	Past due loans (1 month and under 3 months) for institution $i$ at time $t$	
$Vol_{i,t}$	Annual variance in asset growth for institution $i$ at time $t$	+ve
$Dg_{i,t}$	Annualised monthly growth in deposits for institution $i$ at time $t$	+ve
$Ll_{i,t}$	Loan-loss reserves to total assets of institution $i$ at time $t$	
<b>Dummy Variables</b>		
$DSIB_{i,t}$	A dummy that assigns a value of "1" for institutions designated D-SIBS and "0" for other financial institutions.	-ve
$Time_t$	A vector of 13 dummy variables, one for each year covered by the study.	

# DATA

- Unbalanced panel of 1157 observations
- Monthly data (Jan 2001-Dec 2013) covering 10 DTIs.
- *Income* data was derived from quarterly data by interpolating in EViews.
- The control variables were taken from the literature.
  - The assessment was in some cases limited by the data availability on key control variables.

# DIAGNOSTIC TESTS

- Unit Root test Im, Pesaran and Shin (2003) and Levin, Lin and Shu (2002) with SIC.

Variables	Im-Pesaran-Shin		Levin-Lin-Chu		Order of Integration
	<i>t-stat</i>	<i>p-value</i>	<i>t-stat</i>	<i>p-value</i>	
Deposit Growth	-43.8882	0.0000	-62.4626	0.0000	I(0)
Income	-5.40123	0.0000	-1.57414	0.0577	I(0)
Liquidity	-6.05198	0.0000	-2.73414	0.0000	I(0)
Volatility	-3.91585	0.0000	-1.49987	0.0668	I(0)
Risk Premium	-5.80213	0.0000	-3.40735	0.0000	I(0)

# D-SIBs: BNS & NCB

Explanatory Variables	-1	-2	-3
Intercept	0.4062***	0.5331***	0.4777***
Risk Premium(-1)	0.8829***	0.8761***	0.8579***
Deposit Growth	0.0499***	0.0432***	0.0518***
Volatility	-0.0168***	-0.0112***	-0.0190***
Income	-0.0003	0.0006**	0.0024**
Liquidity	-0.1273***	-0.1197***	-0.1095***
Liquidity(-1)	0.1319***	0.1189***	0.1190***
D-SIB*Post Crisis Dummy		-0.2947***	-
D-SIB*yr02			-0.0265
D-SIB *yr03			-0.0535
D-SIB *yr04			-0.606
D-SIB *yr05			-0.2219
D-SIB *yr06			-0.4615***
D-SIB *yr07			0.4808**
D-SIB *yr08			-0.2708
D-SIB *yr09			-0.4031
D-SIB *yr10			-0.293
D-SIB *yr11			-0.8170***
D-SIB *yr12			-0.7462***
D-SIB *yr13			0.2991
Observations	1157	1157	1157
Adjusted R <sup>2</sup>	0.7005	0.7241	0.6969
Sargan Test	0.0721	0.0591	0.1302

# D-SIBs: BNS, NCB, JNBS, PCB(SCJ) & JMMBMB

Explanatory Variable	-4	-5	-6
Intercept	0.4511***	0.6210***	0.5904***
Risk Premium(-1)	0.8976***	0.8671***	0.8661***
Deposit Growth	0.0392***	0.0436***	0.0434***
Volatility	-0.0106***	-0.0117***	-0.0149***
Income	-0.0006	0.0005	0.0022**
Liquidity	-0.1063***	-0.1186***	-0.0893***
Liquidity(-1)	0.1040***	0.1162***	0.0916***
D-SIB*Post Crisis Dummy		-0.2929***	-
D-SIB*yr02			-0.0681
D-SIB *yr03			-0.0329
D-SIB *yr04			-0.3979*
D-SIB *yr05			-0.3290*
D-SIB *yr06			-0.4329***
D-SIB *yr07			-0.4030***
D-SIB *yr08			-0.2928*
D-SIB *yr09			-0.1525
D-SIB *yr10			-0.3148
D-SIB *yr11			-0.5266***
D-SIB *yr12			-0.5485***
D-SIB *yr13			0.2302*
Observations	1157	1157	1157
Adjusted R <sup>2</sup>	0.7656	0.7153	0.7519
Sargan Test	0.0721	0.0591	0.1302



# CONCLUSIONS

- The results confirm the existence of three D-SIBs and two D-SIB banking groups in Jamaica.
- We cannot definitively state that D-SIBs benefit from an implicit government subsidy, in the context of TITF characteristics.
- However, D-SIBs pay significantly less on comparable deposits than their counterparts, which provides additional resources for D-SIBs to become even more significant, which creates an additional layer of risk for the system.

# RECOMMENDATIONS

- Explore measures to reduce the probability of failure of D-SIBs and limit their ability to become more systemic.
- Measures could include:
  - Supplementary capital requirement for D-SIBs,
  - Structural measures such as caps on counterparty exposure as well as other requirements related to size or market capitalization for D-SIBs.
- Adoption of such measures require consideration of macro-financial risks as well as the probability of default of the institutions.

THANK YOU!!

## ○ Working definition

- A **definition** that is chosen for an occasion and may not fully conform with established or **authoritative** definitions. Not knowing of established definitions would be grounds for selecting or devising a working definition.
- A definition being developed; a **tentative** definition that can be tailored to create an authoritative definition
- A definition in development

## ○ Redundant variable test

- Equity to total assets, non-performing loans to total loans and loan-loss reserves to total assets were at first included in the model, but based on the results of the redundant variable test were subsequently excluded.

## ○ Global Financial Crisis

- The paper suggests 2008-2009
- Years leading up to crisis 2004 to 2008
- Post Crisis in the data 2009-2013

## ○ Sargan test

- P-value greater than 0.05
- All instruments are valid and there are no over-identifying restrictions
- “Instruments are variables we felt would, was guided by the literature.”
- \*If models are perfectly identified you have as many instruments as regressors.
- “Instruments are transformations of the independents. Lags etc”
- Instruments are used to help eliminate correlations of the other variables with the error terms and are correlated with the regressors.

# DTIs TOTAL SCORE

	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
BNS	0.94	0.98	0.98	0.98	0.96	0.93	0.95	0.93	0.94	0.93	0.92	0.94
NCB	1.28	1.26	1.26	1.23	1.31	1.31	1.32	1.35	1.34	1.38	1.38	1.34
RBC	0.19	0.19	0.19	0.19	0.18	0.19	0.18	0.18	0.20	0.20	0.19	0.19
FCIB	0.23	0.24	0.24	0.24	0.22	0.24	0.23	0.29	0.27	0.27	0.26	0.27
FGB	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.14	0.13	0.13	0.13	0.13
CBNA	0.16	0.16	0.14	0.15	0.14	0.14	0.13	0.10	0.12	0.10	0.11	0.10
SBJ	0.08	0.08	0.08	0.08	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.08
JNBS	0.45	0.45	0.46	0.47	0.44	0.45	0.45	0.44	0.44	0.43	0.44	0.44
VMBS	0.32	0.31	0.31	0.31	0.30	0.30	0.31	0.30	0.30	0.31	0.31	0.33
SJBS	0.07	0.06	0.06	0.06	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.08
FCIBS	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.00
CCMB	0.09	0.09	0.09	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10
MFG	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
<b>Total</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>