Performing Macro-prudential Scenario Analyses of Jamaica Commercial Banking Sector within a Financial Programming and Policies Framework

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Abstract[1]

This paper proposes the use of an accounting framework to assess the consistency between Jamaica's macroeconomic programme framework and the solvency of the commercial banking sector. Specifically, medium-term projections of the commercial banking sector's profit and loss account and capital adequacy ratio are obtained based on changes in the projections of the real, fiscal, external and monetary sectors. A key supplement to the accounting framework is use of dynamic panel econometrics to incorporate the sensitivity of bank-level NPLs to projected macroeconomic conditions. The proposed framework is then used to conduct scenario analyses of the aggregated banking sector in order to examine bank solvency risks related to large changes in interest rates.

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[1] The views expressed are those of the author and not necessarily those of the Bank of Jamaica.

1.0   Introduction

In light of the recent global financial crisis, the development of specialized financial sector surveillance tools are of high importance. This paper proposes the use of a financial sector projections framework to assess the consistency between Jamaica's macroeconomic programme, which includes medium term projections of the real, fiscal, external and monetary sectors, and the solvency of the banking sector. Additionally, the framework will be useful in evaluating the trade-offs among the several different macro-economic objectives such as exchange rate and price stability, together with government debt sustainability and financial sector stability. This particular projections approach focuses on the viability of the commercial banking sector and the results include medium-term projections of the commercial banking sector's profit and loss (P&L) accounts and capital adequacy ratios.[2] Of note, commercial banks' P&L accounts broadly consist of interest and non-interest related elements, where projections of the interest related elements are largely dependent on medium-term macroeconomic predictions.[3]

In this paper, P&L account projections over the medium term generate a path for profits which, net of dividends, translates into a path for capital buildup. Capital adequacy is then measured using the projected paths of capital and risk-weighted assets. If the generated paths of profitability and capital adequacy show a declining trend or fall below specified thresholds, this suggests that the assumptions of the macroeconomic framework, are likely unsuitable for the solvency of the financial sector and should be re-examined.[4]

In particular, the framework combines historical data from the financial sector with historical stocks, flows and projections from the fiscal, monetary and banking sectors to formulate assumptions and derive P&L projections. The projection of commercial banks' P&L relies on forward-looking assumptions related to interest rates, the fiscal and monetary sectors as well as the historical P&L and balance sheets of the commercial banks. Data from commercial banks historical P&L's are used to calculate parameters which are used to determine the path of variables for the P&L projections. Balance sheet items, more specifically total assets and total capital, are

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[2] The Financial Programming and Policies framework developed in the context of IMF surveillance focuses largely on the commercial banking sector.

[3] Interest-related elements and non-interest related elements figure on both the income and expenditure side of the P&L accounts.

[4] The assumptions of the macroeconomic framework also rely on projections of private sector credit from the commercial banking sector.

involved in the projection of capital adequacy, while figures on non-performing loans are used to determine the projection of loan-loss provisions.

Provisions against credit risk are a key element in the projections of commercial banks' P&L accounts. The path of these provisions relies heavily on the projected path of NPLs. In the literature, NPLs are generally forecasted using equations which estimate the growth of the ratio of NPLs to total loans as a function of a set of macroeconomic variables such as real GDP growth, inflation, interest rate and exchange rate change. For example, Greenidge and Grovesnor (2010) forecasted NPL ratios for Barbados using a multivariate model, which incorporated both macroeconomic and bank-specific variables. In their study, Autoregressive Distributed Lag models were used to determine an aggregated NPL ratio as well as individual NPL ratios. Their results supported the view that macroeconomic variables such as real GDP growth, inflation rate and the weighted average loan rate are important drivers of credit quality. In another study which yielded somewhat divergent results, Yoshino *et al.* (2015) used cointegration analysis to forecast NPLs for banks in Iran. This study used macroeconomic variables such as GDP, CPI, M1 as well as an additional variable to capture the financial profile of banks. Their results suggested that macroeconomic variables are not adequate in an NPL forecasting model for different types of banks, and that the model needs to also be able to capture idiosyncratic shocks to the banking sector.

This paper will first present the model that will be used to specify a projected path for commercial banks' NPLs. The results of this model will be used in the development of the path for loan-loss provisions – a key element of the financial sector projections framework.

2.0 Forecasting Commercial Banks' Non-performing Loans
Data and Methodology
In this analysis, we analyze the NPL ratios of the commercial banking sector which is calculated by dividing NPLs by total gross loans. A NPL is defined as the total outstanding balance on all loans past due for ninety days or more. As at end-June 2015, Jamaica's commercial banking sector consists of six banks commercial banks and the NPL ratio for the sector was 4.4 per cent. The data used was of quarterly frequency, covering March 2000 to June 2015. However, the sample is

unbalanced because of the entry point of some banks. The sample included data from six commercial banks.

The model outlined used dynamic panel econometrics to analyze the sensitivity of bank-level NPLs to macroeconomic conditions. The specification was selected after exploring the relationship of NPLs with macroeconomic variables such as GDP, exchange rate, credit growth, interest rates, unemployment rate and the average wage. The final model was selected based on the precision of the parameter estimates and the robustness of the results.

The model applied in this paper closely follows the methodology used by Vazquez *et al.* (2012), which suggests that the logit-transformed NPLs of each bank *i* follows an AR(1) process and is influenced by past GDP growth, with up to *S* lags:

$$ln\left(\frac{NPL_{i,t}}{1-NPL_{i,t}}\right) = \mu_i + \alpha \ln\left(\frac{NPL_{i,t-1}}{1-NPL_{i,t-1}}\right) + \sum_{s=0}^{S}\beta_{t-s}\,\Delta ln(GDP)_{t-s} + \varepsilon_{i,t} \qquad (1)$$

where $NPL_{i,t}$ represents the ratio of NPLs to total gross loans of bank *i* in period *t,* and GDP_t represents GDP in quarter *t.* The lagged dependent variable was included in order to reflect the persistence of NPLs. The term μ_i represents the bank-level fixed effects, which are treated as stochastic. The idiosyncratic disturbances $\varepsilon_{i,t}$ are assumed to be independent across banks and serially uncorrelated. The coefficient α is expected to be positive but less than one, and the β coefficients are expected to be negative.

Using this model, the short-term effect of a change in quarter-on-quarter GDP growth on the logit of NPLs is given by the sum of the estimated β coefficients. By the chain rule, the effect of a shock to a GDP growth on the untransformed NPL ratios, evaluated at the sample mean of NPLs is given by equations (2) and (3):

Short term effect: $\frac{\Delta NPL}{\Delta \ln(GDP)} = \overline{NPL} * (1 - \overline{NPL}) * \sum_s \beta_{t-s,}$ \qquad (2)

Long term effect: $\frac{\Delta NPL}{\Delta \ln(GDP)} = \frac{1}{1-\alpha} * \overline{NPL} * (1 - \overline{NPL}) * \sum_s \beta_{t-s,}$ \qquad (3)

Results
The model was estimated using the generalized method of moments (GMM) technique and the result was consistent with expectations. The model was subjected to robustness checks for dynamic

panel models and the Sargan test showed no evidence of over-identifying restrictions indicating that the instruments used in the model are valid. The coefficient of the lagged dependent variable was 0.9 reflecting the strong persistence of NPLs. In addition, the coefficients of GDP growth are negative as expected, and significant for the current period and the second lag. The results of the model are presented in Table A.1.
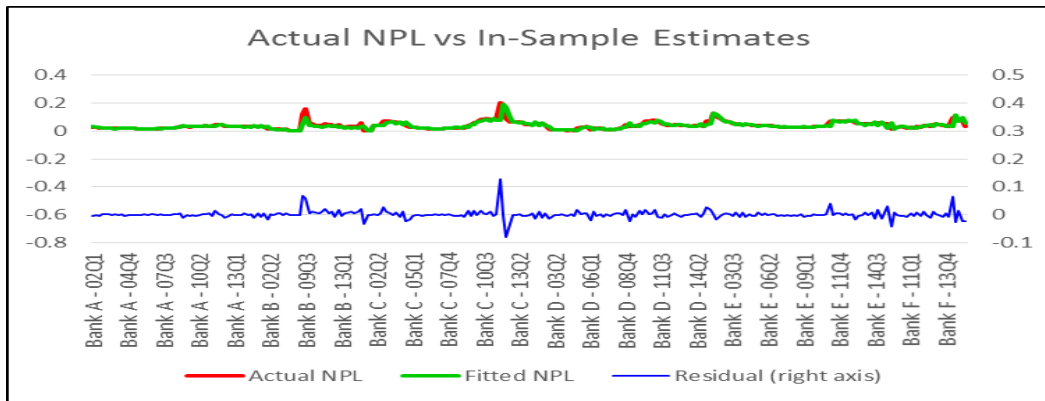
Forecast Assessment

The results of the GMM estimation technique was used to forecast NPLs based on the projections of GDP growth. Both in-sample and out of sample forecasts for the dependent variable were generated using the estimated equations. The in-sample estimates were generated over the entire sample period, that is, March 2000 to June 2015. Summary statistics for these estimations are reported in Table A.1 and Table A.2

The criteria used to measure the forecast performance of both the in-sample and out-of-sample forecasts were the root mean square error (RMSE), the mean absolute error (MAE) and the Theil-U Statistic. Figure 1 shows that the model provided a relatively good in-sample fit. The model had a RMSE of 1.23, MAE of 0.7, and a Theil- U statistic of 0.17, with the sum of the squared residuals being lowest for the in-sample forecast of the two largest banks.

The period June 2012 to June 2015 was used to generate out-of-sample forecasts. The performance criteria for the forecasts showed that the out-of-sample forecast outperformed the in-sample estimates (see Figure 2 and Table 1).

The model relied on GDP projections to forecast NPLs for each individual bank up to March 2018. The forecast showed a general decline in commercial banks' NPLs, reflecting projected improvements in GDP (see Figure 3). Given the NPL ratio forecasts for each individual bank, a forecasted weighted NPL ratio was calculated for the commercial banking sector using the share of total loans for each commercial banks as at the most recent period (June 2015) as the weight.

Figure 1

Actual NPL vs In-Sample Estimates

— Actual NPL   — Fitted NPL   — Residual (right axis)

Figure 2

Non-Performing Loans vs Out-of-Sample Forecast

— Actual NPL   — Forecast NPL
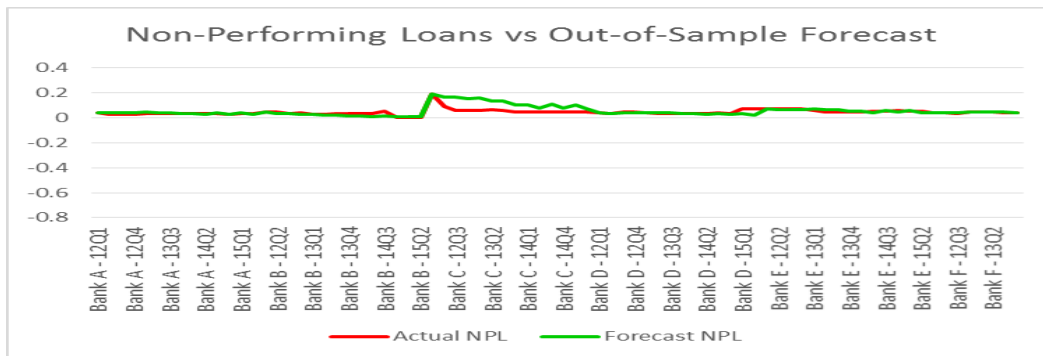
Table 1

GMM Model		
	In-Sample Forecast	Out-of-Sample Forecast
RMSE	1.23	0.65
MAE	0.70	0.44
Theil-U	0.17	0.10

Figure 3   NPL Forecast[5]
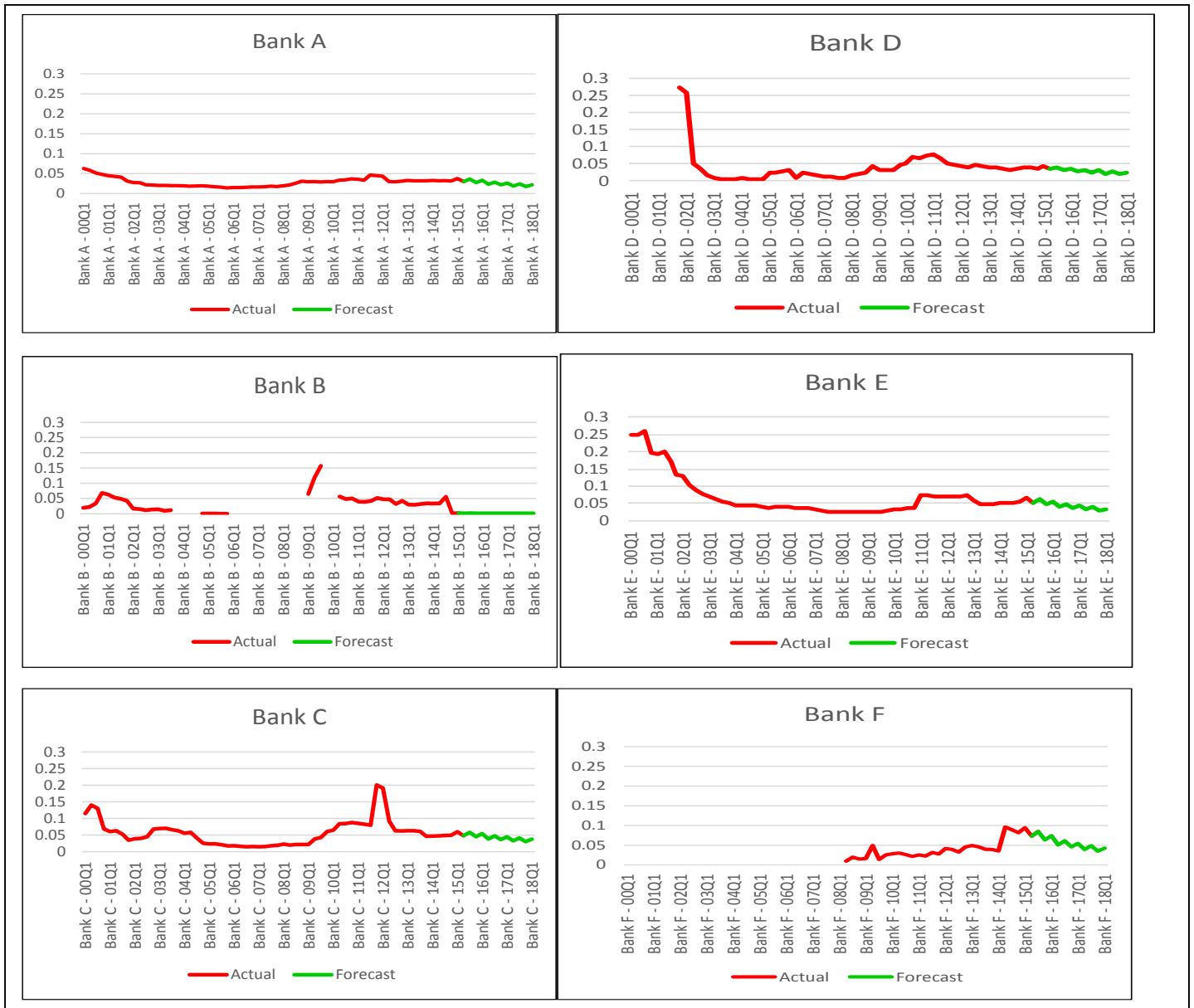
[5] Bank B has periods of zero NPLs.

3.0   Financial Sector Projections

This section of the paper develops the accounting framework which forecasts the profitability and capital adequacy paths of the commercial banking sector largely utilizing historical data and projections for the fiscal and monetary sectors.

Data

Fiscal Sector

The net financing needs of the government is an important source of interest income for commercial banks. Income to commercial banks from interest payments on government securities was projected using the following data:

- Investment details submitted to the Bank's Financial Institutions Supervisory Division (FISD) by individual commercial banks which include holdings of both Government of Jamaica (GOJ) domestic and global bonds.
- The GOJ's bond prospectuses which includes data on coupon rates, variable rate margins, interest payment dates and maturity of the bonds.
- Treasury Bill (T-Bill) rates were also used to calculate the coupon payments on variable rate Certificates of Deposit (CD).

In addition, projections regarding GOJ bond interest payments were based on assumptions made in the GOJ's medium term debt management strategy which suggests that external borrowing is currently the government's preferred source of funding. Further, the projection as it relates to T-Bill rates is that these rates remain constant as at the end of the most recent period. This method is consistent with the methodology used in the Bank's macro-economic projections. These rates were utilized in projecting *Interest earned on government securities* by held by commercial banks.

Monetary Survey

Several key assumptions of the commercial banking sector's P&L and balance sheet projections depend on the money stocks obtained via the calculation of the monetary survey (see Table 2). The monetary survey is an aggregation of the balance sheet of the Central Bank and depository corporations; the commercial banking sector, in this case. The monetary survey is compiled according to IMF's *Monetary and Financial Statistics Manual*, and aggregation entails the summation of assets and liabilities within each relevant category.

The balance sheet of the Central Bank has three main categories covering net foreign assets (NFA), net domestic assets (NDA) and reserve money, where NFA plus NDA equals reserve money. For the purposes of calculating the monetary survey, the commercial banking sector's balance sheet is decomposed in a similar manner, where NFA plus NDA equals liabilities to the private sector. The aggregation of both balance sheets result in a monetary survey that includes the three major sections: NFA, NDA and Broad Money, where NFA plus NDA equals Broad Money.

The monetary survey also includes projections of monetary stocks which are based on the aggregation of the Central Bank and commercial banks' balance sheet projections and were obtained from the Financial Programme and Policies framework (MAPFPP).

Table 2. Integration of monetary stocks into the projection of the commercial banking sector's P&L

INPUT – Monetary Stock	OUTPUT - Projections
Commercial banks' foreign liabilities, Liabilities to private sector, Public sector deposits at banks	Commercial banks' liabilities
Commercial banks, claims on private sector, o/w in LC	Interest earned on LC loans and advance, Net Commissions Earned, Other Income, Problem loans
Commercial banks' claims on private sector, o/w in FC	Interest earned on US dollar loans and advance, Net Commissions Earned, Other Income, Problem loans
Commercial banks' LC sight deposits and term deposits, Non-residents deposits at banks in LC, Public sector deposits at banks (LC)	Interest paid on deposits, Interest paid on debt, Other income, Net commissions earned
Commercial banks' FC deposits and term deposits, Non-residents deposits at banks in FC	Interest paid on deposits, Interest paid on debt, Other income, Net commissions earned
Commercial banks' foreign assets	Interest earned on foreign assets
Commercial banks' foreign liabilities	Interest paid on foreign liabilities (foreign banks and NIR dep)
Exchange rate	Interest earned on US dollar loans and advances, Interest paid on FC deposits, FC deposits

Interest Rates

Interest rate projections are necessary to determine the path of interest related elements of the P&L. More specifically, projected monetary stocks are multiplied by projected interest rates to determine projected interest related elements of the P&L. The key agents in the money and bond markets are commercial banks, the government and the Central Bank. As it relates to interest rate projections,

this entails specifying the benchmark rates for each interest rate involved, as well as the margins associated with each benchmark rate (see Table 3).

Table 3. Integration of interest rates into the projection of the commercial banking sector's P&L

INPUT – Interest Rates	OUTPUT - Projections
Benchmark	
6 month USD LIBOR	Interest earned on foreign assets
Government	
Treasury Bill Rate	Interest earned on Government Securities:- Treasury Bills and Bonds
FC Eurobond	Interest earned on Government Securities:- Eurobonds
Commercial Bank	
LC deposit rate	Interest paid on LC deposits
FC deposit rate	Interest paid on FC deposits
LC lending rate	Interest earned on other loans and advances
FC lending rate	Interest earned on other loans and advances
Central Bank	
LC deposit	Interest earned on deposits at the Central Bank
Certificate of deposit (CD) rate	Interest earned on Central Bank CDs
Special CD rate (overnight instrument)	Interest earned on Central Bank CDs

Methodology

Projection of Interest Related Components of the P&L

The projection of the interest related components of the P&L relies on the projections of monetary stocks, interest rates and other macroeconomic variables. Projections of monetary stocks and other macroeconomic variables form part of the standard IMF financial programming exercise. Therefore, the projections for these variables are direct inputs from the MAPFPP. However, interest rate projections do not form part of a standard IMF financial programming framework and must be projected for the purposes of this application.

Interest rate projections

Interest rate projections are very important to the results of the macro-financial forecast due to the large share of interest income related components in commercial bank's P&L. The following assumptions are made with respect to the projection of interest rates:

- There is a transmission mechanism of international reference rates to domestic rates. That is, there is a direct link from US dollar interest rates (6-month LIBOR rate and the 5-year T-Bill rate) to interest rates on government debt.
- A link also exists between international rates and rates on Central Bank instruments.
- Commercial banks link interest rates offered on private sector deposits and loans to the rates of return on government paper (see Table 4).

Table 4. Interest rate projections

Interest Rate	Projected Interest Rate
Benchmark	
6 month USD LIBOR	Short term projection: Intl Dept Medium term projection: LIBOR = LIBOR(t-1)
5-year U.S. note, interest rate	5-year U.S. note(t-1)
Government	
Treasury Bill Rate	Tbill(t-1) + change in LIBOR
FC Eurobond	US 5year note + (spread Eurobond-FC Eurobond(t-1) spread
Commercial Bank	
LC deposit rate	Tbill - (spread of Tbill - LC deposit rate)
FC deposit rate	Eurobond - (spread Eurobond-FC deposit rate) - term structure (proxied by 5yr US note-LIBOR)
LC lending rate	LC deposit + (spread LC lending - LC deposit)
FC lending rate	FC deposit + (spread FC Lending - FC Deposit)
Central Bank	
LC deposit rate	LC deposit(t-1)
Certificate of deposit (CD) rate	LIBOR + current spread
Special CD rate(overnight instrument)	Special CD rate(t-1)

Projections of non-interest related components of the P&L

The non-interest income and expenditure related components of the P&L include net commissions earned, other income, general & administrative expenses, and provisions. **Table 5** illustrates the formulas used to project the non-interest related components of commercial banks' P&L.

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[6] Spreads used in projections are 5-year averages of historical spreads.

Table 5. Parameters used to derive projections for non-interest related components of commercial banks' P&L

Non-Interest Related Components	Parameters
Revenue	
Net commission earned	Net commission earned(t-1) /(loans and deposits(t-1))
Other income	Other income/(loans and deposits) [averaged over 5 years]
Expenditure	
General & administrative expenses	General & administrative expenses*Average CPI inflation rate
Provisions	Ratio of provisions to problem loans

Other Parameters in P&L Projections

Parameters which also affect the output and are based on 5-year averages of historical data include the implied tax rate on profits which is used to determine corporate tax and net profit.

Parameters based on ratios as at the most recent period include:

i. share of after-tax profits as a share of capital which is used to determine the share of profit that is re-invested
ii. the ratio of risk-weighted assets to total assets which is used to project risk weighted assets

Results - Baseline Scenario
Profitability
The results of the medium-term projections show a gradual increase in commercial banks' net profits largely due to:

- A projected increase in interest income largely related to a projected increase in *Interest earned on other loans and advances, more* specifically, *LC loans & advance.*
- Projected increases in *Net commissions earned* and *Other income* which is largely due to the projected increase in loans.

Capital Adequacy

The capital adequacy ratio (CAR) of the commercial banking sector gradually declined throughout the projection period. The projected capital base increased, however, there was faster growth in projected risk weighted assets (RWA) which resulted in the CAR's steady decline. However, the CAR remained above the prudential minimum benchmark of 10 per cent (see Appendix).

Scenario 1

The assumption for this scenario is a narrowing of interest rate spread between domestic loans and advances and domestic currency deposits. The impact of narrower spreads on commercial banks' profitability is explored given the current monetary policy objective of stimulating credit growth. After analyzing data on the average weighted saving and lending rate for the period June 1996 and June 2015, it was noted that interest rate spreads steadily narrowed starting at around January 2000 to one of its narrowest point at January 2003. This scenario was replicated in our forecast which was a narrowing of interest rate spreads of 1.4 percentage points (pps), 4.0 pps and 4.8 pps for FY 2015/16, FY 2016/17 and FY 2017/18, respectively, relative to baseline. The scenario resulted in a significant reduction in bank profitability, by more than 50 per cent at the end of each fiscal year. However, this reduction in profitability had no significant impact on capital adequacy, given that only a small portion of profit is appropriated to the capital base.

4.0   Conclusion and Policy Implications

The results of the NPL forecast estimation provide evidence that there is a robust inverse relationship between GDP growth and NPLs, and as such predicted a general decline in banking sector NPL over the next three fiscal years.   In addition to being a key element of the overall financial sector projections framework, this NPL forecast can be used to guide the formulation of regulations governing the levels of loan-loss provisions throughout different business cycles as well as in the further development of credit risk models.

This paper further shows that the current macroeconomic framework encourages profitability and solvency in the commercial banking sector, even with a significant narrowing of the spread between average lending and deposit rates, reflecting that there is consistency between economic policy and financial stability.

Appendix

Main Results

Table A.1

Dependent Variable: LNPLR
Method: Panel Generalized Method of Moments
Date: 10/30/15   Time: 16:21
Sample (adjusted): 2002Q1 2015Q2
Periods included: 54
Cross-sections included: 6
Total panel (unbalanced) observations: 271
2SLS instrument weighting matrix
Instrument specification: C NPL_2 NPL_3 NPL_4 GDP_4 GDP_5 GDP_6
        GDP_7 GDP_8
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.274795	0.144795	-1.897819	0.0588
LNPLR_1	0.922015	0.041186	22.38685	0.0000
DLGDP	-6.730984	3.019905	-2.228873	0.0267
DLGDP_2	-6.050731	2.981890	-2.029160	0.0435

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.882661	Mean dependent var	-3.506493
Adjusted R-squared	0.879078	S.D. dependent var	1.139890
S.E. of regression	0.396384	Sum squared resid	41.16549
Durbin-Watson stat	2.159655	J-statistic	8.559604
Instrument rank	14	Prob(J-statistic)	0.127973

Table A.2

Dependent Variable: LNPLR
Method: Panel Generalized Method of Moments
Date: 11/02/15   Time: 15:10
Sample (adjusted): 2002Q1 2012Q4
Periods included: 44
Cross-sections included: 6
Total panel (unbalanced) observations: 211
2SLS instrument weighting matrix
Instrument specification: C NPL_2 NPL_3 NPL_4 GDP_4 GDP_5 GDP_6
    GDP_7 GDP_8
Constant added to instrument list

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.282446	0.144197	-1.958749	0.0515
LNPLR(-1)	0.916570	0.040197	22.80221	0.0000
DLGDP	-8.732595	3.567197	-2.448027	0.0152
DLGDP(-2)	-9.252395	3.637021	-2.543949	0.0117

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.910972	Mean dependent var	-3.576752
Adjusted R-squared	0.907446	S.D. dependent var	1.199313
S.E. of regression	0.364863	Sum squared resid	26.89129
Durbin-Watson stat	2.120188	J-statistic	6.887906
Instrument rank	14	Prob(J-statistic)	0.229111

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Table A.4   Commercial Banking Sector Historical Assets and Liabilities

Summary Operations of the Banks
(in billions of J$)

	2009 Mar	2010 Mar	2011 Mar	2012 Mar	2013 Mar	2014 Mar	2015 Mar
Reserves	69.4	66.0	67.7	64.2	77.6	103.1	77.3
Currency	7.4	8.3	8.7	8.1	8.8	10.7	10.5
Deposits with Central Bank	62.1	57.7	59.0	56.2	68.8	92.5	66.9
o/w in forex	16.7	14.0	13.5	14.9	19.4	20.9	23.2
o/w certificates of deposit (CDs)	30.4	32.5	46.4	38.0	3.5	12.0	8.0
Claims on private sector	223.5	218.5	220.3	250.8	297.3	334.0	349.2
LC	119.7	122.2	136.4	162.7	208.6	238.9	262.4
FC	103.8	96.2	83.9	88.1	88.7	95.2	86.9
Claims on public sector	136.5	145.1	164.3	156.6	135.6	137.0	127.7
Treasury bills and bonds	61.9	61.9	65.1	56.1	63.4	51.9	112.9
of which: in FC	61.5	61.5	64.5	55.4	63.0	51.7	112.7
o.w. Eurobonds	-	-	-	-	-	-	-
other FC bills/bonds	-	-	-	-	-	-	-
of which: LC TBs	0.5	0.5	0.6	0.7	0.4	0.3	0.1
Other	74.5	83.1	99.2	100.5	72.3	85.1	14.8
Foreign assets	268.7	280.1	240.5	246.2	279.3	319.2	332.1
- Claims on N. Res. Private Sector	3.4	4.4	3.7	4.7	6.2	12.4	10.5
- Claims on N. Resident Banks	38.9	63.3	41.2	49.3	69.0	83.3	69.5
- Other Foreign Assets	226.3	212.4	195.6	192.3	204.1	223.5	252.2
Fixed assets	9.6	10.1	11.1	13.4	14.6	15.2	17.4
Unclassified assets	19.2	15.6	17.1	18.0	21.2	23.4	39.1
Assets = Liabilities	726.9	735.3	720.9	749.2	825.7	932.0	942.8
Assets = Liabilities	525.7	537.4	532.5	573.9	620.9	688.7	730.2
Private resident sector deposits	279.6	285.4	290.1	300.7	344.6	360.8	385.1
Local currency	152.7	146.1	158.3	156.6	170.3	160.3	165.4
Sight	128.7	123.2	133.4	132.0	143.6	135.1	139.4
Term	24.0	23.6	25.1	25.5	33.2	29.7	28.9
Foreign currency	126.9	139.3	131.8	144.1	174.3	200.6	219.7
Sight	85.7	96.4	92.2	99.3	126.6	137.6	154.5
Term	41.2	42.9	39.6	44.8	47.6	63.0	65.2
Public sector deposits	37.1	51.1	50.6	68.6	70.0	72.5	68.8
- Sight Deposits of Public Adm.	32.2	42.1	39.7	51.6	44.9	42.6	43.1
- Term Deposits of Public Adm.	5.0	9.0	11.0	17.0	25.1	29.9	25.7
- Other Deposits	-	-	-	-	-	-	-
Liabilities to nonresident banks	73.2	62.1	44.7	41.9	35.5	22.9	30.1
Deposits of nonresidents	17.4	16.6	13.2	14.2	14.6	19.2	18.4
Local currency	-	-	-	-	-	-	-
o/w Demand Deposits							
Foreign currency	17.4	16.6	13.2	14.2	14.6	19.2	18.4
Sight	11.8	11.5	9.3	9.8	10.6	13.1	12.9
Term	5.7	5.1	4.0	4.4	4.0	6.0	5.5
Bonds/Other financial liabilities	44.9	36.0	35.3	34.8	46.8	88.8	84.6
Capital accounts	66.3	78.4	86.2	102.0	93.6	108.0	120.4
o/w Subordinated loans	-	-	-	-	-	-	-
- Core Capital	48.1	57.7	59.3	61.3	62.7	78.2	78.2
- Supplementary Capital	2.4	2.6	2.3	2.4	2.8	3.1	3.1
Unclassified liabilities	7.3	7.9	12.4	11.7	15.8	16.5	22.9

Table A.3 Baseline Scenario

Summary Operations of the Banks
(in billions of LC, unless otherwise indicated)

	FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
						Projection		
Revenue	74	84	78	85	94	112	123	138
Interest income	52	48	51	55	60	73	80	91
Interest earned on government securities	12	11	12	11	12	11	11	11
Tbills and bonds	...	... ...		0	6	6	5	5
Eurobonds	...	... ...	...		5	5	5	6
Interest earned on other loans & advances	36	35	38	43	47	52	58	66
LC loans & advance	...	... ...	...		43	48	53	62
FC loans & advances	...	... ...	...		6	4	4	4
Interest earned from other sources	3	2	1	1	1	11	12	14
Interest earned on foreign assets	...	... ...	...		0	1	1	1
Interest earned on deposits at the central bank	...	... ...	...		3	3	3	3
Interest earned on central bank CDs	...	... ...	...		7	7	8	10
Net commissions earned	14	15	17	19	21	23	25	28
Other income	8	20	9	10	12	16	18	19
Expenditure	56	58	63	72	80	78	79	83
Interest expenses	11	9	9	11	14	8	8	9
Interest paid on foreign liabilities	0	0	0	0	0	-1	-1	-1
Interest paid on debt	3	3	3	5	8	4	4	4
Interest paid on deposits	8	6	6	6	6	6	6	6
General & admin expenses	40	43	49	55	60	65	69	74
Provisions	5	6	5	5	5	5	1	0
Net profits	**16**	**22**	**12**	**7**	**9**	**25**	**32**	**40**
Total assets	581	615	677	759	813	835	901	970
Total capital	86	102	94	108	120	120	120	120
Total capital/Total assets (in percent)	14.9	16.6	12.9	15.4	14.6	14.4	13.4	12.4
Capital adequacy ratio (in percent)	**17.1**	**14.8**	**12.9**	**15.4**	**14.6**	**14.2**	**13.2**	**12.2**
Key assumptions (in percent):								
US$ LIBOR (6 month) 1/	1.9	0.7	0.4	0.3	0.4	0.5	0.5	0.5
FC deposit rate 2/	1.4	1.4	1.0	1.1	0.8	-1.7	-1.7	-1.7
LC deposit rate	2.7	2.2	1.8	2.0	1.7	2.1	2.1	2.1
FC lending rate	8.7	8.1	7.5	7.3	7.3	4.9	4.9	4.9
LC lending rate	20.3	17.7	18.0	17.6	17.1	18.1	18.1	18.1
Eurobond	7.2	7.3	7.6	6.6	4.7	4.7	4.7	4.7
Tbill	6.8	6.6	6.4	9.4	7.2	7.3	7.3	7.3
Central Bank CD rate	...	6.3	5.8	5.8	5.8	5.3	5.3	5.3
Central Bank FC deposit (3 year rate)	...	...	0.0	5.2	5.0	5.1	5.1	5.1
Ratio of gross problem loans to total loans	6.9	8.4	6.3	4.8	4.9	4.9	3.8	3.1
Ratio of provisions to problem loans	...	...	...	...	107.4	107.4	107.4	107.4
Share of after-tax profits going to capital	0.0	0.3	0.1	0.1	0.0	0.0	0.0	0.0
Memorandum items :								
FC deposit rate - LIBOR	-0.5	0.7	0.5	0.8	0.4	-2.2	-2.2	-2.2
LC deposit rate - FC deposit rate	1.2	0.8	0.8	0.9	0.9	3.8	3.8	3.8
Tbill - Eurobond	-0.4	-0.7	-1.2	2.8	2.5	2.6	2.6	2.6
FC lending rate - FC deposit rate	7.3	6.7	6.6	6.3	6.5	6.6	6.6	6.6
LC lending rate - LC deposit rate	17.7	15.5	16.2	15.6	15.4	16.1	16.1	16.1
Eurobond rate - FC deposit rate	5.7	5.9	6.6	5.5	3.8	6.4	6.4	6.4
Tbill rate - LC deposit rate	4.1	4.4	4.6	7.4	5.5	5.2	5.2	5.2

Table A.4 Scenario 1

Summary Operations of the Banks
(in billions of LC, unless otherwise indicated)

	FY 2010/11	FY 2011/12	FY 2012/13	FY 2013/14	FY 2014/15	Projection FY 2015/16	FY 2016/17	FY 2017/18
Revenue	74	84	78	85	94	131	133	146
Interest income	52	48	51	55	60	92	90	99
Interest earned on government securities	12	11	12	11	12	11	11	11
Tbills and bonds	...	... ...		0	6	6	5	5
Eurobonds	...	... ...	...		5	5	5	6
Interest earned on other loans & advances	36	35	38	43	47	71	68	74
LC loans & advance	...	... ...	...		43	67	64	70
FC loans & advances	...	... ...	...		6	4	4	4
Interest earned from other sources	3	2	1	1	1	11	12	14
Interest earned on foreign assets	...	... ...	...		0	1	1	1
Interest earned on deposits at the central bank	...	... ...	...		3	3	3	3
Interest earned on central bank CDs	...	... ...	...		7	7	8	10
Net commissions earned	14	15	17	19	21	23	25	28
Other income	8	20	9	10	12	16	18	19
Expenditure	56	58	63	72	80	114	113	118
Interest expenses	11	9	9	11	14	45	43	44
Interest paid on foreign liabilities	0	0	0	0	0	0	0	0
Interest paid on debt	3	3	3	5	8	4	4	4
Interest paid on deposits	8	6	6	6	6	41	39	40
General & admin expenses	40	43	49	55	60	65	69	74
Provisions	5	6	5	5	5	5	1	0
Net profits	16	22	12	7	9	12	14	20
Total assets	581	615	677	759	813	835	901	970
Total capital	86	102	94	108	120	120	120	120
Total capital/Total assets (in percent)	14.9	16.6	12.9	15.4	14.6	14.4	13.4	12.4
Capital adequacy ratio (in percent)	17.1	14.8	12.9	15.4	14.6	14.2	13.2	12.2
Key assumptions (in percent):								
US$ LIBOR (6 month) 1/	1.9	0.7	0.4	0.3	0.4	0.5	0.5	0.5
FC deposit rate 2/	1.4	1.4	1.0	1.1	0.8	-1.7	-1.7	-1.7
LC deposit rate	2.7	2.2	1.8	2.0	1.7	10.6	9.6	9.3
FC lending rate	8.7	8.1	7.5	7.3	7.3	4.9	4.9	4.9
LC lending rate	20.3	17.7	18.0	17.6	17.1	25.3	21.7	20.6
Eurobond	7.2	7.3	7.6	6.6	4.7	4.7	4.7	4.7
Tbill	6.8	6.6	6.4	9.4	7.2	7.3	7.3	7.3
Central Bank CD rate	...	6.3	5.8	5.8	5.8	5.3	5.3	5.3
Central Bank FC deposit (3 year rate)	...	...	0.0	5.2	5.0	5.1	5.1	5.1
Ratio of gross problem loans to total loans	6.9	8.4	6.3	4.8	4.9	4.9	3.8	3.1
Ratio of provisions to problem loans	...	...	...	...	107.4	107.4	107.4	107.4
Share of after-tax profits going to capital	0.0	0.3	0.1	0.1	0.0	0.0	0.0	0.0
Memorandum items :								
FC deposit rate - LIBOR	-0.5	0.7	0.5	0.8	0.4	-2.2	-2.2	-2.2
LC deposit rate - FC deposit rate	1.2	0.8	0.8	0.9	0.9	12.3	11.3	11.1
Tbill - Eurobond	-0.4	-0.7	-1.2	2.8	2.5	2.6	2.6	2.6
FC lending rate - FC deposit rate	7.3	6.7	6.6	6.3	6.5	6.6	6.6	6.6
LC lending rate - LC deposit rate	17.7	15.5	16.2	15.6	15.4	14.7	12.1	11.2
Eurobond rate - FC deposit rate	5.7	5.9	6.6	5.5	3.8	6.4	6.4	6.4
Tbill rate - LC deposit rate	4.1	4.4	4.6	7.4	5.5	-3.3	-2.3	-2.0

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