SESSION 1

SUB-THEME: INVESTIGATION OF MACROFINANCE INTER-LINKAGES

MACROFINANCIAL LINKAGES IN THE ECCU

Garfield Riley
Research Department
Eastern Caribbean Central Bank
St Kitts

This study examines the linkages between non-performing loans (NPLs) and macroeconomicperformance in the Eastern Caribbean Currency Union through the lens of severalcomplementary approaches. Static and dynamic panel models estimated over the period 1995– 2013 for commercial banks in the ECCU indicates that the NPL ratio improves following apositive growth shock. By contrast, higher lending rates reduce the quality of the loanportfolio of banks. Less efficient, riskier banks hold higher NPLs on average, while moreprofitable banks are associated with lower NPLs. The results of panel VAR models suggestrobust feedback effects from deterioration in banks' balance sheets and subdued economicactivity.

Keywords: Non-performing loans, panel VAR
JEL Classifications: C11, C23, E44

Financial Stability the Business Cycle and Macro-Prudential Regulations

Amar Ramlogan
Republic Bank Limited
Trinidad and Tobago

The ebb and flow of business cycles have significant implications for the long-term sustainable development of the economy, of which the financial sector forms a key component. In this regard, the financial sector needs to be effectively monitored and regulated to prevent additional economic strains in the economy. Macroprudential policies are therefore paramount in controlling the profit maximisation goals of financial sector participants. Financial deepening and proliferation of banking services to the non-bank financial sector has made these measures even more relevant, as the systemic risk inherent in one institution has the potential to impact the other major players in the economy and ultimately affect the entire system.

The Effects of Loan Portfolio Diversification on Commercial Banks' Performance over the Business Cycle

Shane Lowe
Kester Guy *and*
Tiffany Grosvenor
Central Bank of Barbados
Barbados

In the years immediately following the beginning of the global downturn, Barbadian commercial banks have witnessed a steady worsening of loan quality, a marked increase in provisions against expected loan losses and a slow decline in their profitability (Central Bank of Barbados, 2012). While this has been widespread across the entire sector, the rise in nonperforming loans has been particularly acute in the hotels and restaurants (tourism) sector, as it is the island's largest sector and main source of foreign exchange earnings, and as with the other traded(We classify the traded sectors as Agriculture and Fisheries, Manufacturing, Mining & Quarrying and Tourism.) sectors, is highly vulnerable to external, economic shocks. In this light, those banks whose portfolios were more concentrated toward these sectors are likely to have seen much larger deteriorations in asset quality and profitability. Thus, this study tests Winton (1999)'s theoretical framework about the U-shaped relationship between loan portfolio diversification and bank returns/risk, taking the level of loan risk into consideration, while also seeking to decompose the effects of the traded sectors of the economy on bank profitability and risk given the varying levels of concentration to different sectors among Barbadian banks at varying points of the business cycle. Finally, we determine what, for the banking system, is likely to be an optimal portfolio mix among sectors as banks seek to maximize profits or minimize expect loan losses.

SESSION 2

Sub-Theme: Macroprudential Policy and Financial Stability in the Caribbean

An Overview of Financial Stability and Macroprudential Issues for the Caribbean

Shelton Nicholls
Caribbean Regional Technical Assistance Centre (CARTAC)
Barbados

This presentation examines the core principles that underlie the financial stability mandate and provides an update on current financial stability and macroprudential developments in the Caribbean region. It notes that despite the steady improvements made by the region in some aspects of the financial stability risk architecture, much of this progress has been confined to the deposit-taking segment of the financial sector. Far less progress has actually been achieved in the non-deposit-taking segment (insurance, credit union, pensions and securities sectors) of the regional financial system. It proposes that a more robust and holistic financial stability architecture would require (i) codifying financial stability and macroprudential policy in law; (ii) strengthening macro and microprudential policy and operating frameworks; (iii) expanding the perimeter for financial surveillance to cover systemic and cross-border risks that may arise through financial interdependency and interconnectedness; (iv) closing information gaps by carefully mapping and developing workflows and processes to support information gathering, analysis and dissemination; (v) enhancing macro stress-testing capabilities and (vi) developing national crisis management plans and a regional crisis management framework that go beyond broad principles to include specific scenarios and pragmatic action steps.

Macroprudential Policy and Financial Stability in the Caribbean

Ravi Rambaran
Sagicor Financial Corporation
Barbados

This paper presents the views of a regional insurer and pension manager. It attempts to present the current state of the insurance and pension industries, the macroprudential policies that have been deployed and their impact on the industries, the argument that activities of insurers and pension funds pose significantly less systemic risk than the activities of banks and so should be treated in a distinct manner. The paper proposes the need for relevant and theoretically consistent measures of systemic risk, identifies the major sources of systemic risk facing the industries today, the funding of such systemic risks and a governance architecture.

Keywords: Insurance and pension; systemic risk; measurement; funding; governance

DEVELOPING A COMPREHENSIVE REGIONAL FINANCIAL STABILITY ARCHITECTURE FOR THE CARIBBEAN

Dave Seerattan
Institute of International Relations *and*
Caribbean Centre for Money and Finance
The University of the West Indies
St. Augustine Campus, Trinidad and Tobago

Caribbean financial activity is increasing cross-border in nature while the systems for maintaining financial stability are still largely characterized by national structures with some mechanisms for supervisory and regulatory cooperation across countries. The CL Financial case has brought the potential for regional financial contagion into sharp focus and highlighted the need to develop a formal architecture to maintain regional financial stability. Policymakers are aware of the institutional weaknesses inherent in this current set-up but consensus on how to proceed has been difficult to achieve given real challenges such as deciding on burden sharing and the form of resolution if there is a failure of a regionally important financial institution. The CL Financial crisis taught regulators a number of lessons, the most important being that focusing on the safety and soundness of individual institutions or indeed, those domiciled in individual national jurisdictions will not in themselves ensure the stability of national financial systems. The regional dimension of risks must be factored in and managed which means that a regional financial stability architecture underpinned by information on regional contagion risks and codified in legislation and institutional structure has to be developed to manage regional financial risk exposures. This paper reviews existing regional financial stability architectures, the unique challenges facing Caribbean policymakers in this area and outlines architectural models which may work in the Caribbean.

Keywords: Financial contagion, financial regulation, financial stability architecture

JEL Classifications: G01, G28, F36

SESSION 3

Sub-Theme: Macroprudential Policy and Financial Stability in the Caribbean

The Evolution of Explicit Deposit Insurance Systems in The English-Speaking Caribbean over The Period 1986-2011

Denis Cox
Sir Arthur Lewis Institute of Social and Economic Studies
The University of the West Indies
St. Augustine Campus, Trinidad and Tobago

The paper attempts to examine the key features and peculiarities of the deposit insurance system in each territory of the Caribbean that has adopted an explicit deposit insurance scheme (EDI), namely, Trinidad and Tobago (1986), Jamaica (1998), The Bahamas (1999) and Barbados (2006). The rationale for the study lies in the fact that deposit insurance has been a critical phenomenon in the financial safety net mechanism adopted by most developing countries and there seems to be a dearth of literature on deposit insurance in the context of the Caribbean as it relates to whether it has achieved its mandate which would inform public policy.

The advent of deposit insurance in the four (4) territories of theCaribbean was positioned against a backdrop of adverse economic conditions and a series of bank failures that plagued the financial sector in the late twentieth and early twenty-first century. There is the presumption, therefore, that there may be reasons for policy makers in the Caribbean to have gone the route of EDI as the panacea to arrest banking crises and to restore depositor confidence in the banking system.

In reviewing the literature, researchers have described some of the key features of deposit insurance, and established a distinction between an explicit and an implicit deposit insurance scheme. Demirgüç-Kunt (2000), in particular, defined explicit deposit insurance as a formal set of arrangements established to compensate depositors of a failed financial institution while the absence of such formal arrangements is the assumption that the country has an "implicit" deposit insurance system. Further, the features of EDI systems include coverage limits, funding arrangements, membership, administration and resolution mechanisms for failed banks.

Keywords: Banking crises, depositor confidence, explicit deposit insurance system, macroeconomic environment, moral hazard.

Contagion Risk in the Jamaican Financial System

Toni-Anne Milwood
Financial Stability Department
Bank of Jamaica, Jamaica

This paper seeks to examine contagion risk in the Jamaican banking system through the channel of interbank exposures of financial institutions. Shocks to the interbank market pose risks to financial stability particularly in cases where the level of interconnectedness amplifies the impact of the initial shock. To gain insight into the dynamics within the market, this paper first applies network topology techniques to determine the institutions that play an important role in the financial system network as well as the evolution of the network structure over time. Additionally, this paper seeks to simulate the resilience of the system to interbank shocks. The more interconnected the financial network becomes, the greater the likelihood of shock amplifications. Understanding the significance of institutions to systemic risk within the network allows policy makers to tailor liquidity facilities where necessary.

Systemic Risk and Systemic Importance – An Insurers Perspective

Paul Traboulay
Group Risk Management
Guardian Holdings Limited
Trinidad and Tobago

The paper reviews the recent regulatory thrust to define systemic risk in the insurance sector. While the current research suggests that core insurance activities are unlikely to create systemic risk, it is important to recognize the systemic importance of large insurers and insurance groups, in particular their specific business models and characteristics in the Caribbean region. It is also important to recognize that while the Financial Stability Board has started examining the framework on G-SIFI's to consider the treatment of D-SIB's, a framework for treating with domestic systemically important insurers has not yet been outlined and based on the commentary around the lower systemic risk posed by global insurers it is unclear whether such a framework will be proposed. Given the current deliberations from the regulatory environment on financial stability, systemic risk and macroprudential regulation, the paper outlines some issues and perspectives from the domestic insurance community regardingthe development and implementation of macroprudential supervision including the need to realistically assess failure probabilities using both qualitative and quantitative indicators.

SESSION 4

Sub Theme: Macroprudential Policy and Financial Stability in the Caribbean

Analysis of Risk-weighted Capital Requirements on the Commercial Banking sector and Implications for New Capital Requirements in Trinidad and Tobago

AlonDhanessar,Avinash Ramlogan andAkeem Rahaman[1]
Central Bank of Trinidad and Tobago
Trinidad and Tobago

This paper seeks to investigate whether Basel I capital adequacy rules, which had been adopted in 1994 to manage the health of the domestic banking sector, adversely impacted the level of economic activity in Trinidad and Tobago. The paper first utilizes detailed bank balance sheet data to provide a preliminary empirical assessment, followed by a formal assessment employing a cointegrating vector error correction model using macroeconomic and aggregate commercial bank data over the period 1994 – 2014. We find that capital rules under Basel Accord I adversely affected overall credit supply and the level of economic activity. However the result shows that the impact was largely insignificant, mainly due to the highly capitalized nature of the commercial banking sector. Considering that the nation is poised to adopt the Basel II rules in the near future, the effect of more stringent requirements is not likely to have any major adverse effects on private sector credit availability and by extension, investments in the local capital markets.

[1]The authors are economists in the Research Department of the Central Bank of Trinidad and Tobago. The views expressed in this paper are those of the authors and not necessarily those of the Central Bank of Trinidad and Tobago.

Examining the Banking Sector's Exposure to the Local Real Estate Market

Wendy Ho Sing** and **Avinash Ramlogan
Central Bank of Trinidad and Tobago
Trinidad and Tobago

Housing markets play an important role in an economy. Despite its importance, however, housing markets can be a major source of vulnerabilities and crises. Detecting over-exposure by financial institutions to these markets is of paramount importance in preventing bank failures, especially if housing markets are becoming overvalued. Although the recovery of the local housing market is a welcoming development, bank regulators need to guard exposure against the likelihood of an unsustainable boom. This paper examines the extent to which the banking sector is exposed to the local real estate market. We exploit available macroeconomic and financial sector data to gain an understanding of the evolution of exposure over the last decade or so. Then we adopt credit risk stress-testing to assess the degree of exposure to the market as at a specific point in time. We also utilize Johansen co-integration techniques to determine how exposure is related to movements in key macroeconomic variables.

Keywords: Real estate market, bank exposure, financial stability, energy dependent economy
JEL Classifications: C32, E43, G21

THE ROLE OF THE TRINIDAD AND TOBAGO SECURITIES AND EXCHANGE COMMISSION IN REDUCING SYSTEMIC RISK AND FORMULATING MACROPRUDENTIAL POLICY

Ronald Phillip, KavenaRamsoobhag,
John Cozier *and* ***Kimber Jeffers***
Trinidad and Tobago Securities and Exchange Commission
Trinidad and Tobago

Financial regulators globally have made the containment of systemic risk within their jurisdictions a major objective of their regulatory mandates. The Trinidad and Tobago Securities and Exchange Commission (TTSEC) recently had its regulatory powers expanded through amendments to the Securities Act, 2012.[2] This paper discusses the role that the TTSEC must perform to ensure the reduction of systemic risk within the local capital markets. Within this discussion will be an examination of the mutual fund industry of Trinidad and Tobago, which falls under the regulatory purview of the TTSEC. The paper focuses on the trends within the industry, its contribution to the development of the local capital markets and its potential risks. It also discusses the reasons why the TTSEC regulates the industry and outlines the procedures that the TTSEC uses to regulate the mutual fund industry. Systemic risks are best mitigated against through the use of a holistic macroprudential perspective.

Keywords: Systemic risk, macro prudential policy and regulation.

[2] The amendments for the Securities Act, 2012 were assented to by the President on September 10, 2014.

SESSION 5

Sub-Theme: Macroeconomic Structure and Financial Stability in the Caribbean

Influence of Oil Prices upon Trinidad and Tobago's Exchange Rates

Roger Hosein *and* ***Don Charles***
Department of Economics
The University of the West Indies
St. Augustine Campus, Trinidad and Tobago

Evidence from several studies has suggested that crude oil price fluctuations can have an influence on the exchange rate. Golub (1983), Krugman (1983) and Corden (1984) have observed that oil price increases can lead to the appreciation of the nominal exchange rate, and oil price depreciation can lead to deprecation of the nominal exchange rate for oil exporting countries. The reverse scenario holds for oil importing countries; a negative relationship between oil prices and the exchange rate.

Many developing countries including T&T, rely on the export-oriented development model for economic growth (Ustaoğlu and Yıldız, 2011). In the 1970s, T&T experienced buoyant oil prices, windfall oil revenues and appreciating real effective exchange rates (REER). In the decade that followed, there was a collapse in crude oil prices, accompanied by depreciating REER, rising unemployment, negative current account balances and declining economic growth (Hosein, 2006).

The economics literature has come to describe such a phenomenon as the Dutch Disease, or the resource curse paradox; windfall revenues from a booming sector of an economy lead to increased concentration on a few sectors, appreciation of the REER, and weak economic growth of the economy when the boom ends (Karl, 2007).

Several authors have investigated the Dutch Disease effect upon T&T. Auty (1986) studied the effects of resource based industrialization on T&T and Venezuela. He observed that T&T experienced relatively low revenue retention, heavy dependence on export markets, skilled personnel shortages and severe 'Dutch disease' effects. Hosein (2003) observed volatility in oil prices creates uncertainty in government revenues. However, like Auty (1986), Hosein (2003) found that Government expenditure on development programmes have been questionable. However, there is scarce literature examining the volatility of oil prices upon exchange rates in T&T.

This paper investigates whether oil prices have a reliable and stable out-of-sample relationship with the T&T/U.S dollar nominal exchange rate. Data on oil prices is collected from the Energy Information Administration (EIA) database. US oil prices; West Texas Intermediate (WTI), is used as the benchmark for oil prices, since T&T/ US exchange rate relationship is being considered. Data on T&T's nominal exchange rate is collected from the Central Bank of Trinidad and Tobago. Daily frequency is used from 13th April, 1993 to 14th August, 2014 to capture all the short term variation in each time series.

A Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) (1, 1) and an Exponential GARCH (EGARCH) (1, 1) model are used to model the volatility in oil prices and exchange rates. The mean equation of both the GARCH (1, 1) and the EGARCH (1, 1) the exchange rate is specified as a function of oil prices. The Theil statistic is used to evaluate out of sample prediction accuracy.

Macroeconomic Fluctuations under Natural Disaster Shocks in Central America and The Caribbean

Patrice Borda
Université des Antilles and CREDDI

Allan Wright
Central Bank of Barbados, Barbados
*and**Centre for Latin American Monetary Studies (CEMLA)***
Mexico

This paper estimates a panel vector autoregresive (VAR) model for output, investment, trade balance, consumption and country spread to capture the economic effects of output, country risk and exogenous natural disaster shocks. We determined the empirical dynamic responses of 27 countries in Central America and the Caribbean. The findings show that Carribean countries are better prepared for natural disaster shocks and Central America countries have long-run negative effects. Output shocks have short-run effects in both group of countries. This paper examines also the role of uncertainty shocks in a one-sector, representative-agent dynamic stochastic general equilibrium model.

Keywords: Panel Var, business cycles, small open economy
JELClassifications: E32, F41

Patrice Borda: Professor, Universite de Antilles et de la Guyane, Guadeloupe (e-mail: patrice.borda@univ-ag.fr). Allan Wright: Senior Economist and Researcher, Central Bank of Barbados, Caribbean Centre for Money & Finance, Centre for Monetary Studies in Latin America (e-mail: wright@cemla.org, allan.wright@centralbank.org.bb)

The aim of the sudy is to determine the short-run and long-run dynamics of macroeconomic fluctuations within an exogenous disaster shock for 13 Caribbean countries (Antigua and Barbuda, The Bahamas, Barbados, Dominica, Granada, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Suriname and Trinidad and Tobago) and 14 Central America countries (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Panama and Nicaragua). Using a panel vector autoregressive (VAR) model we capture the dynamic respones of a varity of shocks.

Aggregate supply and demand fluctuations have been well documented for developed and emerging markets (Agénor et al 1999, Cushman and Zha 1995, Blanchard 1989, Uribe and Yue 2006). However, not much literature research has tried to explain macroeconomic fluctuation for small open economies as Central America and the Caribbean countries (Watson 1996, Borda and Montauban 2000). In this paper we attempt to estimate the responses of macroeconomic variables of the region under an exogenous natural disaster shock. Given their geographical location, Central America and the Caribbean countries are vulnerable to a varity of natural phenomenona. For example, economies in both regions suffer from hurricains and stormsseveral times a year, while only Central American countries suffered the impact of frequent earthquakes.

The main results of the paper show that Central American and Caribbean countries have different respones for aggregate supply and demand shocks. We find that Caribbean countries are better prepared for natural disaster shocks. Impulse response function to a disaster shock show that output, consumption, investment and trade balance ratio fairly adjust in the short-run to their pre-shock level. But Central

American countries have negative long-run effects for disaster shocks mainly on output and trade balance ratio.

EXPLORING THE FORMATION OF INFLATION EXPECTATIONS IN JAMAICA: A PRAGMATIC APPROACH

Ralston Henry[3]
Research Services Department
Bank of Jamaica, Jamaica

The study utilizes a two-stage procedure to explore the dynamics of how inflation expectations are formed among businesses in Jamaica. A seasonal autoregressive integrated moving average (SARIMA) model was used to estimate expected inflation in the country, which was compared to survey data on inflation expectations for consistency/robustness. The results indicate that the SARIMA model provides a good estimate of inflation expectations for Jamaican businesses. A reduced form equation was then estimated to evaluate the major determinants of inflation expectations in Jamaica. The reduced form equation revealed that the real interest rate has a statistically significant but small impact on inflation expectations, as against exchange rate depreciation which had a more significant impact. Similarly, international commodity prices in real terms were also found to have a positive impact on expectations.

JEL Classifications: C53, E31, E37, G10

[3]The views expressed in this paper are not necessarily those of the Bank of Jamaica.

Economic Volatility and Growth in Trinidad and Tobago

Anthony Birchwood
Department of Economics
The University of the West Indies
St. Augustine Campus, Trinidad and Tobago

Dominic Stoddard
Central Bank of Trinidad and Tobago
Trinidad and Tobago

Several studies have found that economic volatility and growth are negatively associated and that this relationship has negative welfare consequences. The relationship between volatility and growth was tested for Caribbean countries over three decades, where the relationship was found to be positive and invariant with respect to size or per capita income level. We then hypothesized that given the structure of the Trinidad and Tobago economy, the terms of trade is likely to be the most significant contributor to output volatility. We estimated the effect of the terms of trade volatility on growth using a GARCH approach but found that the impact was surprisingly small. Using the GARCH model to forecast output volatility suggests that the economy is likely to experience moderate to high volatility over the medium term.

SESSION 6

SUB-THEME: MACROECONOMIC STRUCTURE AND FINANCIAL STABILITY IN THE CARIBBEAN

HOW TO AVOID A DARKENING DEBT STORM IN THE CARIBBEAN: LESSONS FROM THE BANKING UNION FRAMEWORK IN THE EURO AREA[*]

Andrew Hughes Hallett
School of Public Policy
George Mason University
United States of America

Svend E. Hougaard Jensen
Department of Economics
Copenhagen Business School
Porcelaenshaven, Denmark

Using the euro area and the Eastern Caribbean Currency Union as case studies, this chapter argues that a comprehensive policy framework should comprise not only a rule for fiscal policy but also, and equally important, a broader set of strategies designed to improve competitiveness and economic growth. Specifically, we stress the need to prevent a build-up of debt, public *and* private, by introducing a mechanism to ensure that public and private borrowing is consistent with an overall macroeconomic strategy. This introduces elements of a banking union framework, tied into Europe's notion of a fiscal and competitiveness compact. We use this framework to show how different policy institutions can retain different priorities in their own economies, and hence individual policies that are internally consistent, while also

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[*]This paper has been prepared for the 46th Annual Monetary Studies Conference, to be held at the Central Bank of Trinidad and Tobago in Port of Spain, Trinidad, 18 - 20 November, 2014.

maintaining a degree of flexibility that allows them to deal with problems as they arise.

Keywords: The Euro area, The Eastern Caribbean Currency Union, public debt, private debt, fiscal rules, banking union, structural reforms
JEL Classifications: E62, E63, F33, F34, F36, H63, N14, N16

Estimating the Cyclicality of Remittance Flows to Jamaica from the USA

***Kirsten Roach*[4]**
International Economics Department
Research and Economic Programming Division
Bank of Jamaica, Jamaica

This study models the relationship between selected US economic indicators and remittance inflows to Jamaica, utilizing an Autoregressive Distributive lag (ARDL) model over the period 1997 Q3 to 2013 Q1. Results support the hypothesis that there exists a weak pro-cyclical relationship between selected US economic variables and remittance inflows to Jamaica. In particular, remittance flows to Jamaica are partially influenced by movements in US real GDP as well as employment in the Health Care & Social Assistance sector. In addition, the ARDL error correction model indicates a 50.0 per cent correction of the disequilibrium in remittances each quarter when controlling for the effect of shocks to domestic variables.

Keywords: Remittances, business cycles, Latin America
JEL Classifications: E32, F15, F16, F22, F24

[4]The views expressed in this paper are not necessarily those of the Bank of Jamaica.

Evaluating the Impact of Fiscal Policy on the Household Sector in Trinidad and Tobago in a Static Computable General Equilibrium Framework

Carlos O. Hazel**[5]and **Patrick Kent Watson
Sir Arthur Lewis Institute of Social and Economic Studies
The University of the West Indies, St. Augustine Campus
Trinidad and Tobago

How may fiscal policy be used to influence household activity and, indirectly, economic growth and development in the coming years in an emerging economy such as that of Trinidad & Tobago? This paper is an attempt to answer such a question through the construction and simulation of a static Computable General Equilibrium (CGE) model for Trinidad and Tobago. The model is calibrated on a micro Social Accounting Matrix (SAM), disaggregated into 52 industries, 52 commodities, 14 households, three factors and four government accounts, along with one enterprise, one accumulation and one rest-of-the-world account and it is used to simulate the impact of changes in taxation and other fiscal measures on household groups in Trinidad and Tobago. Data for the model are drawn from various sources including the National Accounts, the Supply and Use Tables (2000), the Survey of Living Conditions (2005) and the Household Budgetary Survey (2008) for Trinidad and Tobago.

Keywords: Computable General Equilibrium model; Social Accounting Matrix, Trinidad and Tobago; fiscal policy, policy simulations.

[5] Corresponding author.

The Application of the Twin Deficit Hypothesis to a Small Island Economy: the Case of Barbados

Anthony Birchwood *and* ***Soliel Fredrick***
Department of Economics
The University of the West Indies
St. Augustine Campus, Trinidad and Tobago

While the literature examined the causality between fiscal and external deficits there is a paucity of studies concerning the situation in Small Island States in the Caribbean. In particular, Barbados recorded both fiscal and external current account deficits for over one decade. As a result the economy suffered regular downgrading by international credit rating agencies. An important question here concerns whether macroeconomic adjustment should be initiated from the fiscal side or the external account side

SESSION 7

SUB THEME: THE RELATIONSHIP BETWEEN FINANCIAL INTEGRATION AND FINANCIAL STABILITY

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

Kacian Lewis, Andrene Senior
*and**Rasheeda Smith Yee***[6]
Bank of Jamaica, Jamaica

This paper explores the existence of a funding cost advantage for "systemically important" deposit-taking institutions (DTIs) compared to other DTIs, attributable to their too-important-to-fail characteristics. Using readily available indicators for the period 2000 to 2013, we seek to confirm the existence of systemically important institutions, in the first stage of our analysis as well as investigate what happens to their risk profile when we extend our study to include affiliate non-DTI financial institutions. In the second stage we look at whether Jamaica's systemically important DTIs have a significant pricing advantage, after controlling for key risk variables. We find evidence that there exist three systemically important DTIs in Jamaica and two major groups in our extended framework. We also find that these institutions do appear to have cost advantage.

[6]The views expressed are those of the authors and not necessarily those of the Bank of Jamaica.

The Compensation Hypothesis: A Monetary Transmission Mechanism for Exchange Rate and Financial Stability?

Tarron Khemraj
New College of Florida
United States of America

A system of compensation could enable the central bank to achieve both its monetary policy and financial stability objectives. Excess reserves do not determine the expansion of loans, but could be used by banks to speculate in the domestic foreign exchange (FX) market by increasing the bid-ask spread and/or demanding more foreign currency assets. This will place pressure on the exchange rate to depreciate. Therefore, the central bank could simultaneously allow the banks to substitute an interest earning liquid asset for the excess reserves, while easing the pressure to depreciate the rate. The liquid assets provide a new profit centre for the commercial banks instead of the non-remunerated excess reserves that are injected when the monetary authority accumulates foreign reserves, which further enhance the foreign currency constraint in the domestic market. Excess liquid assets and excess reserves may also reduce the volatility of the portfolio of assets demanded by the banks.

Keywords: Impossible trinity, monetary transmission mechanism, compensation thesis, Caribbean-type economies

Current Account and Real Exchange Rate Dynamics in Jamaica and Latin America compared to the G7 countries

Andre Haughton
The University of the West Indies
Mona Campus, Jamaica

This paper analyses the interaction between the real exchange rate and the current account in Jamaica and four Latin American Countries Brazil, Chile, Costa Rica and Mexico using structural Vector Auto Regressive VAR's technique proposed by Lee and Chinn (2006). Similarly, we assume minimal criterion for identification that temporary shocks have no effect on the real exchange rate in the long run by implementing the long run Blanchard and Quah (1989) restrictions. This allows us to disaggregate the shocks in terms of temporary shocks which are interpreted as monetary shocks and permanent shocks which are interpreted as productivity shocks. Using quarterly data from 2005Q1 to present, temporary monetary shocks play a bigger role in explaining variation in the real exchange rate for Brazil while permanent productivity shocks play a bigger role in explaining variation in the real exchange rate for Chile, Costa Rica, Jamaica and Mexico. The latter is similar to the results found in Lee and Chinn (2006) for the G7 countries where permanent shocks have a large long run effect on the exchange rate but relatively small effect on the current account, while temporary shocks have large effects on the current account and the exchange rate in the short run but not in the long run. Here too temporary shocks play a bigger role in explaining current account movement in Costa Rica, Chile, Jamaica and Mexico but not in Brazil. Our results are consistent with the results of Lee and Chinn (2006) and the sticky price model of Obstfeld and Rogoff (1995) where permanent shocks to productivity have a small effect on current account and a real long term effect on the exchange rate, while monetary shocks have a large effect on the current account in the short run, but no effect in the long run.

Keywords: Real effective exchange rate, current account, VAR, temporary and permanent shocks
JEL Classifications: F12, F31, F32, F41

SESSION 8

Sub Theme:Data Development and the Financial Stability Monitoring Framework

Credit Card Risk Modelling Using Artificial Neural Network

Dorian M. Noel*and* ***Robert Stewart***
Department of Management Studies
The University of the West Indies
St. Augustine Campus, Trinidad and Tobago

We apply a single layer feed forward artificial neural network (FFNN), with a backpropagation learning algorithm, to predict credit default among credit card holders in Trinidad and Tobago. Among the data features of credit card holders captured in our sample, FFNN model indicates that sex, education level, and the number of dependents of credit card holders are the most important variables for predicting credit card default in Trinidad and Tobago.

We construct out-of-sample forecasts from FFNN models and compare the forecasting results to that of logistic regression classification scheme. The FFNN model marginally outperforms the logistic regression, with a prediction accuracy of 80% compared to 78% for the logistic regression.

Keywords: Credit risk, credit card delinquency, artificial neural network, logistic regression.
JEL Classifications: C45; C25; G21

DETERMINANTS OF NON-PERFORMING LOANS IN TRINIDAD AND TOBAGO: A GENERALIZED METHODS OF MOMENTS (GMM) APPROACH USING MICRO LEVEL DATA

Akeem Rahaman, Timmy Baksh
Reshma Mahabir *and* ***Dhanielle Smith***
Central Bank of Trinidad and Tobago
Trinidad and Tobago

Non-performing loans (NPL) is a major credit risk that can affect the stability for any banking sector. Even though NPL has been steadily declining at the aggregate level, it has been increasing at the individual bank level thus increasing credit risk for specific institutions which can have an overall impact on financial stability given the financial linkages of the system. This paper uses panel data from the commercial banking system in Trinidad and Tobago to estimate the bank specific determinants of NPL with a Generalized Methods of Moments (GMM)/Dynamic Panel model. The model employed the Arellano-Bond (1991) two-step estimation technique which provides unbiased estimators when compared to a pooled regression model. The data satisfied all robust conditions and the results lend support to the Moral Hazard Hypothesis where banks may have lower capital levels than that which is optimal and consequently increasing the riskiness of their loan portfolio. Furthermore, the estimating rejected the 'bad management' and 'skimping' hypothesis.

Keywords: Non-performing loans, dynamic panel, two-step estimation.
JEL Classifications: C23, C26, G21

The Co-operative Credit Union Movement of Trinidad and Tobago: An Evaluation of Its Financial Performance

Yohance Nicholas
Kairi Consultants Limited
Trinidad and Tobago

This thesis traces the evolution of the credit union movement of Trinidad and Tobago from its emergence in the pre-independence era to the present day. With the aid of the PEARLS financial ratios, the paper analyses the financial performance of a sample of the eight largest credit unions in the movement against the backdrop of the country's economic cycle. With the aid of a translog stochastic cost frontier, efficiency estimates were generated for the period 1990 to 2012 for large and very large credit unions. The results indicate that large and very large credit unions have exhibited increases in cost efficiency over the period under investigation.

Keywords: Co-operative credit union movement; pearls ratios; translog stochastic cost frontier analysis

Stress Testing Household Data in Trinidad and Tobago to Assess the Implications of Changes in the Economic Environment

Reshma Mahabir, Akeem Rahaman
***Timmy Baksh** and **Dhanielle Smith**[7]*
Central Bank of Trinidad and Tobago

The Central Bank of Trinidad and Tobago employs financial soundness indicators and stress testing to assess the vulnerability of the financial system. However these methodologies focus on the financial institutions and more specifically commercial banks. This paper seeks to use data gleaned from the 2008/2009 Household Budgetary Survey (HBS) to assess for the first time in Trinidad and Tobago the financial vulnerabilities of citizens of Trinidad and Tobago, thus complementing the traditional stress testing used by the Central Bank. Using information on individual debt in the form of credit cards, hire purchase and loans, as well as income and expenditure, a financial margin for individuals is defined and tested for a variety of shocks. The results indicate that the percentage of persons who are vulnerable to default on their debts when interest rate and inflation shocks are applied is very similar. Movements in the unemployment rate had the largest impact on citizens. Notably an investigation into mortgage debt reveals that this type of debt is very resilient to the different types of shocks.

Keywords: Trinidad and Tobago, financial margin, loan delinquency.

JEL Classifications: D14, G21

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[7] The authors are economists in the Research Department of the Central Bank of Trinidad . The views expressed are those of the authors and not necessarily those of the Central Bank

SESSION 9

Sub Theme: Data Development and the Financial Stability Monitoring Framework

Use of Loan-to-Value Ratio as a Macroprudential Tool in the Mitigation of Residential Property Price Volatility

Janelle Awai, DarcelleBowrin, Michell Majid
*and***CharissaMooteeram***
Central Bank of Trinidad and Tobago
Trinidad and Tobago

Property price cycles and their impact on financial stability have earned newfound attention following the global financial crisis of 2007/2009. Since then, policy makers have been forced to re-evaluate their policies, more so now, to contain system vulnerabilities. The financial crisis has underpinned the need for macroprudential policies to mitigate system instability. It has also raised awareness of the interdependence of the macroeconomy and financial stability which calls for coordination between traditional monetary policy and macroprudential tools.

The literature review reveals that there is a distinct relationship between the property market, as a source of economic cyclicality, and the financial system. In this vein, this paper documents the experiences of several countries and examines the macroprudential tools employed related to the risks associated with real estate booms and busts. In particular, the paper will examine the effectiveness of the loan-to-value ratio (the ratio of the maximum permitted loan against the value of the property) as a tool in mitigating systemic risks that can arise from property price volatility in various countries.

Trinidad and Tobago's financial system continues to be dominated by the banking sector in which mortgage lending represents a large portion of the banks' loan portfolio. This then places greater importance on macroprudential policy tools to ensure financial stability in a small, open economy. This paper aims to draw lessons for Trinidad and Tobago by reviewing the experience of other countries which have successfully drawn on the loan-to-value tool as a means of softening the impact of housing price volatility.

Keywords: Macroprudential, financial stability, loan-to-value, mortgages, policy, systemic risk
JEL Classifications: E58, G21, G28

MEASURING THE LEVEL OF FINANCIAL STABILITY IN THE BAHAMAS

Alwyn Jordan *and* ***Latoya Smith***[8]
Central Bank of The Bahamas
The Bahamas

In recent years, the necessity for countries to efficiently and consistently, monitor and assess developments within their financial sectors has escalated, especially given the observed contagion effects of the recent financial crisis. This is particularly important for Caribbean countries, where the financial sectors are largely dominated by a small number of large institutions. Accordingly, this paper seeks to create an Index of Financial Stability for The Bahamas, by utilising a variety of macroeconomic andmacroprudential indicators.

Keywords: Financial stability, macroprudential indicators

[8]The views expressed in this paper are those of the authors and do not necessarily represent The Central Bank of The Bahamas. This paper should be considered a work in progress and as such the authors would welcome any comments on the written text.

A Framework for Constructing a Housing Price Index in Barbados: A Progress Report

Tiffany Grosvenor
Shane Lowe *and*
Anton Belgrave
Central Bank of Barbados
Barbados

As evident from the 2007/2008 housing crash in the United States of America, the fortune of the real estate market have implications for the overall health of a financial system. Despite the initial efforts of Browne, Clarke and Moore (2008), there exists no systemically updated real estate price index for Barbados. As such, this study undertakes to create a real estate price index for Barbados by using a more comprehensive method and provided by the Land Registry and Land Tax departments. The analysis will evaluate a number of models proposed by the literature for constructing real estate price indices and defines those factors most important for determining property prices in Barbados. This fills the gap highlighted by the IMF's financial sector assessment programme with regards to the construction of a real estate price index while furthering the initial efforts by Browne, Clarke and Moore (2008) by using a much larger dataset including the actual prices of houses sold and additional variables which may be important in determining property prices on the island.