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“Building Financial Sector Resilience in the Caribbean”

BUILDING RESILIENCE IN THE GUYANESE BANKING SYSTEM

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During the last few decades, a large number of developed and developing countries have reported individual banking institution problems, systemic banking crises, currency crises and a combination of the latter two. The most recent is the downturn in the US housing sector – the subprime crisis which has been contagious, spreading to countries with no apparent vulnerabilities and evolved into a global financial crisis. These crises have had substantial impact on the economies of these countries with downturns lasting an average of 2-3 years and costing between 5-10 percent of GDP. The causes of the crises include weak macroeconomic conditions, external shocks, liberalization, institutional weaknesses and poor internal governance. The lessons suggest that countries with a robust financial system, sound macroeconomic environment, key fundamental infrastructure requirements and bank regulatory principles are likely to minimize future crises and adverse impacts. Notwithstanding, the impact of the recent subprime crisis and its contagion suggest a reassessment of certain principles and practices in financial sector policy making. The Guyanese banking system is evaluated against this general background.

REMITTANCES AND ECONOMIC DEVELOPMENT THE DEVELOPMENTAL IMPACT OF REMITTANCES IN THE CARIBBEAN: A COMPARATIVE ANALYSIS: EVIDENCE FROM ST. LUCIA AND TRINIDAD AND TOBAGO

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Official remittance flows to developing countries has been on the increase over the years, reaching a peak in 2008 at US$ 328 billion. Remittances are a leading source of external finance for the development of many economies and are second to foreign direct investment flows. While Kirton over a time period has researched the impact of remittances in Jamaica and Guyana, the WB/IADB has published works on Remittances for Latin America and the Caribbean. Few studies have examined the impact of remittances on economic development in the larger Caribbean and even fewer in the OECS countries. Therefore this study seeks to bridge this gap through a comparative analysis between St. Lucia and Trinidad and Tobago, using survey research data. The results suggest that remittances impact economic development significantly at the household level via the increase in income, access to greater health and educational services, as well as smoothing consumption and an increase in domestic investments. However the governments of the respective economies lack the necessary policies to further facilitate this development process.

FINANCIAL SYSTEMS IN THE CARIBBEAN – AN OVERVIEW

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The financial services available in Caribbean economies are yet to evolve to the level of the industrial world. This paper seeks to identify where on the continuum of financial system development the Caribbean economies are, by comparing them with the financial services that exist in developed and developing nations. Initial observation suggests that the Caribbean financial systems are still dominated by commercial banks, but we seek to examine how other financial institutions grown over the years. Focus will be on the composition of and structure of the financial system and on financial soundness indicators.

The countries to be covered are: Aruba, The Bahamas, Barbados, Belize, ECCU, Guyana, Haiti, Jamaica, Suriname and Trinidad and Tobago.

FINANCIAL INTEGRATION OF BELIZE WITH CENTRAL AMERICA AND WITH CARICOM

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This paper attempts to measure the degree of financial integration of Belize with Central America and with CARICOM using monthly deposit and lending interest rates to compute interest rate spreads, sigma convergence and beta convergence that measures the convergence across the credit markets. The findings revealed that according to the interest rate spread and measure of sigma convergence, the degree of financial integration of Belize with the Central American nations seems to be advancing but at a slow rate. On the other hand, these measures indicate that there is no movement in the degree of financial integration of Belize with the CARICOM nations. Meanwhile, the beta convergence results suggest that only Belize and Guatemala seem to be converging together inside the Central America region. Within CARICOM, the results similarly suggest that Belize is converging with the other CARICOM nations. The latter analysis examines the long term cointegration relationship between the deviation of the interest rate spread from a US benchmark and the variable of interest which is the lag of the interest rate spread of the domestic country.

THE DYNAMICS OF BANK SPREADS IN THE JAMAICAN BANKING SECTOR: AN EMPIRICAL ASSESSMENT

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This paper investigates the dynamics of the pass-through between market rates and bank retail rates across the Jamaican banking sector. Accordingly, commercial banks, merchant banks and building societies were sampled to ascertain the extent to which their price setting behaviour influences the pass-through process. The paper builds on the framework developed by Ho and Saunders (1981) and Maudos and Fernandez de Guevara (2004) by incorporating a variable to capture the policy rate impact on the pass-through process. The results suggest that, for all three sectors, the pass-through for loans is significantly faster and more complete when compared to deposits. Additionally, for the commercial banks, the findings show that the pass-through to retail rates occurs after three quarters but is much faster (slower) for loans (deposits) when market rates adjust upwards in the commercial banking sector. Similarly, the pass-through in building societies occurred after one quarter but was slower for both loans and deposits, while a complete and full pass-through was evident for the merchant bank sector in both deposit and loan categories after two quarters. Further results across all the sectors show no clear evidence that the risk premia associated with market risk affect the pass-through process.

JEL classification Numbers: E43, G21
Keywords: Monetary transmission, banks, market rates, retail rates

[2]The views expressed in this Working Paper are those of the author and do not necessarily represent those of the Bank of Jamaica (BOJ). Working Papers describe research in progress by the author and are published to elicit comments and to further debate.

COMPETITION AND BANKING SECTOR SOUNDNESS: EMPIRICAL EVIDENCE ON JAMAICAN DATA

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This paper utilizes a simultaneous equation framework to analyze the inter-relationship between competition and banking sector soundness for Jamaican banks over the period March 2000 to June 2008. The study also explicitly accounts for inefficiency by estimating deviations of a banking firm's total costs from a minimum cost frontier. For merchant banks and building societies, results suggest that greater competition is accompanied by lower capitalization and increased insolvency risk in these sectors. For the commercial banks, the findings show that greater competition contributes to improvements in insolvency risk. In addition, an important concern for regulators is that for the commercial banks, as well as the building societies, there is a ***U-shaped*** relationship between loan growth and the ratio of non-performing loans (NPLs) to total loans, the proxy for loan quality. This finding supports the hypothesis that at low loan growth rates, loan growth has a negative effect on the number of bad loans. However, at high loan growth rates the amount of bad loans increases with loan growth rate. This finding conforms to regulatory perception that banks with high rates of loan growth, tend to warrant additional supervisory attention.

JEL Classification Numbers: D40; G21
Keywords: competition; inefficiency; ZSCORE Index

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

EFFICIENCY AND PRODUCTIVITY IN THE BANKING SECTOR IN TRINIDAD AND TOBAGO: A PANEL DATA ESTIMATION OF EFFICIENCY FUNCTIONS

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LIQUIDITY MANAGEMENT, INTEREST RATES AND BANK BEHAVIOUR IN THE CARIBBEAN

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Caribbean central banks' efforts to mop up excess liquidity in the economy are being thwarted by persistently high interest rate spreads. Monetary authorities have tried to lower spreads through moral suasion. In this paper we investigate the relationship between liquidity and interest rate spreads in the Caribbean. In the literature it is argued that excessive interest rate spreads are hindrances to investment, since borrowers are subject to higher than affordable lending rates and surplus agents are deterred by low deposit rates. The result is a slowdown in the credit machinery rendering investment deficient. It is argued that this feature is prominent in the financial systems of emerging economies including the Caribbean Region. Large spreads are especially harmful to private investment and economic growth where commercial financing is primarily sought from banks. The literature cites market concentration, high operational outlay and non-performing loans, actual or expected, as factors producing high banking spreads. We explore the influence on banking spreads of the levers controlled by the central bank (the interest rate and reserve requirements).

DYNAMIC INTERACTIONS OF BANK ASSETS IN TWO FOREIGN CURRENCY CONSTRAINED ECONOMIES

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This is an exploratory study that seeks to uncover how shocks to a particular measure of the foreign currency constraint engender dynamic adjustments in commercial banks' – which are also foreign exchange traders – asset holdings. We found a consistent pattern of asset adjustments in Guyana and Jamaica. A positive shock to the foreign currency constraint elicits a negative response in excess bank liquidity, a positive response in foreign asset holdings and a relatively small positive response in loans to the private sector. The initial exchange rate response is different – the Guyana results show an initial appreciation while the Jamaica results suggest an immediate depreciation.

Keywords: commercial banks, generalized impulse response functions, foreign exchange market

JEL codes: O16, F31, G21

The Simple Analytics of Oligopoly Banking in Developing Economies

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Previous research noted the tendency for the commercial banking sector of developing economies to be highly liquid and be characterised by a persistently high interest rate spread. This article embeds these stylised facts in the oligopoly model of the banking firm. The paper derives both the loan and deposit rates as a mark up rate over a relatively safe foreign interest rate. Using a diagrammatic framework, the paper provides an analysis of: (i) the distribution of financial surplus among savers, business borrowers and banks; (ii) exogenous deposit shocks; (iii) exogenous loan demand shocks; and (iv) the impact of interest rate policy on financial intermediation.

JEL Codes: D30, E40, G21

Keywords: Oligopoly, commercial banks, developing economies

Implications of Optimal Price Regulation in Sub-Prime Banking Markets

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This paper investigates a model of endogenous product differentiation in the banking sector which incorporates both loan and depositor risk as well as increasing returns to scale (IRS), and Variable annual percentage rate (APR) lending behaviour. The paper fills a gap in the literature which largely ignored IRS, Variable APRs and risk. Moreover, most of the generally empirical literature tends to assume product differentiation rather than obtain it as an endogenous choice. The main finding is that when an average cost pricing rule is imposed, banks will maximally differentiate their product. However, high quality-type banks benefit from increased market power, while low quality-type banks could benefit from either increased market share or increased market power

QUANTIFYING MANAGEMENT'S ROLE IN BANK SURVIVAL USING DATA ENVELOPMENT ANALYSIS (DEA): CASE OF JAMAICA

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This paper presents a new approach for quantifying bank's management quality, using a data envelopment analysis (DEA) model that combines multiple inputs and outputs to compute a scalar measure of efficiency. This measure will seek to capture a fundamental and crucial element of a bank's success, which is its management efficiency. The results show that, on average, differences in management quality scores exist between institutions that failed during the 1996-1998 financial sector meltdown relative to banks that survived. Additionally, during this period, the technical efficiency scores for foreign-owned banks were higher in comparison to scores for indigenous banks. In examining the post-crisis period: 2002-2008, it was found that the three largest commercial banks, on average, exhibited lower management efficiency scores in contrast to smaller commercial banks.

JEL Classification: **C51, C61, G21, D24**

Keywords: Data Envelopment, Linear Programming, Banking Crisis, Commercial Banks

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

Financial Aspects of Growth and Development in the Caribbean

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This paper is a critical review of what we have learned about financial aspects of growth and development in the Caribbean, and how Caribbean countries compare with other small open economies. We survey the literature and compile comparable data for the Caribbean and similar countries on investment ratios, savings ratios, financial deepening ratios, banking finance, other types of finance, incremental capital output ratios, stock market indicators and other indicators of the performance of the financial sector. What is the range of performance in the Caribbean, and how does it compare with similar countries elsewhere? Do we have any unequivocal results from available studies on the links between finance and growth?

Cross Border Equity Flows in the CARICOM Region

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Despite the absence of a formally integrated market, there is much evidence of cross-border trading in equity in the CARICOM region. How much trading takes place? What determines what and how much is traded? What are the main consequences for the financial sector and for the economy as a whole of such trading? To what extent does such trading measure the extent of financial integration? These are all important questions to be answered by this study. The

principal objective is to determine the nature and extent of cross-border trading in the CARICOM region. This will inform policy makers, stock exchange managers and others about the gains from such trading and the possible use to which this could be put to further the integration of the CARICOM markets.

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Co-movement in the Caribbean Equity Markets with Macroeconomic Indicators

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In this paper, I investigate the strength and direction of the comovement between the macroeconomy and equity returns in three Caribbean countries (Barbados, Jamaica and Trinidad & Tobago). A Vector Error Correction Mechanism framework will be applied to monthly data for the equity returns and macroeconomic variables, which include an index of production, the short term interest rate and the rate of inflation. I also use the Johansen method of cointegration to determine comovement in the markets.

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Setting the Monetary Policy Rate in the Presence of Persistent Excess Liquidity: the Case of Trinidad and Tobago

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The effectiveness of the repo rate as the main policy tool of monetary policy tends to be thwarted by persistent excess liquidity which typifies the banking system in Trinidad and Tobago. As a result, there is need for an investigation on the reliability of changes in the policy rate to effect changes in the market rate and therefore on aggregate demand. This paper would conduct an empirical examination with respect to Trinidad and Tobago, in a bid to explore the effectiveness of the policy instrument in the presence of chronic excess liquidity.

TOWARDS A COMPUTABLE GENERAL EQUILIBRIUM MODEL OF BANKING SYSTEM STABILITY FOR JAMAICA

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This paper employs a general equilibrium (CGE) framework to the evaluation of financial stability of the banking sector in Jamaica. This CGE model was designed following the work of Goodhart et. al. (Ann Fin 2, 1-21, **2006b**). As such, the model incorporates heterogeneous banks and capital requirements in a general equilibrium model with incomplete markets, money and default. Further, agents in the model interact in several financial markets, including a credit, deposit and an interbank market in an infinite horizon setting. The model is calibrated to conform to the time-series data of the Jamaica banking system between 2005 and 2008 and can be readily used to assess financial fragility given its flexibility, computability, and the presence of multiple contagion channels and heterogeneous banks and investors.

DO EXCHANGE RATE REGIMES MATTER FOR INFLATION AND EXCHANGE RATE DYNAMICS? THE CASE OF CENTRAL AMERICA

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This paper makes an empirical contribution to the discussion on the optimal exchange rate regime. Using as a study case the experience of the Central American countries, we compare the dynamics of the Real Exchange Rate (RER) and inflation persistence between dollarized economies and countries with some degree of exchange rate flexibility. Our results show thatthe two dollarized countries in the region, El Salvador and Panama, are quite different in terms of RER and inflation dynamics. While in El Salvador the RER spends more time away from the equilibrium level than the non-dollarized countries in the region, the opposite is true for Panama. We also find that inflation persistence in El Salvador is similar to that of the other countries, but smaller in Panama. This leads us to the conclusion that some degree of exchange rate flexibility helps countries to have a RER more aligned with its fundamentals. Nevertheless, a long-lived, highly credible dollarized economy, like Panama, can reduce inflation persistence to such an extent that RER misalignments are actually less frequent than in countries with more flexible exchange rate regimes.

Do Archipelagic Countries have Bigger Governments?

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This paper investigates whether geographically fragmented countries engage in higher public spending relative to contiguous countries. Using a standard OLS estimator we find that countries with archipelagic morphologies have higher levels of government spending. This result is strongly indicative of a diminished capacity to realize economies of scale in spending on public service provision and delivery across intervening bodies of water.

Key words: Archipelago, Population Density, Public Expenditure,

JEL Classification: H50; H40; O23

* In memory of Steadroy Frederick from the Grenadine island of Bequia. Any errors in this paper are solely the responsibility of the authors. Corresponding author address: University of North Carolina, Department of Economics, CB 3305, Chapel Hill NC 27599-3305. Email: acpeters@email.unc.edu.

Fiscal Adjustment and the Prospects for Growing Out Of Debt in Jamaica

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Jamaica, for the past decade, has remained one of the most highly indebted countries in the world. The significant increase in the burden of Jamaica's public debt arose from the costs of resolving the financial sector implosion of the mid-1990s. The increase in public debt also increased the fiscal costs of debt servicing and the diversion of fiscal resources from essential social and infrastructural expenditure. In the absence of debt repudiation, a course that Jamaican Governments have resolutely resisted, the correction of the problem has demanded the sustaining of substantial primary surpluses and a progressive elimination of the fiscal deficit.

Despite intermittent successes, fiscal performance has mostly fallen short of budgeted fiscal

objectives. Medium term programmes toward the elimination of the fiscal deficit have had to be restated on several occasions. Rating agencies and creditors have been encouraged by Jamaica's demonstrated commitment to paying its debt. This confidence has, however, been undermined by protracted and apparently worsening fiscal underperformance and the impact on Jamaica of the international financial crisis. This has culminated in reduced ratings by credit rating agencies, a reengagement of credit from the International Monetary Fund, and the prospect of shock fiscal adjustment. This will only underwrite enhanced fiscal and debt sustainability to the extent that it facilitates stronger and sustained economic growth.

This paper will explore elements of received theory on the macroeconomic impact of fiscal deficits and public debt, especially as they relate to economic growth. It will also examine the nature of IMF adjustment programmes and their interaction or coexistence with economic growth in Jamaica. It will then explore the evolution of Jamaica's fiscal crisis to it's culmination in 2009.This will be followed by a critical examination of the options for fiscal adjustment, the realism of their prospect and especially the implications of these options for economic growth. In doing this, the paper will distinguish between the monetary and macroeconomic implications of a successful reduction in deficit financing, and the implications of specific expenditure cuts and revenue enhancement measures. From this analysis, the paper will seek to weigh the prospects for fiscal adjustment in easing the debt constraint and conclude by offering recommendations to enhance the prospects for success.

This preliminary examination will rely on the historical records of the Government of Jamaica and the International Monetary Fund, both statistical and analytical. Data will be used for illustrative purposes. Considering especially, the likely impact of wider socio-political contextual factors and exogenous shocks, there must be caution in extracting causative inferences from the analysis.

Following from this, directions for further work and methodological enhancement will also be identified. In particular, there will be a need for more rigorous causative analysis. Despite this, it is expected that the paper will allow for useful conclusions on the prospects for Jamaica's adjustment out of debt, and practical suggestions as to how to enhance the process.

Financing Recovery: Implications of Natural Disasters indebtedness on the Fiscal Sustainability of ECCU States

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The rising impact of natural disasters such as earthquakes, floods, landslides, volcanic eruptions and hurricanes is driving up the cost of disaster relief and reconstruction. Disaster recovery produces a cost to society and governments bears the majority of this cost. In the Eastern Caribbean, most countries have financed recovery by acquiring loans and accessing emergency funds provided by bilateral and multilaterals institutions. In many instances these options were chosen because these states have small tax base, low domestic savings and limited risk financing options.

Given that the Eastern Caribbean States economies resilience is quite low; absorbing the financial impact of these events can be catastrophic. Mainly because, natural disasters can bring about deep and sudden collapses in national output and in some instances cause an entire economy to collapse. Moreover, when poor countries such as the ECCU state are faced with natural disasters, the cost of rebuilding becomes even more of an issue when they are already burdened with debt. This pressures both the government and donor agencies. In recognizing pressures the World Bank reviewed its policy which is set out in "Lay the groundwork for new paradise of natural disaster management," employing efforts to reduce disaster looses and shift financing from reactive borrowing to more efficient use of cost sharing and risk transfer tools (World Bank 1999).

The broad objective of this is study is two folds. Firstly, to conduct empirical estimation and secondly to present the analyses on findings of the impact of natural disasters on fiscal sustainability by focusing on primary and secondary data collated through field research conducted on the ECCU for the period 1980-2008.

The origin of unsustainable fiscal policy in the ECCU countries has been attributed to a combination of exogenous shocks including natural disasters. Sahay (2006) concluded that the rapid increase in debt reflected fiscal expansion related to both policy slippages and insufficient fiscal planning for anticipated (e.g., decline in preferential access) and unanticipated (e.g., reconstruction costs after natural disasters) adverse shocks. Among other findings, this study found that natural disaster expenditure is the main exogenous shock which has the greatest negative impact on public sector spending.

In examining the effect of natural disasters on country's debt, this study found that the Eastern Caribbean States' ability to cope or withstand the impact of the natural disasters is significantly hampered by their small size, insularity and remoteness, economic structure, subjectivity to a narrow range of domestic exports and specifically their high reliance on agriculture and tourism as crucial foreign revenue earners. In many instances, these states were unable to cover disaster expenditure with governments' revenue; as a result, public sector borrowings increased. Additionally, the study found that six (6) out of the eight (8) Eastern Caribbean Sates contracted loans to offset disaster expenditure St. Kitts-Nevis– EC$1.1m Hurricane Georges, St. Vincent and the Grenadines- EC$20m; St. Lucia-EC$789,140m; and Grenada EC$5.4m to cover cost of Hurricane Ivan.

Keywords: public sector debt, fiscal sustainability, natural disasters expenditure, financing recovery

The Macroeconomic Impact of IMF-Supported Programmes in Small Open Economies: The Case of Barbados

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It is often argued that the IMF plays an important role in international financial affairs, particularly in providing support to countries experiencing macroeconomic imbalances. At the same time, critics claim that the conditionalities imposed on the countries caused much hardship and often fail to achieve their intended objective. Based on the analysis of IMF 1992 adjustment programme in Barbados, this paper evaluates the macroeconomic effectiveness of fund-supported stabilization program with both its criticism and its advocates. Barbados presents an interesting study as it is one of the few cases where an exchange-rate devaluation was not part of the programme.

The Productivity-Wage Gap and the Current Account Balance: An Empirical Analysis

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Economic theory suggests the existence of a causal relationship between the wage-productivity gap and the current account balance. However, this theory has not received any empirical support to date, as studies investigating the determinants of the current account have generally focused on other variables.In InnInInnnsdf In this paper, the authors use panel data to determine whether there indeed exists such a relationship and, if so, the strength of this relationship in an intertemporal model. The conclusions of this paper should spark interest in the topic and instigate further empirical research.

STRUCTURAL SHOCKS AND LABOUR MARKET DYNAMICS IN A SMALL OPEN-ECONOMY: THEORY AND SOME EVIDENCE

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Using a rational expectations model à la Blanchard and Summers (1986) and assuming that the labour market is controlled by insiders, this paper measures theoretically and empirically the persistence of unemployment due to various structural shocks in the context of small open economies under two different exchange rate regimes and also attemps to capture the links that potentially exist between structural shocks.

As pointed out by many authors, at the outset, two contrasting phenomena need to be signaled. Indeed, on the one hand, there is the rapidly adjusting labour market to disturbances or shocks noted in many Asian economies such as Hong Kong, Taiwan and the Republic of Korea. On the other hand, there is the relative slowness with which labour market seems to adjust to disturbances or shocks in emerging economies such as the Caribbean, the Latin American economies and some European economies.

The low performance of labour market in the latter economies due mainly to constraints generated by the openness of countries and their limited economies of scale, is an issue that needs to be dealt with to the extent that labour market rigidity is in general an impediment to economic growth. Put differently, the importance of this paper lies in the fact that in many economies a well behaved labour market is key to boosting or at the very least maintaining economic growth and achieving economic integration into the global market.

The analysis of the role of microeconomic rigidities on labour market distortions is not new in the labour literature. Indeed, distortions due mainly to persistence or hysteresis have been analyzed and found originating from the relationship between employment and insider status (see Lindbeck and Snower, 1986). For recall, labour markets are basically supposed to be controlled by insider trade unions or insiders\footnote{"The insiders are workers who have some connection with the firm at the time of the bargaining, and whose interests are therefore taken into account in the contract." (Romer, 2001, 436-437).}.

In a dynamic perspective, adverse shocks that contribute to reduced labour demand change the number of insiders, lower the next periods employment target and affect the nominal wage rate. In other words, membership considerations go a long way in explaining the dependence of unemployment on insider power. The argument that the distortions in the labour market coming from wage setting where a trade union selects an employment target that consists only of current union membership has been provided as one explanation to the persistence of unemployment in industrialized countries (see, for example, Blanchard and Summers, 1986; Lockwood and Philippopoulos, 1994; Blanchard and Wolfers, 2000).

The paper contributes to the literature in two ways. First, it extends the analysis of the sources of the persistence of unemployment to new emerging countries, precisely the Caribbean Countries (Barbados, Jamaica and Trinidad and Tobago) and the Latin America countries (Colombia, Argentina and Chile). Second, acknowledging that the emerging small open economies may be seriously affected by their openness, the paper makes the case for introducing foreign shocks in the dynamic model of unemployment. Precisely, contrary to authors such as Blanchard and Summers (1986), beside from "domestic" shocks we analyze theoretically and empirically the role of foreign shocks in explaining the labour market dynamics. Naturally, we distinguish between two exchange rate regimes: fixed and flexible.

The remainder of the paper is organized as follows. Section 2 discusses the basic framework underlying the stochastic open economy. Section 3 develops the extended model based; a New Keynesian macroeconomic model.

Which focuses on the effect of international business cycles on labour market dynamics. Section 4 calibrates the model for Caribbean economies (Barbados, Jamaica and Trinidad and Tobago) and Latin America. Section 5 concludes the paper.

A Market Microstructure Analysis of Foreign Exchange Intervention in Jamaica

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This paper seeks to uncover the micro-structure dynamics of the foreign exchange market in Jamaica. The D'Souza (2002) framework is applied to the Jamaican context to evaluate how customer order flows – i.e. central bank intervention flows, commercial client trade flows and trade flows of cambios - with the authorised dealers affect the exchange rate determination process. The paper investigates and reveals that there is inventory-based information present in customer order flows. The paper shows that dealers use private payoff relevant information to minimize risk in holding undesired inventory levels (risk sharing). Finally, the use of microstructure theory in the Jamaican context explains more of the volatility of the foreign exchange market compared to previous studies but a significant portion is still left unexplained.

JEL Classification: D46, D53, D81, D82, F31, G12, G14, G32

Keywords: Microstructure, Foreign Exchange, Asymmetric Information models, Speculation, Risk sharing, Vector Auto-regression

EXCHANGE RATES AND MARKET MICROSTRUCTURE – THE CASE OF GUYANA

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This paper uses monthly data from 1993 to 2007 to test the Evans and Lyons (2002) in the Guyanese Foreign Exchange Market (GFM). It also extends the basic model in Evans and Lyons (2002) by testing an alternative specification that includes risk (measured by GARCH-based volatilities in the nominal exchange rate). The results provide mixed evidence with respect to the impact of order flow on the exchange rates in the Guyanese Foreign Exchange Market. In particular, it reveals that while order flow is an important determinant of the nominal G$/US$ exchange rate it does not have a statistically significant effect on the exchange rates between Canadian Dollar and Guyanese Dollar (G$/Cdn$) and the Pound Sterling and the Guyanese Dollar (£/G$). Additionally, our regression results show that the models with order flow only explains 11% of the variation in the log of the US$/G$ nominal exchange rates and less than 10% in the log the (G$/Cdn$) and (£/G$ exchange rates. The inclusion of the risk variables and estimation by GARCH provides superior results to those obtained by OLS.

Key words : Guyana, order flow, market microstructure, GARCH

INTERVENTION IN THE FOREIGN EXCHANGE MARKET, MARKET TURNOVER AND THE IMPACT ON EXCHANGE AND INTEREST RATE DYNAMICS

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Direct intervention in the foreign exchange market and interest rate policy seems to be inextricable linked, even when direct interventions are fully and immediately sterilized. The picture is further clouded when we introduce micro-structural element such as the effect of foreign exchange trading volumes which not only affect the dynamics of the relationship between these two policy variables and exchange rates but is itself driven by innovations in these variables. Looking at the impact of direct intervention and interest rate policy on exchange rates separately, and without taking account of micro-structural features that impact on the effectiveness of these policy instruments, may therefore give misleading results. Additionally, many studies only looked at the impact of these policy instruments on the level of the exchange rate but not on its variance, limiting its usefulness to policy makers in a situation where exchange rate volatility is increasingly the feature of exchange rate dynamics targeted by central banks. This study seeks to close this gap by investigating in a multivariate GARCH framework the links between direct intervention, interest rate policy, exchange rates and trading volumes in the foreign exchange market. In particular, it looks at whether direct intervention "signals" the future interest rate policy stance of the central bank and are designed to "lean against the wind" of exchange rate trends in select Caribbean countries. This framework not only allows one to look at how these policy instruments affects exchange rate dynamics in a joint framework but also shows how policy intervention affects the conditional covariance and correlation of important variable like interest and exchange rates over time. This can shed some light on the costs associated with unsynchronized implementation of related policy instruments in the foreign exchange market.

JEL Classification: E58; E43; F31

Keywords: Central Bank Intervention; Interest Rates; Foreign Exchange Market Dynamics

EVIDENCE OF MODERATE DEGREE OF CAPITAL MOBILITY IN 15 CARIBBEAN COUNTRIES AND THE ABSENCE OF THE FELDSTEIN-HORIOKA(F-H) PUZZLE.

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The observed low saving- retention coefficients for 15 Caribbean countries imply a moderate degree of capital mobility and the absence of the Feldstein-Horioka (F-H) puzzle. This finding of the prevalence of a moderate degree of capital mobility is consistent with the macroeconomic experience of these countries during the period under investigation.

The finding of the presence of cointegration of the savings and investment ratios and the observed magnitude of the estimated average saving- rentention coefficient for the panel reveal that for this panel of Caribbean countries, the F-H puzzle is not valid and the long-run international solvency is maintained in most of these countries.

Risk Transmission in the Caribbean

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The Caribbean is a highly interconnected region with a significant presence of regional and international banks providing a diverse range of financial services. The recent financial distress of one of the major Caribbean financial conglomerates (CLICO) with a wide network of subsidiaries around the region has triggered the alarm about the potential level of risk transmission through national financial systems. In this work we develop network indicators of financial interconnection to the potential for the transmission of shocks around the region. We also construct distance measures based on economic fundamentals. We then analyze whether certain indicators move together in (negative) relation to distance or due to our indicators of financial interconnection.

ISSUES FACING THE ONSHORE AND OFFSHORE FINANCIAL SERVICES SECTOR SINCE THE ONSET OF THE GLOBAL FINANCIAL CRISIS

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This paper examines the impact of the fallout from the global financial crisis on the financial services sector in the Caribbean region. First, a brief background and review of the expected fallout from the crisis is outlined. Second, there is discussion of a number of significant negative events in the region, including: the CL Financial debacle, the Stanford fiasco, and other Ponzi schemes. Third, developments affecting the offshore financial sector are examined. Forth, the consequences of the financial are discuss. It is argued that the financial sector will suffer serious drawbacks that my take years to overcome. Finally, the paper ends with a short summary of the key issues.

PRINCIPAL COMPONENT VALUE AT RISK: AN APPLICATION TO THE MEASUREMENT OF THE INTEREST RATE RISK EXPOSURE OF JAMAICAN BANKS TO GOVERNMENT OF JAMAICA (GOJ) BONDS

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This paper develops an effective value at risk (VaR) methodology to complement existing Bank of Jamaica financial stability assessment tools. This methodology employs principal component analysis and key rate durations for assessing interest rate risk of the Jamaican banking sectors' holdings of both local and global Government of Jamaica (GOJ) bonds. Principal Components Analysis (PCA) is proposed as a tractable and simple-to-implement method for extracting market risk factors from observed data. This approach, which is informationally efficient, quantifies the risk associated with portfolios using three principal factors that affect yield curves. Due to the orthogonal nature of the factors, correlation and covariance between the yields do not have to be explored, simplifying the calculation of VaR for the portfolios. Results of this paper indicate that the PC VaR outturn for the Jamaican banking system is higher relative to both parametric and historical VaR outturns suggesting that the PC VaR holds more information as it relates to the risks impacting banking system portfolios.

A New Framework for Managing Sovereign and Banking Sector Risk in Trinidad and Tobago: An Application of the Contingent Claims Approach

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Gray, Merton and Bodie (2008) propose a new approach to improve the way central banks can analyze and manage macro-financial risks in an economy. It is based on the modern theory and practice of Contingent Claims Analysis (CCA), an extension of Black-Scholes-Merton option-pricing theory, which combines balance sheet information with widely used finance and risk management tools. This paper applies the CCA to the sovereign and banking system in Trinidad and Tobago. The first section outlines the CCA methodology and derives a range of risk indicators including the distance to distress, the probability of default, credit spreads, and expected losses (the implicit government guarantee of the banking system) for the period 2000-2007. The second section of the paper assesses the impact of recent market turbulence on risk indicators. The third section of the paper considers the sensitivity of current balance sheets to potential shocks and changes in the structure of debt. The paper concludes with a discussion of various extensions to the CCA model in the Trinidad and Tobago context including financial stability stress testing and incorporating credit risk indicators into monetary policy models.

Terms-Of-Trade Shocks and Sector Labor Reallocation: The Case of Jamaica, Guyana, and Trinidad and Tobago

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This paper quantifies the long-run impact of terms-of-trade shocks on real gross domestic income growth of Jamaica, Guyana, and Trinidad and Tobago and relates these effects to the reallocation of labor across sectors in response to such shocks. The paper also discusses broadly defined fiscal policy responses that may mitigate or exacerbate the incidence of terms of trade shocks on income growth via the sector labor reallocation channel.

JEL code:
Keywords: GDP, GDI, sector labor reallocation, fiscal policy, terms of trade shocks.

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GLOBAL FINANCIAL CRISIS TO REAL SECTOR CONTRACTION: TRANSMISSION MECHANISMS IN A SMALL OPEN ECONOMY – BUSINESS COPING STRATEGIES IN JAMAICA

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This paper examines the Jamaican experience in the aftermath of the US crisis, to highlight the impact of contagion and types of transmission mechanisms in effect in a small open economy. A micro-level approach is adopted, focusing on the post-crisis coping strategies being utilized by businesses. Coping strategies were categorized according to their expected impact on socio-economic outcomes, with distinctions being made between strategies with direct adverse, indirect delayed and minimal domestic socio-economic impacts. The study utilized primary data from a comprehensive survey of Jamaican businesses in the immediate post-crisis period, which captured the experiences, expectations and plans of critical decision-makers in the business community. Statistical tests of association were used to highlight the transmission mechanisms most highly associated with each type of coping strategy. The extent to which businesses' choice of coping strategies was impacted by basic business characteristics and the Government of Jamaica's policy response to the US crisis was also assessed. The information and analysis presented in this study are useful in the discourse on crisis transmission mechanisms, particularly where countries exhibit atypical tendencies.

The Causal Relationship between Government Expenditure and Tax Revenue in Barbados

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Solving the budget deficit problem is a concern for many countries; some economists emphasized tax increases or tax cuts, while others favour spending cuts. This paper investigates the interrelationship between total government expenditure and total tax revenue in Barbados using both bivariate and multivariate cointegrating models. The technique of Granger Causality is also applied to determine the causal relationship in the multivariate model. The results from the multivariate error correction model suggest that government expenditure unidirectional Granger-cause changes in revenue.

Price Reform and Household Demand for Electricity

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This paper estimates a model of residential electricity demand to project the impact of proposed tariff changes on a representative sample of 130 Barbadian households. The results from the demand function suggest that the price elasticities of demand for particular appliances varied significantly, with households that utilize solar water heating being more price elastic

than households that use air conditioning and electric water heating . The income effects were, however, statistically insignificant as they may have been captured by choices of appliances rather than utilisation. The income elasticity for households with solar water heating was found to be negative, probably reflecting the substitution impact arising from the use of solar power to provide water heating. The database also allowed the authors to breakdown price and income elasticities by individual households and these results suggest that middle-income households tend to be more prices sensitive, indicating that these households may be more able to reduce their usage of discretionary appliances than low-income households. The propose changes in the electricity rate structure was investigated and determined to likely have very little influence on households demand for electricity. Changes in consumption will however be more noticeable within upper consumption and upper income households.

JEL Classification: Q41; C24; O54

Keywords: Electricity demand; Price Reform; Heckman estimator; Developing country

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INSPECTING THE MECHANISM: EXTERNAL SHOCKS AND THE ECCU

Preliminary, For Discussion Only

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This paper documents detailed evidence on the relative importance of external shocks to macroeconomic fluctuations in the Eastern Caribbean Currency Union. Using a Bayesian VAR model, it finds that almost half of the variation in ECCU growth over the 1977 – 2008 period can be explained by external shocks. Of these, US demand shocks exert the greatest influence, followed by World interest rate shocks. An increase in US GDP growth (interest rates) is expansionary (contractionary). Conditional forecasts based on likely scenarios of the evolution of key external variables highlight the sensitivity of the ECCU to renewed concerns about US growth and increases in oil prices.

JEL Classification Numbers: F21, F31, O24
Keywords: Transmission Mechanism, Bayesian VAR, ECCU

Towards a Greater Degree of Financial Integration in the OECS

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In general the paper will focus on the importance of financial integration in the OECS and how some elements of finacial intemediation may be pivotal in going forward. In light of the recent world-wide financial melt-down, it behooves countries such as the OECS to be ever so vigilant in terms of their financial systems. The issues of moral hazards, adverse selection and asmmetric information could, in my view, be mitgated in there is a greater degree of financial integration in the OECS. This issue will be head on with the question of countries' sovereignity. But, ceteris paribus, the long-run positive impact of the greater financial integration should outweigh the short-run strictures that may be placed on countries sovereignity.

Strategic IDB Responses to Current Development Challenges in the Caribbean Region

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Caribbean countries find themselves buffeted by the effects of international recession and financial distress. As the leading multilateral financial institution supporting development in the region, the IDB has proposed a range of measures to help its borrowing member countries to weather the storm so that they can maintain macroeconomic stability and past social and economic gains, and sustain economic development. This presentation will give an overview of the region's current challenges and outline the measures that the Bank has adopted to respond to these challenges.

Unregulated Investment Schemes in Jamaica: Recent Experiences, Problems and Prospects

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Over the last year, reports on the operations of some of Jamaica’s financial conglomerates indicate that the collapse of two of the country’s largest unregulated investment schemes have had negative effects on their operations necessitating significant increases in provisions for bad debts. It is estimated that these unregulated investment schemes were managing about J$150 billion or 12 per cent of the country's Gross Domestic Product.

This paper examines the operations of schemes since 2000. It then discusses the macro and micro economic implications of the operations and recent collapse of the major schemes. In addition, legal and regulatory issues are explored. Policy issues are also examined and suggestions for public policy responses outlined.

REVISITING THE UNDERGROUND ECONOMY IN GUYANA

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This study revisits the phenomenon of the underground economy in Guyana, for the years 2001-08. ***The first section*** addresses issues of meaning and methods utilised in this type of analysis. Its main purpose is to provide the definition of the phenomenon adopted in this study. ***The second section*** considers the methods used in the three previous formal studies of the underground economy in Guyana (Thomas 1989; Bennett 1995; Faal 2003). Their resulting annual estimates are compared and presented in this section. The ***third section*** reviews the major macro-economic characteristics of the period 2001-08. The intent here is to contrast the very different macroeconomic circumstances prevailing over four periods namely, the early post-colonial years; late 1970s and 1980s; 1990s; and at present (2001-08). The three previous formal studies provide estimates for the first three of these periods. ***Section IV*** then applies the three methods of measurement utilised in the three previous studies to our period of enquiry (2001-08). ***Section V*** locates these results in what we term as "the changing character" of the underground economy in Guyana where the main new driver of the present process is the role of "highly organised criminal enterprises and their activities". Following popular usage, the part of the underground economy attributable to this new driver is labelled as the "phantom economy". The final ***Section (VI)*** draws some important conclusions and points the way forward for future lines of research inquiry.

Tax Evasion, Growth and the Informal Economy in Trinidad and Tobago

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Studies indicate that countries with high tax evasion have reduced growth rates. The first objective of this paper is to determine the extent of tax evasion in Trinidad and Tobago during the period 1960-2007. This is done using estimates of the hidden economy based on a variant of Tanzi's monetary model. The second objective is to determine if, and to what extent, any relationship exists between certain key macroeconomic variables and the level of income tax evasion in Trinidad and Tobago. The bounds testing procedure to cointegration within an autoregressive distributive lag (ARDL) framework is used to address this question.

Keywords: tax evasion, Trinidad and Tobago, Autoregressive Distributive Lag

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