

Competition and Efficiency in the Guyanese Banking System

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ABSTRACT

There have been significant structural changes in the Guyanese banking system over the last two decades. These changes were in response to policymakers' efforts to address issues of operational inefficiencies, risk management, capitalization and governance. The efforts included closures and consolidation of banks which entailed privatization and divestment of government holdings. Measured by standard indicators, Guyanese banks have showed significant improvement in their soundness. Notwithstanding, there are concerns that the banking system remained uncompetitive and thus inefficient, unable to provide greater access and financial deepening. Against the backdrop of these concerns, this paper analyses the competitive and efficiency issues by assessing the reform programs undertaken and outcomes. It also empirically tests the degree of effective competition and efficiency over the 1995-2009 periods.

1.0 Introduction

Guyana has undertaken wide-ranging economic and financial reform programs during the last two decades to stabilize its economy and to establish market forces as performance drivers. The emphasis on the financial sector was on its strengthening and restructuring as well as improving the supervision and regulation of banking and financial services. There was divestment of state holdings in banks as well as privatization of the major state-owned bank. Two new banks were licensed to increase the number of commercial banks operating in a highly concentrated and relatively underdeveloped financial system.

Table 1 – Financial Intermediaries Across Countries (2005 – 2009)

	Private Credit/GDP	Bank Deposits/GDP	Loans/ Deposit
Guyana	37	84	43
Jamaica	22	35	78
Trinidad and Tobago	12	56	72
Suriname	26	45	56

The reform programs undertaken have remarkably improved the health of the banking system. Indicators of bank soundness show a significant improvement. Banks financial intermediation in the form of private sector credit to GDP has been modest, averaging 37 percent. However, this is relatively high when compared to those of other Caribbean countries as shown in Table 1. Bank deposits to GDP ratios have been significantly high but loan to deposit ratios were lower when compared to other Caribbean countries. Notwithstanding these achievements, there have been concerns that the banking system is not operating within a competitive environment to improve efficiency of financial services, enhance its reach and promote innovations in the sectors, which are critical for economic development.

Against the backdrops of these concerns, this paper assesses the level of competition and efficiency in the Guyanese banking system. The rest of the paper is organized as follows.

Section II describes the main characteristics of the structure and reform of the banking sector as well as the banks financial performance. Section III provides a brief overview of the literature survey on completion. Section IV describes the theoretical model. Section V discusses the results of the model. Section VI provides an evaluation of efficiency in the banking system. Section VII provides some concluding remarks.

2.0 Banking Sector Developments

a) Reform Measures

There are six commercial banks in Guyana which hold approximately 45 percent of the financial systems total assets at end 2009. All the commercial banks are privately owned. This was facilitated with the divestment of government financial holdings in two of the large banks which began in 1994, and the privatization of Guyana National Cooperative Bank (GNCB) in 2002. Three of the banks are foreign owned and account for 60 percent of total assets of the commercial banks.

For over two decades prior to 1989, Guyana's financial system evolved within the framework of a "corporate state". The financial system was characterized as highly regulated and financially repressed. There were interest rate controls, allocation of financial resources to priority sectors, quantitative loan target, intensive financing of fiscal deficits, entry regulations and strict branching licensing policies. State owned banks were highly inefficient and unprofitable. However, the implementation of the IMF-supported Economic Recovery Programme (ERP) in 1989, which shifted public policy toward a market-oriented economy, resulted in the adoption of financial reform/liberalization measures.

The reforms were undertaken as a component of the overall scheme of macroeconomic stabilization and structural reform. The overall process was aimed at stabilizing and enhancing the efficiency and competitiveness of the economy. The reforms were comprehensive in scope covering, besides the financial sector, area including domestic

investment, infrastructure development through private sector initiatives, promoting foreign competition by reducing protective barriers such as import controls and high tariffs, encouraging direct foreign investment as a source of technology up gradation, public sector reform including an aggressive privatization programme and reforming the tax system. All of these reforms are closely inter-related, and progress in one area is intended to help to achieve objectives in others.

The main elements of financial reform in Guyana can be analysed under three (3) broad categories (Ganga 2009): adjustments in the policy framework; improving the stability and soundness of the financial institutions; and strengthening the institutional capacity in the financial sector. The central features of reform with respect to adjustments in the policy framework consisted of: the removal of restrictions on interest rates, credit and foreign exchange transactions, encouraging private ownership of commercial banks and the use of indirect instruments of monetary policy and financial control by the Bank of Guyana. The primary objective was to bring about an improvement in the system relating to allocation of funds and eliminating market fragmentation. The reforms to promote financial institution soundness included: measures to strengthen the regulatory and supervisory framework of licensed financial institution which included the introduction of prudential norms, through regulations and guidelines. Institutional capacity strengthening was done through appropriate institution building measures by instilling a greater element of competition, improving the quality of loan assets, and strengthening the supervisory process.

b) Commercial Banks Performance

Table 2 below displays a set of banking system macro-prudential variables that can be used to assess the outcomes of the reform measures on the banking system. The data shows that the banking sector in Guyana was adequately capitalized and was “sound” in the post reform years of 1996-2009. The Capital Adequacy Ratio (CAR), which captures banks’ overall financial soundness, has hovered at 15.3 percent between 1997 and 2009, well above the 8 percent minimum level required by law. There was, however, significant

dispersion among banks, although all of the banks satisfied the capital adequacy requirements. Additional safety nets were high levels of reserves and liquidity. The banking system maintained reserves well in excess of the required amount as is shown in Table 2, thereby suggesting that the system had room for leveraging. The banking system liquidity was also high with the liquid asset to total asset ratio during the 1999-2009 period, averaging 28.2 percent. Further, the banking system had a buffer against liquidity shocks with customer deposits to total loans increasing from 148.3 percent in 1998 to a peak of 282.4 percent in 2005 before declining to 233.9 percent in 2009.

The data sets also show that the asset quality of banks improved during the 1996-2009 period. This is reflected in the decline in the levels of non-performing loans. The size of non-performing loans, which was G\$4,027 million in 1992, fell to G\$264 million in 1994 but went up to G\$20,612 million in 2000, mainly as a result of the merger of GAIBANK and GNCB¹. Non-performing loans declined to G\$6,779 million in 2006 and increased to G\$7,574 million in 2009. As a percentage of total loans, non-performing loans declined from 22.7 percent in 1995 to 11.6 percent in 2006 and to 8.3 percent in 2009. Expressed in terms of total assets, there was a decline from 8.7 percent in 1995 to 4.7 percent in 2006 and to 3.0 percent in 2009. Provisions for bad loans as a percentage of non-performing loans were satisfactory, averaging approximately 50 percent between the 1997 and 2002. This declined to 33.3 percent in 2003 but increased to 44.4 percent in 2005 and to 53.8 percent in 2009.

The composition of the banking system earning assets has changed to vary risks during 1996-2009. Credit to the private sector as a percentage of total bank assets grew from 47.8 percent in 1996 to 51.7 percent in 1999 but thereafter declined to 37.4 percent in 2002 and further to 26.4 percent in 2009. Diversification of credit across sectors have also taken place with the real estate and the household sectors accounting for about 67 percent of total credit in 2009 compared with 23 percent in 1996. Credit to the agriculture sector declined from 21.4 percent in 1996 to 16.1 percent in 2002 and to 7 percent in

¹ This outturn can be attributed to the prudent lending of banks, resolution of the rice sector loans and the closure of the state owned Guyana National Cooperative Bank (GNCB) in 2002.

2009. The decline in the share of private sector credit and the diversification of private sector credit indicates a reduction in the credit risk of banks but this reduces the franchise value of commercial banks.

The holdings of public sector securities (treasury bills) by banks as a percentage of total assets declined from 22 percent in 1996 to 12.8 percent in 1999. However, this holding has increased to 23.4 percent in 2009. Although the level of exposure of the banking system to government securities is large, default risks have been extremely small but market risks are a matter of concern due to potential changes in relative prices. Banks overseas holdings/investments as a percentage of total assets increased from 4 percent in 1996 to 17.7 percent in 2009. Their net overseas holdings as a percent of capital and reserves increased from 15 percent in 1999 to 114.4 percent in 2009. This shift in portfolio reflects the diversification from loans but it has exposed the banking system to contagion from external factors.

	1997	1998	1999	2000	2001	2002	2003 [1]	2004	2005	2006	2007	2008	2009
Capital Adequacy													
Capital to risk-adjusted assets	13.30	16.96	16.73	16.15	16.16	14.29	12.73	14.28	14.36	15.47	15.02	14.94	18.31
Tier I capital to risk-weighted assets	13.73	16.81	16.67	15.78	16.34	13.39	12.80	14.09	14.50	15.36	14.51	15.01	18.19
Tier II capital to risk-weighted assets	0.21	0.18	0.85	0.77	0.70	0.60	0.40	0.40	0.20	0.11	0.53	0.14	0.28
Capital to total assets	7.74	10.28	10.59	9.46	9.00	7.90	6.10	6.35	6.23	6.68	6.90	7.03	10.01
Frequency distribution of banks' capital ratios [2]	6.00	7.00	7.00	7.00	7.00	7.00	5.00	6.00	5.00	5.00	6.00	6.00	6.00
Lending to connected parties [3]													
Related parties loans to total loans	3.00	4.00	4.00	5.00	5.00	5.00	6.00	6.00	5.00	3.79	3.67	4.51	4.49
Related parties loans to capital base	20.00	20.00	23.00	28.00	27.00	27.00	30.00	26.00	21.00	18.23	16.91	22.67	20.32
Director exposure to related parties exposure	26.00	20.00	25.00	1.00	3.00	4.00	4.00	1.00	2.00	2.03	1.36	1.67	7.26
Asset composition													
Business enterprises to total loans	76.20	76.20	76.20	76.60	75.60	72.00	66.60	61.60	57.00	54.33	50.66	51.32	48.82
Agriculture to total loans	16.30	17.50	14.60	15.00	14.50	12.90	8.00	7.30	7.80	6.08	4.90	5.62	6.37
Mining and quarry to total loans	2.20	2.40	2.20	1.80	2.50	2.20	2.30	1.00	1.30	1.70	1.23	1.95	1.64
Manufacturing to total loans	28.30	26.90	28.70	28.70	27.80	26.00	23.10	24.10	18.60	18.98	16.84	15.98	13.45
Services to total loans	29.60	29.50	30.70	31.10	30.80	30.90	33.20	31.80	29.30	27.57	27.71	27.76	27.36
Households to total loans	19.40	19.30	17.90	16.10	14.90	17.20	20.10	17.50	17.10	21.02	22.34	20.22	18.08
Top 20 borrowers to total loans	27.60	27.70	26.80	27.90	23.20	25.20	48.50	45.40	44.50	46.69	39.21	33.19	35.49
Top twenty borrowers to capital base	192.10	151.60	144.50	146.10	121.60	131.30	239.50	203.20	195.00	224.43	180.78	166.78	160.53
Asset quality													
Non-performing loans to total loans	24.30	30.30	31.40	35.70	38.20	37.15	23.30	17.80	13.90	11.59	10.85	5.29	8.26
Non-performing loans to total assets	13.10	17.00	18.60	19.20	18.90	16.20	8.00	5.70	4.30	3.82	3.65	1.99	3.03
Non-performing net of provisions to capital and reserves	57.20	64.72	67.60	67.53	90.00	80.50	62.90	41.70	29.40	26.55	19.79	4.53	13.99
Provision for loan loss to non-performing loans	51.00	56.00	54.40	49.40	49.10	53.71	33.30	39.70	44.40	41.04	54.20	79.09	53.82
Total on-balance sheet assets to capital and reserves	691.60	862.00	798.20	801.90	936.40	1,076.60	1,179.30	1,216.70	1,224.40	1,177.91	184.88	1,089.70	986.64
Large exposure to capital base	361.50	285.40	276.20	285.20	253.30	267.10	369.30	314.02	305.00	320.48	267.50	195.49	175.77
Non-performing loans (G\$ millions)	10,946.00	16,636.00	17,636.00	20,612.00	21,604.00	20,058.00	10,561.00	8,136.00	6,907.00	6,779.00	7,288.00	4,547.00	7,574.00
Earnings and profitability													
Return on assets	1.40	2.95	1.28	0.65	0.48	0.44	1.21	1.37	1.74	0.59	0.59	0.57	0.67
Return on equity	11.70	25.83	10.64	5.57	4.37	4.45	13.68	16.44	21.27	6.92	6.85	6.31	6.66
Net interest income to gross income	41.80	35.96	37.85	33.00	32.50	39.50	44.30	47.40	50.00	48.61	44.71	46.93	41.81
Non-interest expenses to gross income	34.26	40.41	42.08	40.80	44.80	53.40	51.90	51.50	44.85	37.77	35.82	38.72	21.72
Personnel expenses to non-interest expenses	37.19	34.70	31.21	36.63	33.68	37.07	32.51	36.74	40.58	44.10	38.12	30.31	52.26
Net operating income to average total assets	5.72	3.90	1.32	0.83	0.70	0.61	1.37	1.75	2.42	0.87	0.79	0.80	1.08
Operating expenses to average total assets	9.70	10.10	10.80	10.52	9.90	8.49	6.98	6.65	5.98	1.40	1.82	1.76	1.74
Operating expenses to total income	79.70	82.00	89.00	92.27	93.24	93.55	83.19	79.14	71.15	61.52	69.79	68.80	61.76
Liquidity													
Interest expense to average earning assets	15.46	17.62	7.44	7.57	6.73	4.75	3.46	3.24	3.12	0.74	1.19	1.03	1.51
Net interest income to average earning assets	15.19	13.85	6.01	4.86	4.50	4.80	5.00	5.55	5.93	1.51	1.57	1.61	1.58
Liquid assets to total assets	30.57	26.16	25.11	25.47	23.50	23.90	26.40	33.30	32.50	33.01	26.47	29.79	30.95
Customer deposits to total loans	154.60	148.29	140.86	157.50	169.06	195.13	248.46	272.29	282.38	264.36	256.71	227.85	233.89
Customer deposits to total loans and investments	108.06	109.44	107.95	109.32	110.94	111.89	118.89	121.29	124.81	120.14	123.40	112.80	116.13

[1] This comprises 6 commercial banks excluding GNCB, which was privatised in March 2003.

[2] Number of commercial banks with ratios greater than the 8 percent minimum capital adequacy ratio.

[3] Related parties include directors, senior officers and shareholders with 20 percent or more shares.

Source: Bank of Guyana

The banking system remained profitable during 1996-2009 and this profitability has provided a liquidity buffer against shocks. Banks' ratio of net profit to equity (ROE) was 15 percent in 1996 and moderated to 4.0 percent in 2000 and to 6.7 percent in 2009. Similarly, the ratio of net profit to asset (ROA) which was 1.05 percent in 1996 moderated to 0.8 percent in 2000 and to 0.67 percent in 2009. The level of banks' profitability in Guyana is associated with relatively high interest incomes from wide spreads. The ratio of interest income to gross income has been in excess of 50 percent during the 1990s and early 2000s. In 2009, net interest income to gross income was 41.8 percent. Non-interest expenses to gross income averaged 42 percent during the 1996-2002. In 2009, this was 21.7 percent.

Most banking institutions have adhered to the Bank of Guyana's Corporate Governance and other Guidelines as well as laws on regulations from enhanced supervision. The banks have adopted internal control procedures, held regular board meetings, formed active audit and financial committees, submitted timely and accurate information, as well as outlined management succession plans and business continuity plans to the authorities. Transparency and accountability of regulatory authorities such as the Central Bank and central government have also been required with the changing environment in which financial institutions operate. There has been public dissemination of economic and financial sector data and policies. The timely dissemination of Bank of Guyana reports, Budget Speeches as well as the IMF Public Information Notices have contributed to reducing vulnerability in the banking system by providing reliable and relevant information for undertaking financial activities.

Although there have been widespread implementation of market oriented reform measures, the level of concentration in the Guyana banking system is quite high. The Herfindahl-Hirschman Index has been above 1800 for all years between 1998 and 2009, except for 2001 and 2002. The high concentration level reflects the small number of banks in Guyana as well as the share of the three largest banks which account for almost 60 percent of total assets.

Notwithstanding, the high level of concentration, the reach of banking services in Guyana has improved since 2000 when measured through a combination of bank branches, Automated Teller Machines (ATMs) and point of sale terminals. Specifically, the number of bank branches increased from 23 in 1998 to 27 in 2009.² The number of ATMs increased from 35 in 2001 to 71 in 2009. The number of point of sale terminals increased from 249 in 2001 to 393 in 2009. There were also 161 credit card terminals in 2009. The reach, however, has concentrated largely in urban areas with the rural and hinterland areas having only one branch each as part of banks service extension.

3.0 Theoretical Literature on Competition

The degree of competition is an important determinant of the performance in any sector, including the banking sector, of the economy. It is critical in the efficiency of the provision of goods and services, the quality of the goods and services produced as well as the degree of innovation in the sector. The competitiveness of the banking industry cannot be measured only by market structure indicators. Indicators such as the number of institutions, the Herfindhal concentration index and others such as profitability and interest spreads are poor guides to competitiveness. This is because these performance outcomes are influenced by factors such as a country's macroeconomic performance, taxation, judicial systems, risk preference as well as the availability and quality of information systems.

The degree of competition is often tested through a contestability-based approach. In this approach, there are several sets of conditions or behaviors that can yield competitive outcomes even if the system is concentrated and dominated with a few large entities. Baumol (1982) posited that a concentrated industry can behave competitively if the barriers for new entrants to the market are non-existent or low. Entry barriers may also include foreign ownership, branching restrictions and the severity of restrictions in the sector to limit intra-industry competition. In view of this, deregulation and liberalization is expected to make the industry more contestable or open to competition.

² Some branches were closed with the sale of GNCCB in 2002.

The Panzar-Rosse (1987) or the “H-Statistic” competition model is commonly employed to test the degree of competition in an industry. This approach relies on the premise that banks will have different pricing strategy to changes in factor input prices and therefore one can inferred from the revenues earned whether a bank operates in a competitive market or has some market power. The Panzar-Rosse approach uses bank-level data and allows for bank-specific differences in the production function and analysis of different types of banks in terms of size and ownership.

The Ponzar-Rosse approach established the “H-Statistics” to measure the competitiveness of the industry. The H-Statistic is the sum of the elasticities of the reduced forms (equilibrium) revenue with respect to input prices. If the H-Statistic is less than or equal to zero, the market in which banks operate is characterized as monopoly.³ If the H-Statistics is equal to one, the market structure is characterized as perfectly competitive since a proportional shift in all input prices will increase both marginal and average costs by the same proportion without changing the equilibrium output of banks. If the H-Statistics lies between zero and unity, the market in which banks operate is characterized as monopolistic competitive, since revenues will increase less than proportionally to changes in input prices.

4.0 The Model

The Ponzar and Rosse model used in this study is estimated through the following bank revenue equation in which revenue is explained by factor specific prices and other bank specific variables.

$$\ln RITA_{it} = \alpha + C_1 \ln PETA_{it} + C_2 \ln RETD_{it} + C_3 \ln OCTA_{it} + C_4 \ln NPLTL_{it} + C_5 \ln TA_{it} + C_6 \ln TLTA_{it} + C_{it} \quad (1)$$

³ The explanation is that monopolist’s revenue will respond in the opposite direction to a change in input prices.

For $t=1, \dots, T$ where T is the number of periods observed, and $i=1, \dots, I$, where I is the total number of banks and \ln is the natural logarithm.

The dependent variable ($RITA_{it}$) is the ratio of total interest revenue or total revenue to total assets. $PETA_{it}$ is the ratio of personnel expenses to total assets (proxy for input price of labor). $RETD_{it}$ is the ratio of interest expenses to total deposits (proxy of input price of deposits). $OCTA_{it}$ is the ratio of non interest expenses to total assets (proxy for input price of equipment to fixed capital). A number of control variables are included to account for size and risks. Specifically, TA_{it} is total assets (proxy for size). The risks variables are $NPLTL_{it}$ which is the ratio of non performing loans and $TLTA_{it}$ which is the ratio of net loans to total asset.

5.0 Empirical Results

Quarterly individual bank balance sheets and income statements from 7 banks in operation during the 1995-2009 periods have been used to construct the data set. For the econometric estimation, 5 models were used which included all commercial banks (with and without GNCB), local banks, foreign banks, large banks and small banks.

The results in Table 3 suggest that the Guyanese banking system is characterized by monopolistic competition according to the Panzar and Rosse classification. The H-statistics lies between 0 and 1 for all the models. Specifically, when GNCB is included in the models, the H-statistics has a value of 0.47 for all banks, 0.60 for local banks, 0.36 for foreign banks, 0.50 for large banks and 0.70 for small banks. However, when GNCB is excluded from the models, the H-statistics has a lower value of 0.39 for all banks and 0.59 for local banks but a higher value of 0.61 for large banks. It is important to note that when Guyana Banking System is compared to other countries, the average H-Statistics for all banks is close to that of Ghana at 0.49 but below that of East Asia Region of 0.70, the world wide average of 0.72 and the high income OECD countries average of 0.8 (Laeven, 2005).

Table 3: Summary H-Statistics

With GNCB	H-Statistics	Without GNCB	H-Statistics
Commercial Banks	0.47	Commercial Banks	0.39
Local Banks	0.60	Local Banks	0.59
Foreign Banks	0.36	Foreign Banks	
Large Banks	0.50	Large Banks	0.61
Small Banks	0.70	Small Banks	

The results suggest that with the privatization of GNCB, which was one of the large banks, the degree of competition declined substantially for all banks but increased considerably for large banks. The latter may be reflecting enhanced competitiveness through consolidation since one of the large banks bought GNCB. The marginal decline in local banks competitiveness may be explained with the licensing of two new banks in first half of 1990s. Further, small banks seem to have the highest degree of competitiveness while foreign banks have the least degree of competitiveness. This may reflect the nature of their lending practices and differences in operating cost. Foreign banks tend to lend to large commercial and industrial companies while small banks lend to small-medium enterprises. Moreover, in low income countries such as Guyana operating cost tends to be high for foreign banks.

Although the coefficients on the bank specific factors are of secondary interest to the competitive analysis, they are shown in Tables 4 and 5. The coefficient of the unit price of labour is significant only for small banks and has a positive value. This result appears to confirm that personnel costs are one of the important contributors to the explanation of bank revenues for small banks. The coefficient of the unit cost of funds is significant for all specifications and greater than zero. This result shows that the cost of capital has the highest impact on interest revenues than other revenues. The coefficient of the proxy of unit fixed cost of assets is positively correlated with total revenue for all specifications

but only significant for local and large banks where the contribution to the explanation of bank revenues is the second largest.⁴

Table 4: Regression Estimated Results of Competitive Conditions for Commercial Banks in Guyana: (Period 1997-2009).

Independent Variables	Model 1 (All Commercial Banks)			Model 2 (Local Banks)			Model 3 (Foreign Banks)			Model 4 (Large Banks)			Est. Co-efficient
	Est. Co-efficient	t-Statistics	Probability	Est. Co-efficient	t-Statistics	Probability	Est. Co-efficient	t-Statistics	Probability	Est. Co-efficient	t-Statistics	Probability	
PETA	0.1171	1.0247	0.3110	-0.0366	-0.3728	0.7110	-0.0678	-0.7751	0.4423	0.0401	0.3134	0.7555	0.2435
RETD	-0.2043	-5.4057	0.0000	-0.2041	-4.6103	0.0000	-0.3931	-7.6899	0.0000	-0.3723	-5.6372	0.0000	0.4052
OCTA	0.0453	0.6310	0.5312	0.2310	1.4433	0.0013	0.0387	0.6385	0.5264	0.0925	1.0787	0.2865	0.0471
NPLTL	-0.2536	-7.0980	0.0000	-0.2227	-6.6881	0.0000	-0.1839	-3.2578	0.0021	-0.2686	-7.1127	0.0000	-0.0306
TA	-0.0040	-0.5011	0.6187	-0.0514	-4.4687	0.0001	0.0327	4.7885	0.0000	0.0041	0.3154	0.7539	0.0035
TLTA	0.4348	3.1824	0.0026	0.2361	0.9046	0.3705	0.3723	3.4685	0.0012	0.2803	1.9800	0.0538	0.0203
H-Statistics	0.47	S.E. = 0.24		0.60	S.E. = 0.25		0.36	S.E. = 0.20		0.50	S.E. = 0.28		0.70
F-value for H=0													
F-value for H=1	40.931			23.809			65.273			38.434			25.501
Adjusted R-squared	0.8245			0.7285			0.8832			0.8146			0.7424
# of Observations	52			52			52			52			52

Dependent Variable:
RITA rep Interest Income to Total Assets

Independent Variables:
PETA rep Personnel Expenses to Total Assets
RETD rep Interest Expenses to Total Deposits
OCTA rep Other Operating Costs to Total Assets
NPLTL rep Non-Performing Loans to Total Loans
TA rep Total Assets
TLTA rep Total Loans to Total Assets

NB. All variables are Logged

Table 5: Regression Estimated Results of Competitive Conditions for Commercial Banks in Guyana: (Period 1997-2009). (without Commercial Bank GNCB)

Independent Variables	Model 1 (All Commercial Banks)			Model 2 (Local Banks)			Model 3 (Foreign Banks)			Model 4 (Large Banks)			Est. Co-efficient
	Est. Co-efficient	t-Statistics	Probability	Est. Co-efficient	t-Statistics	Probability	Est. Co-efficient	t-Statistics	Probability	Est. Co-efficient	t-Statistics	Probability	
PETA	0.0604	0.5444	0.5889	-0.0874	-0.6384	0.5265				0.0642	0.4624	0.6460	
RETD	-0.2745	-5.6645	0.0000	-0.2827	-7.0517	0.0000				-0.3889	-6.0512	0.0000	
OCTA	0.0581	1.0205	0.3129	0.2134	1.8619	0.0004				0.1612	2.0774	0.0435	
NPLTL	-0.1512	-5.5290	0.0000	-0.0527	-2.8725	0.0062				-0.1426	-3.7751	0.0005	
TA	0.0161	3.1628	0.0028	-0.0087	-1.1915	0.2397				0.0151	1.5264	0.1339	
TLTA	0.4880	4.5084	0.0000	0.0468	0.2971	0.7678				0.2845	1.9176	0.0615	
H-Statistics	0.39	S.E. = 0.22		0.59	S.E. = 0.26					0.61	S.E. = 0.28		
F-value for H=0													
F-value for H=1	60.913			52.323						38.139			
Adjusted R-squared	0.8758			0.8579						0.8138			
# of Observations	52			52						52			

Dependent Variable:
RITA rep Interest Income to Total Assets

Independent Variables:
PETA rep Personnel Expenses to Total Assets
RETD rep Interest Expenses to Total Deposits

⁴ Large banks include one local bank.

The coefficient of the scale variable of total assets is significant for all banks when GNCB is included, foreign banks and large banks, thereby implying that size is a major determinant for total as well as interest revenue. The positive coefficient further confirm that size differentials in assets among banks leads to higher interest revenues, where the larger the bank, the higher the revenues. This denotes very strong economies of scale effect. The coefficients of the other scale variables of total loans to total assets are also significant and positive for all banks, foreign banks and large banks. The result suggests that the higher the proportion of loans on banks portfolio, the higher the interest revenues. The results suggest that small banks have a disadvantage in the system in generating higher interest revenues from loans. The coefficient of the risk variable of non-performing loans to total loans are significant and negative confirming that banks have made significant progress in reducing non-performing loans.

6.0 Efficiency Indicators

The relationship between competition and banking system performance such as lower cost efficiency, access to financing, stability and growth are mixed. Berger and Hannan (1998) found strong evidence that banks in more concentrated markets exhibit lower cost efficiency levels. Hauner and Peiris (2005) noted that competition and vigorous rivalry embanking may not be unambiguously good when compared to other industries. Other evidence suggests that some commercial and savings banks benefit from monopoly rent. Therefore, the link between competition and efficiency of the Guyanese banking system is explored below.

The approach used to gauge the efficiency of the Guyanese banking sector is based on the non parametric Data Envelopment Analysis (DEA) by Charnes, Cooper and Rhodes (1978)⁵ and two standard indicators of the ratio of total operating costs to total gross operating profit and the ratio of operating costs to average total assets. The DEA or frontier analysis measures productive efficiency of decision making units or (DMUs).

⁵ They are a number of software options for running DEA. This study uses the software Solver added-in that comes with Microsoft Excel.

The DEA measure compares each of the banks/branches in that sample with the best practice in the sample. It tells the user which of the DMUs in the sample are efficient and which are not. The ability of the DEA to identify possible peers or role models as well as simple efficiency scores gives it an edge over other methods. As an efficient frontier technique, DEA identifies the inefficiency in a particular DMU by comparing it to similar DMUs regarded as efficient, rather than trying to associate a DMU's performance with statistical averages that may not be applicable to that DMU.

DEA has been associated with technical efficiency and has the ability to transform multiple resources into multiple financial services. The DEA is not an absolute but a relative efficiency score. Therefore, to enhance the evaluation of efficiency, the two standard efficiency ratios of costs/income and costs/assets are often used to measure how efficient or how best commercial banks use their inputs for a given level of output. The ratio of costs/income shows how a bank is achieving a low efficiency ratio. This would either be from low cost or where revenue increases are offsetting cost increases. The costs/assets ratio shows how cost varies with the size of banks. These ratios are crucially dependent on the mix of borrowing, lending and other activities the bank undertakes. It is important to note that the activity mix often has a far greater impact on the value of the banks' ratios than the efficiency with which these activities are undertaken.

a) Efficiency Scores of Banks

Quarterly data for the period March 2003 to December 2009 are used to evaluate the characteristics of banking efficiency in Guyana. The evaluation is done for all banks and the four bank type namely local banks, small banks, large banks and foreign banks. The inputs are non interest and interest expenses while the output is interest income. The efficiency scores are shown in Table 6. The efficiency score of Guyanese banking system ranged between a minimum of 0.72 and a maximum of 1.00. The overall unweighted mean was 0.90. The scores showed that as a group small banks, with efficiency score between a range of 0.71 and 1.00, appear to be more efficient in the pricing of their inputs and outputs.

Large banks and local banks as a group also have high unweighted mean efficiency scores of 0.89 and 0.87 respectively, while foreign banks have the lowest unweighted mean efficiency score of 0.85. The highest scores for small banks as a group could be explained by the large percent of these banks assets in loans when compared to large banks that have a significant percent of their assets in government securities (at least two of the largest) with relatively lower rates of return. The scores also indicate that there has been a trend of general efficiency improvement for all types of bank groups over the period.

Table 6: Efficiency Scores for the Various Banks

	All Banks	Local Banks	Foreign Banks	Large Banks	Small Banks
Mar-03	0.715	0.550	0.693	0.734	0.712
Jun-03	0.873	1.000	0.797	0.816	1.000
Sep-03	0.833	0.834	0.756	0.804	0.889
Dec-03	0.917	0.805	0.877	0.872	1.000
Mar-04	0.784	0.613	0.744	0.823	0.720
Jun-04	0.907	1.000	0.808	0.867	0.968
Sep-04	0.883	0.767	0.838	0.867	0.871
Dec-04	0.847	0.866	0.727	0.808	0.909
Mar-05	0.892	0.755	0.854	0.914	0.796
Jun-05	0.981	0.918	0.947	0.983	0.916
Sep-05	0.849	0.918	0.719	0.790	0.978
Dec-05	1.000	0.884	1.000	1.000	0.922
Mar-06	0.897	0.936	0.823	0.858	0.935
Jun-06	0.915	0.688	0.926	0.960	0.815
Sep-06	0.881	0.892	0.775	0.822	0.965
Dec-06	0.948	0.804	0.928	0.922	0.927
Mar-07	0.817	0.479	0.889	0.920	0.706
Jun-07	0.986	0.988	0.914	0.951	0.998
Sep-07	0.961	0.904	0.921	0.955	0.897
Dec-07	0.856	0.998	0.760	0.810	0.978
Mar-08	0.933	0.987	0.919	0.925	0.945
Jun-08	0.847	0.988	0.802	0.824	0.939
Sep-08	0.860	0.943	0.833	0.859	0.787
Dec-08	0.878	0.955	0.792	0.838	0.923
Mar-09	0.953	0.994	0.922	0.948	0.914
Jun-09	0.971	0.906	0.974	0.988	0.888
Sep-09	0.997	0.994	0.960	0.980	0.992
Dec-09	1.000	0.983	1.000	1.000	0.991
Average	0.899	0.870	0.853	0.887	0.903
Range	0.72 - 1.00	0.48 - 1.00	0.69 - 1.00	0.79 - 1.00	0.71 - 1.00

b) Total Operating Costs to Total Gross Operating Profit

Total operating costs refers to the sum of total personnel expenses and other administrative expenses, excluding provision for loan losses and bad debts. Total gross operating profit refers to the sum of total net interest income and fee-based income less total operating costs.

Table 6

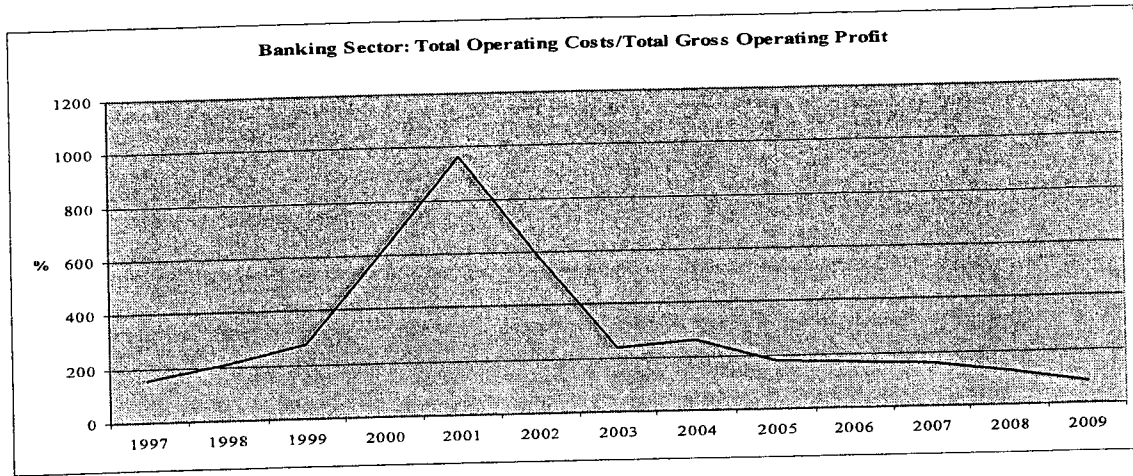
Data used for the Efficiency Indicators Graphs (in G\$ Millions)

Year	Average Total Assets (ATA)	% Δ in ATA	Total Operating Cost (TOC)	Total Gross Operating Profit (TGOP)	% Δ in TGOP	TOC/TGOP (%)	TOC/ATA (%)
1997	12,756	-	2,732	1,750		156	21.4
1998	14,356	12.5	3,134	1,496	-14.5	209	21.8
1999	14,875	3.6	3,600	1,314	-12.2	274	24.2
2000	16,821	13.1	3,813	621	-52.7	614	22.7
2001	17,774	5.7	4,168	434	-30.2	961	23.5
2002	19,292	8.5	4,385	750	72.9	585	22.7
2003	22,499	16.6	4,058	1,722	129.6	236	18.0
2004	24,461	8.7	4,669	1,774	3.0	263	19.1
2005	27,121	10.9	4,837	2,668	50.4	181	17.8
2006	30,036	10.7	5,514	3,230	21.1	171	18.4
2007	33,996	13.2	6,385	3,997	23.7	160	18.8
2008	38,772	14.0	6,430	5,068	26.8	127	16.6
2009	42,293	9.1	6,595	7,940	56.7	83	15.6

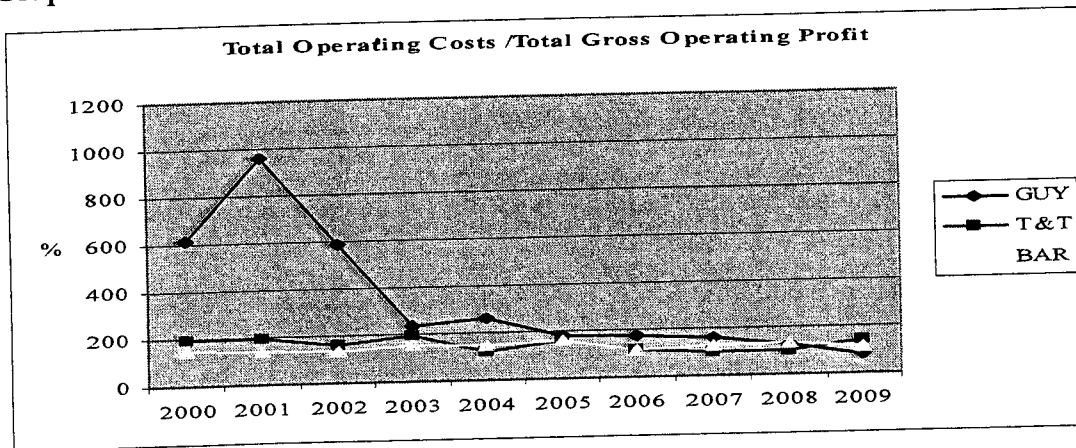
Source: Bank of Guyana

For the period 1997-2009, the ratio of operating costs to gross operating profit for Guyana's banking sector is shown in Graph 1. The ratio showed an upward trend from 1997 to 2001, and there after experienced a declining trend. Based on latter part, it can be concluded that there had been significant improvements in the efficiency of banks in Guyana and thus gains in productivity. The performance of the banking system prior to 2003 can be explained by the inefficiency of the government owned GNCB. Specifically, in 2003, the ratio made a huge plunge due to the faster growth in gross operating profit relative to the operating costs because of the privatization and subsequent closure of GNCB which was a loss making entity. In comparison to other Caribbean countries, Graph 2 shows that during the last few years the Guyanese banking system has achieved similar efficiency as the banking systems in Barbados and Trinidad and Tobago.

Graph 1



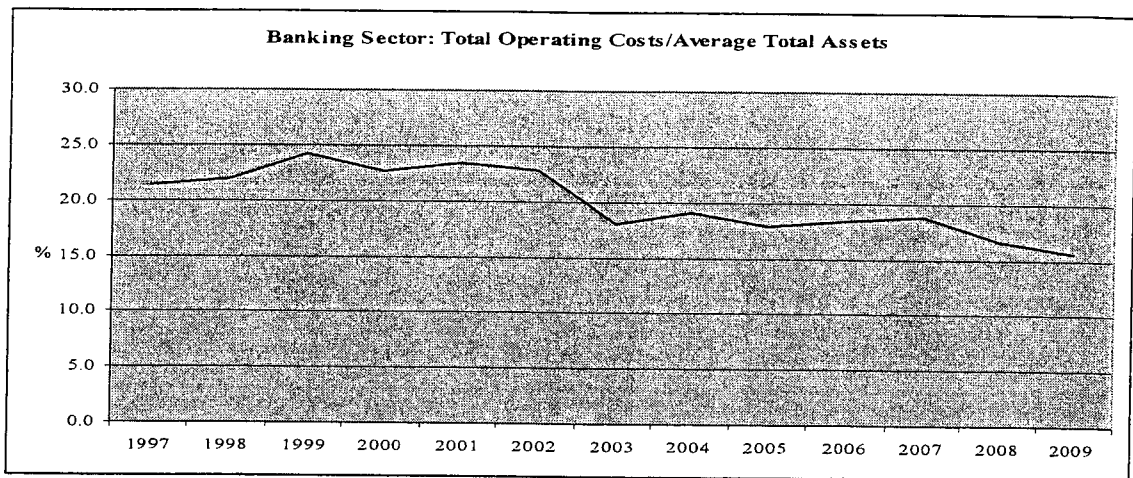
Graph 2



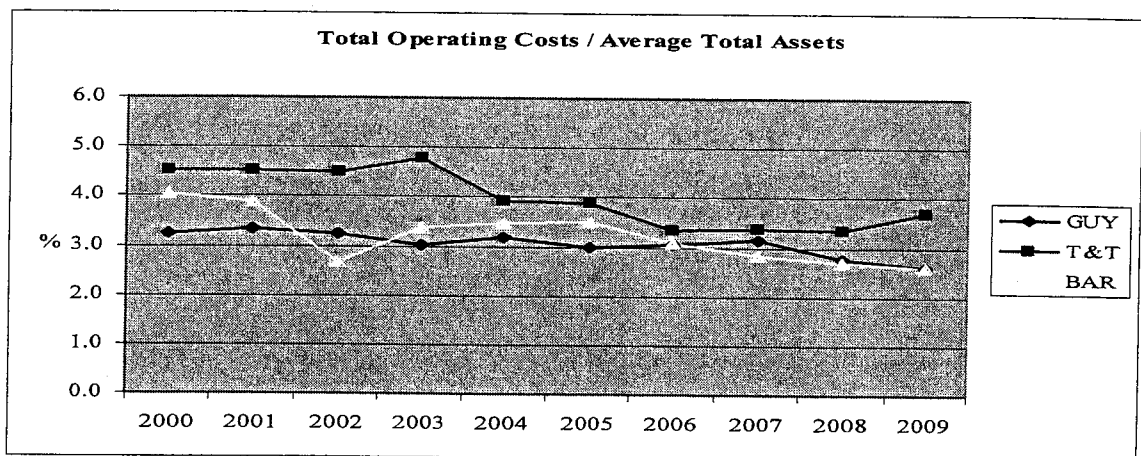
c) Total Operating Costs to Average Total Assets

The efficiency ratio of total operating costs to average total assets of the banking sector is sometimes preferred because the ratio of total operating costs to total gross operating profit can be sensitive to changes in banks' markup over costs due to changes in market structure. The ratio of total operating costs to average total assets is shown in Graph 3. Similar to the trend in Graph 1, the ratio of total operating costs to average total assets also had a falling trend. The decline in the ratio was due to continuous increases in total assets of the banking sector which grew at an average annual growth rate of 10.6 percent relative to total operating costs of 7.9 percent.

Graph 3



Graph 4



Based on this observation, a similar conclusion can be reached that the efficiency of the banking sector in Guyana improved during the years 2002 onwards coinciding with the privatization and closure of GNCB. This improvement of efficiency had helped support growth in the Guyanese economy. Further, when compared with other Caribbean countries, the Guyanese banking system has experienced a consistent level of efficiency similar to that of Barbados and Trinidad and Tobago as shown in Graph 4.

7.0 Conclusions

The financial reforms undertaken in Guyana's banking system have contributed in the building of a market-oriented banking system. The reform measures have achieved most

of the desired results with banks building resilience that is reflected in their high level of capitalization, profitability, and soundness. The divestment of government's financial holdings, privatization of the GNCB and licensing of two additional banks have contributed to increased competitive pressure in the banking system.

The main findings of this paper are that banks in Guyana appear to behave in a noncompetitive manner as measured by the H-Statistics, although large banks have become more competitive as a result of the reform measures embarked upon during the 1990s. This result is consistent with the high profitability of banks and indicates a low level of market contestability. This is reflected in the restrictions on entry of banks in Guyana which are motivated largely by prudential regulations.

The study indicates that small banks are relatively more competitive than large and foreign banks but size is an important determinant of revenues. Moreover, the higher the proportion of loans on banks portfolio, the higher the interest revenues. This suggests that scale matters in the Guyanese banking system and those small banks had to be more competitive to remain in the market. The small banks have done this by offering traditional banking services, operate in local markets, develop close relationships with their customers, and provide more customized products. This level of competitiveness has undoubtedly contributed to the efficiency gains and profitability enjoyed by banks after the year 2002.

The study also shows that the level of efficiency in the banking system has increased since 2002 when the GNCB was privatized. The non-parametric technique of DEA scores shows that as a group, small banks have the highest efficiency score while foreign banks have the lowest efficiency score. The results suggest that since small banks have a larger share of their assets in loans with relatively higher rates of return, other banks can improve their efficiency by finding comparable investment outlets. The two standard indicators of the ratio of the operating costs to operating profit and operating costs to average total assets indicate that since 2002 there has been significant improvement in the

efficiency of commercial banks in Guyana. This suggests that the banking system has help support growth in Guyana.

The monopolistic structure of banks suggests that financial intermediation and deepening may be hampered and therefore, there is room for enhancement of competitive pressure in Guyana's banking system. The frameworks for Guyana's monetary and fiscal policies have supported and encouraged competition and efficiency (Ganga, 2009). The strengthening of the institutional underpinning of a sound financial system via information disclosure, accounting and auditing practices as well as effective implementation of prudential regulations and supervision have also being contributing to a more competitive environment and to support efficiency.

Notwithstanding, competition can be further enhanced by considering appropriate competition policy through the institutional, functional and production approach. The institutional approach is concerned with easing of entry barriers to ensure contestable markets. The functional approach is associated with measures for a level playing field across similar financial products while the production approach encompassed measures to provide for efficiently and equally accessible network services such as information distribution as well as clearing and settlement systems. In addition to competition policies, banks will have to adopt measures to increasingly create costs efficient processes as well as to improve their ability to strengthen asset quality. This can be done by exploiting new technologies and risk management techniques.

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