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**FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH
IN SELECTED CARIBBEAN COUNTRIES**

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Financial Development And Economic Growth
In Selected Caribbean Countries

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The purpose of this paper is to empirically assess the nature of the causal relationship between financial development and economic growth in Barbados(BDS), Jamaica(JA), and Trinidad and Tobago(TT). With the growth in real income and the ratio of broad money supply (M2) to income (GDP) serving as measures of economic growth and financial development, two views stand out concerning the causal link between financial development and economic growth. From studies by Bailey (1971), Friedman (1959), Johnson (1969), Levhari and Patrkin (1968), McKinnon (1973), and Shaw (1973), the view is expressed that financial development is an important determinant of economic growth as it promotes economic efficiency and enhances capital accumulation. While several pieces have explored this view (see Sinai and Stokes 1972, 1989, and McKinnon), studies by Ireland (1994) and others have suggested that causation could just as well run from growth in income to expansion of the financial system. Indeed, based on Patrick (1966), one could hypothesize that as per capita income increases the financial sector should expand as the latter sector attempts to satisfy the additional demands for financial services. Notwithstanding these opposing views of unidirectional causation between financial development and economic growth, other writers have also suggested that the two sectors could be bidirectionally related. For as Lewis (1955) and Patrick suggest, growth in real income could lead to financial development which to the extent that there is a lowering of investor's risk can result in more investment and higher growth in income.

Recognizing that many studies have indicated that a trade oriented policy is beneficial for economic development, another factor, export(E) expansion, is considered along with financial development as being linked to economic growth. For as suggested by Belassa (1978) and others, expansion in exports can lead to higher income to the extent that growth

in exports facilitates improvements in resource allocation and increases in productivity. Of course, as pointed out by other studies, such as Jung and Marshall (1985), there could be causality running from output growth to export expansion as well. Since the omission of relevant variables could bias the results, this study examines the casual relationship among the financial, real, and export sectors, by using a joint trivariate Granger causality model as outlined by Amoateng and Amoako-Adu(1996).

The rest of the paper is organized as follows. Section 2 presents a cross country-comparison of the data on financial development, economic growth, and export performance for Barbados, Jamaica, and Trinidad and Tobago. Section 3 discusses the methodology that is utilized in this study. Section 4 presents and discusses the empirical results derived from estimating the model that was outlined in the previous section. In the final part of the paper, Section 5, the conclusions of the study are presented.

SECTION 2. A CROSS-COUNTRY COMPARISON OF THE DATA ON FINANCIAL DEVELOPMENT, ECONOMIC GROWTH, AND EXPORT PERFORMANCE

The models of money and finance in economic development generally suggest that as real financial development occurs economic growth is accelerated. Using as a measure of financial development, the M2 to GDP ratio, the data suggest that the financial sector is larger in Barbados compared with Jamaica, and Trinidad and Tobago. The data, moreover, indicate that for the past thirty years or so, the size of the real financial sector has steadily grown in Jamaica, and Trinidad and Tobago. As the data in table 1 indicate, the M2 to GDP ratio in the period 1966-70 averages about 0.31 and 0.21 in JA and TT respectively. By the period

1991-93, the M2 to GDP was averaging 0.54 and 0.52 in the countries, JA and TT respectively. For Barbados, the M2/GDP ratio after declining in the 1970's and the early 1980's had returned in 1991-93 quite close to its 1966-70 average value of about 0.63.

For each country, the data on income suggest that there have been periods of substantial growth followed by periods of stagnation and decline. This pattern of economic performance for the three countries is shown in table 2. When the data on economic performance and financial development are viewed together, either over-time or across countries, the relationship between growth in income and financial development appears to be very weak.

Since the real interest rate on saving has an important role in attracting financial resources into the banking, table 3 provides information on the real deposit rate for BDS, JA, and TT. The data suggest that in the 1970's, the real deposit rate was negative in all three countries. Since that time, Barbados has been able to sustain positive real interest rates on a regular basis for most of the years since 1983. In Jamaica, and Trinidad and Tobago, positive real interest rates were achieved for a very short time in the late 1980's, and the early 1990's respectively. As McKinnon observes these consistently negative real interest rates for bank deposit represses the development of the financial sector and hinders economic growth. While no discernable relationship between the real deposit rate and economic growth was revealed for the period 1967 through to 1993 for the three countries. A positive relationship between the two variables was found for the shorter period 1981 to 1993. That relationship for each of the three countries is shown in Figures 1, 2, and 3 respectively.

Apart from financial development, economic growth in these economies has been

frequently linked to export expansion. For the three countries, the scatter diagram on export growth and growth in income reveal a strong positive relationship between the two variables for BDS and TT. For JA, the relationship is however very weak. Figures 4, 5, and 6 highlights the relationship between export growth and growth in income.

SECTION 3: METHODOLOGY

To further explore the relationship between financial development, economic growth and export performance, the following joint trivariate causality model is utilized:

$$(1) \quad Y_t = \alpha_0 + \sum_{i=1}^2 \alpha_i Y_{t-i} + \sum_{i=1}^2 b_i M_{t-i} + \sum_{i=1}^2 \gamma_i X_{t-i} + \mu_t$$

$$(2) \quad M_t = \gamma_0 + \sum_{i=1}^2 \beta_i M_{t-i} + \sum_{i=1}^2 \lambda_i Y_{t-i} + \sum_{i=1}^2 h_i X_{t-i} + \epsilon_t$$

$$(3) \quad X_t = \lambda_0 + \sum_{i=1}^2 q_i X_{t-i} + \sum_{i=1}^2 d_i Y_{t-i} + \sum_{i=1}^2 f_i M_{t-i} + \epsilon_t$$

where Y is the growth rate of real GDP measured as $d \ln(\text{GDP})$, X is the growth rate of real exports measured as $d \ln(E)$ and M is the growth rate of the real financial sector measured as $d \ln(M2/\text{GDP})$.

Equations (1), (2), and (3) tests whether:

1. M and X jointly cause Y after controlling for Y's own lags;
2. Y and X jointly cause M after controlling for M's own lags;
3. Y and M jointly cause X after controlling for X's own lags.

With the issue of the most appropriate statistical technique to employ for determining the

optimal lag length in Granger causality test still not settled, this study follows Amoateng and Amoako-Adu, in the sense that on an *ad hoc* basis two lags are allowed for each variable in equations 1, 2, and 3. To test the various hypotheses associated with the joint trivariate model of causality, the F-value is computed using the following equation:

$$(4) \quad F = (ESS_R - ESS_{UR}) / 2 \div ESS_{UR} / (n - 3m - 1)$$

where ESS_R and ESS_{UR} are the sum of squared residuals for the restricted and unrestricted regressions respectively, n is the total number of observations, m is the number of lagged terms.

Equations 1, 2, and 3 are estimated with annual data for the period 1996-93 for BDS, JA and TT. The data were obtained from a variety of sources. The data on GDP, the broad money supply, the price level, exports, and the deposits rate were obtained from the International Monetary Fund, International Financial Statistics Yearbook 1995. the World Bank, World Tables, various issues, and from regional financial institutions.

SECTION 4: EMPIRICAL RESULTS AND ANALYSIS

Table 4 presents the results from the trivariate analysis in which two variables may jointly affect a third variable. According to those results, there is unidirectional and positive causality between financial development and real GDP growth, in Jamaica after the influence of export growth has been taken account. In Barbados, and Trinidad and Tobago, the evidence suggests that there is unidirectional and positive causality between export growth and real GDP growth after taking into account the influence of growth in the real size of the financial sector. For Jamaica, the evidence also indicates that there is unidirectional and

positive causality running from real GDP growth to growth in real exports after allowing for the influence of growth in the real size of the financial sector. In general, these results would suggest that in the case of BDS and TT either the negative real rate of return on bank deposits and/or external forces have contributed to the independent behavior of the financial and real sectors of the economy. Additionally, these results underscore the importance of exports in promoting economic growth in the economies of Barbados, and Trinidad and Tobago.

As a final exercise and for comparison purposes, the bivariate causality model is used to examine the relationship between M and Y , X , and Y , and X and M . Those results are reported in Table 5. With the exception of the results on the relationship between exports and income for Trinidad and Tobago the results are quite similar to those reported for the joint trivariate model.

SECTION 5: SUMMARY

This study uses a joint trivariate model of causality to assess the relationship among the financial, real, and export sectors of the economy for Barbados, Jamaica, and Trinidad and Tobago. Using data for the period of 1966-1993, there is evidence indicating that in the case of Jamaica financial development has driven activity in the real sector of the economy. In the case of Barbados, and Trinidad and Tobago, the evidence indicates that export growth has driven the expansion of the real sector of the economy. For Jamaica, however, the hypothesis that GDP growth leads to export expansion is supported by the data.

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TABLE 1: THE M2/GDP RATIO FOR BARBADOS,
JAMAICA, AND TRINIDAD AND TOBAGO

<u>PERIOD</u>	<u>BARBADOS</u>	<u>JAMAICA</u>	<u>TRINIDAD AND TOBAGO</u>
1966-70	0.63	0.31	0.21
1971-75	0.46	0.38	0.31
1976-80	0.38	0.37	0.36
1981-85	0.39	0.50	0.51
1986-90	0.48	0.54	0.47
1991-93	0.62	0.54	0.52
1966-93	0.49	0.45	0.43

TABLE 2: THE ANNUAL AVERAGE PERCENT CHANGE
IN REAL GROSS DOMESTIC PRODUCT

<u>PERIOD</u>	<u>BARBADOS</u>	<u>JAMAICA</u>	<u>TRINIDAD AND TOBAGO</u>
1967-70	0.11	0.06	0.03
1971-75	0.002	0.02	0.12
1976-80	0.07	-0.07	0.09
1981-85	-0.007	0.01	-0.07
1896-90	0.03	0.08	-0.05
1991-93	-0.07	-0.01	-0.01

**TABLE 3: THE ANNUAL AVERAGE REAL DEPOSIT RATE
FOR BARBADOS, JAMAICA, AND TRINIDAD AND TOBAGO**

<u>PERIOD</u>	<u>BARBADOS</u>	<u>JAMAICA</u>	<u>TRINIDAD AND TOBAGO</u>
1967-70	-0.08	-0.15	+0.69
1971-75	-0.52	-0.40	-0.35
1976-80	-0.44	-0.46	-0.51
1981-85	+0.04	-0.01	-0.43
1986-90	+0.36	+0.48	-0.31
1991-93	+0.54	-0.27	+0.05

NOTE: The Real Deposit Rate was computed by using the following formula:

$$\text{Real Deposit Rate} = (\text{the deposit rate} - \text{the inflation rate}) / (1 + \text{the inflation rate}).$$

TABLE 4: TRIVARIATE ANALYSIS OF CAUSAL RELATIONSHIP
AMONG M, Y, AND X.

	$M(X) \rightarrow Y$ $X(M) \rightarrow Y$	$M(Y) \rightarrow X$ $Y(M) \rightarrow X$	$Y(X) \rightarrow M$ $X(Y) \rightarrow M$
BARBADOS	0.23 (1.00)	0.30 (1.09)	0.29 (0.21)
	0.25* (3.00)	0.23 (2.00)	0.33 (0.45)
JAMAICA	0.60* (8.07)	0.49 (0.82)	0.31 (0.69)
	0.06 (0.11)	0.49* (3.82)	-0.08 (0.22)
TRINIDAD AND TOBAGO	0.37 (0.83)	0.28 (0.34)	0.20 (0.22)
	0.42* (3.00)	0.08 (1.66)	0.01 (0.21)

NOTES: Figures on top are the sum of the coefficients while those in parentheses are the calculated F - values. The critical F value at the 10% level is 2.62. An asterik, *, indicates that at the 10% level there is a significant causal relationship.

TABLE 5: BIVARIATE CAUSALITY RELATIONSHIP BETWEEN
M AND Y, X AND Y, AND X AND M.

COUNTRY	M → Y Y → M	X → Y Y → X	X → M M → X
	BARBADOS	0.30 (1.26)	0.29* (3.42)
	0.04 (0.03)	-0.01 (1.78)	0.32 (0.88)
JAMAICA	0.56* (9.41)	-0.13 (0.37)	-0.11 (0.80)
	-0.30 (0.63)	0.70* (3.32)	-0.18 (0.22)
TRINIDAD AND TOBAGO	0.05 (0.10)	0.18 (2.07)	0.19 (0.54)
	0.22 (0.59)	0.20 (1.43)	0.13 (0.02)

NOTES: Figures on top are the sum of the coefficients while those in parentheses are the calculated F-values. The critical F-value at the 10% level is 2.59. An asterik, * indicates that at the 10% level there is a significant causal relationship.

FIGURE 1: REAL DEPOSIT RATE AND GDP GROWTH IN BDS 1981-93.

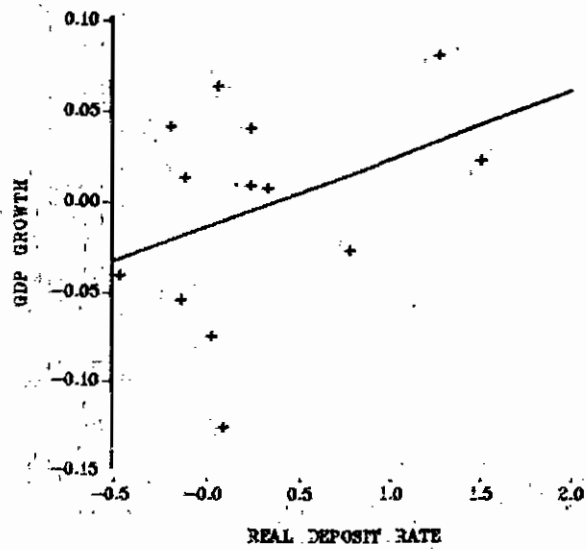


FIGURE 2: REAL DEPOSIT RATE AND GDP GROWTH IN JA 1981-93.

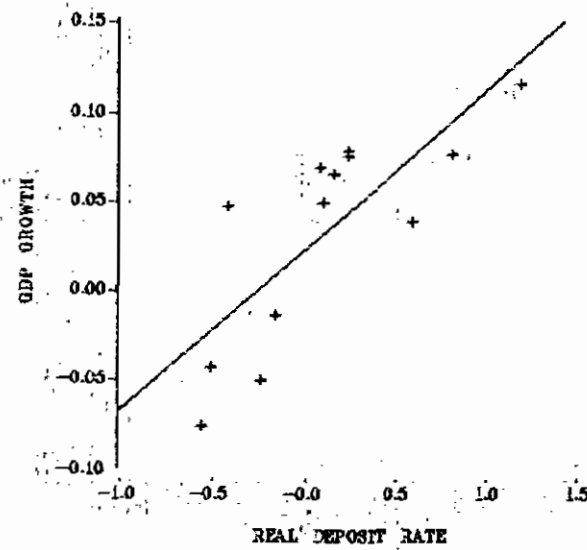


FIGURE 3: REAL DEPOSIT RATE AND GDP GROWTH IN TT 1981-93.

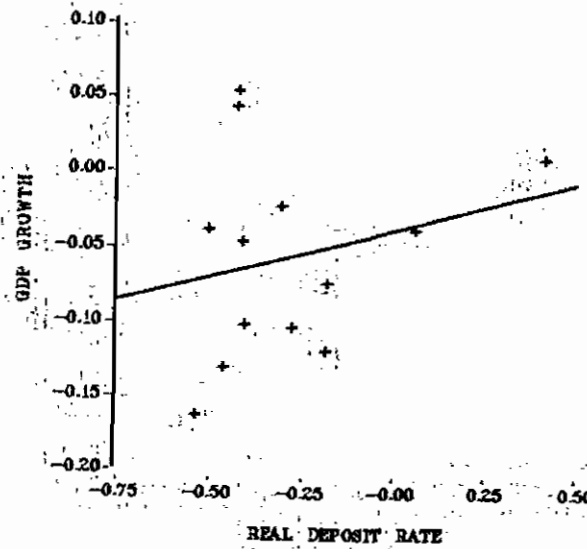


FIGURE 4: EXPORT AND GDP GROWTH IN BDS 1966-93.

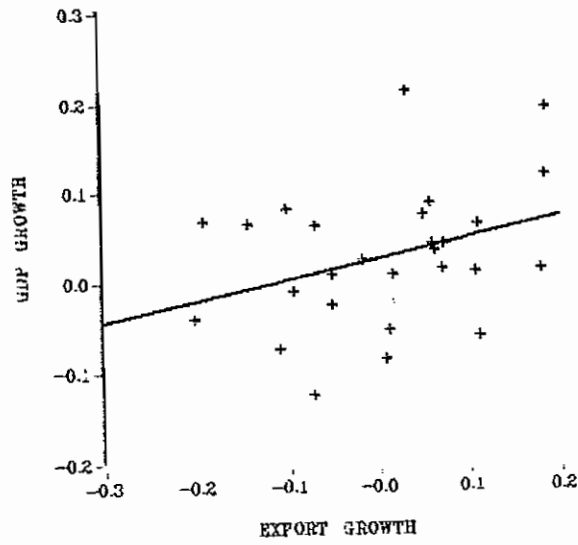


FIGURE 5: EXPORT AND GDP GROWTH IN JA 1966-93.

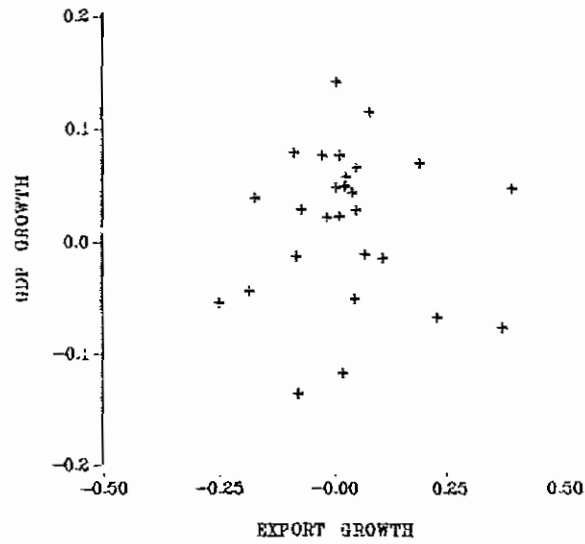


FIGURE 6: EXPORT AND GDP GROWTH IN TT 1966-93.

