

FINANCIAL DEEPENING; DOMESTIC RESOURCE MOBILIZATION
AND ECONOMIC GROWTH: JAMAICA, 1955-1982

by

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Recent writings on the relationship between finance and growth have reversed the Goldsmith-Gurley focus on how growth affects financial development by analysing how finance assists or retards economic growth in less developed countries.¹ There appears to be a theoretical consensus that financial deepening influences the economic growth rate primarily through its effects on the level and efficiency of savings and investment. However, empirical support for the essential propositions although considerable can still benefit from reinforcement for two basic reasons. Much of the earlier evidence has been quasi-historical e.g. McKinnon (1973,1974) Shaw (1973). Also, econometric results have come mainly from time series studies of a few Latin American and Asian countries and from international cross-sections.²

This paper employs an econometric model to analyse the case of Jamaica. In addition to providing further empirical evidence on the financial deepening thesis drawn from a different geographical region, the results are of interest because the relatively long period studied encompasses considerable changes in financial indicators as well as alternating periods of economic growth and slump.

The paper is organised in several sections. The next section establishes the empirical context by outlining some basic trends in Jamaican

economic growth and finance during the 1955-1982 period. Next is the specification of a formal model of financial deepening to be followed by the presentation of the econometric results. The main conclusions are summarised in the final section.

GROWTH AND FINANCE: BASIC TRENDS

The economic growth performance of Jamaica altered significantly after 1973. Between 1955 and 1973, the growth rate of real gross domestic product averaged 5.8 per cent per annum. Between 1974 and 1982, it had become minus 2.4 per cent. Growth rates were also steadier during the first sub-period than during the second, the coefficients of variation being 0.93 and 1.41 respectively. The growth experience reflects savings and investment trends. Jamaican gross investment ratios, i.e. investment divided by real GDP, were on average 23 per cent lower during the economic recession than during the earlier period of rapid growth, and also became somewhat more variable. (Table 1) Furthermore, while the economy continued to supplement domestic savings with foreign savings, the domestic savings ratio decreased by 27 per cent while the foreign savings ratio decreased by 11 per cent. Thus both domestic and foreign resource mobilisation are weaker after 1973.

In less developed countries, financial asset accumulation is a major channel for domestic savings. Broad monetary assets (defined as currency with the public plus deposits in financial institutions) are the predominant financial assets.

TABLE 1: INVESTMENT, GROWTH, SAVINGS AND FINANCE

YEAR	$\frac{I}{Y}$	$\frac{S_D}{Y}$	$\frac{M_3}{Y}$	$\frac{M_1}{M_3}$	$\frac{DC}{Y}$	r_D	i_D	Y
1955	.15	.07	.23	.51	.05	1.9	5.0	482
1957	.25	.18	.24	.50	.07	2.5	0.3	607
1959	.21	.15	.26	.48	.09	2.0	-2.9	627
1961	.19	.19	.23	.42	.18	3.0	-0.9	681
1963	.16	.14	.29	.40	.19	2.9	-0.1	714
1965	.21	.15	.31	.36	.24	3.1	-0.6	771
1967	.23	.16	.35	.33	.34	3.2	-1.8	831
1969	.33	.26	.38	.32	.27	3.6	-1.1	1069
1971	.29	.22	.40	.32	.29	4.5	-3.1	1231
1973	.26	.16	.40	.30	.35	6.4	-9.4	1335
1975	.23	.15	.41	.31	.38	9.3	-11.9	1268
1977	.12	.10	.43	.39	.48	8.8	-8.1	1169
1979	.17	.16	.33	.39	.52	8.3	-14.8	1159
1981	.18	.07	.37	.31	.58	10.0	-11.1	1094

Notes: I is real gross capital formation, S_D is real domestic savings estimated as gross capital formation minus foreign savings; Y is real gross domestic product; M_3 is currency plus demand deposits (=M1) plus time and savings deposits in depository institutions; DC is real monetary sector credit; r_D is nominal rate of interest on commercial bank deposits computed by dividing actual interest paid during the year by average annual deposit balances, except for 1955 to 1964 when quoted deposit rates were utilised; i_D is real deposit rate of interest defined as $r_D - \dot{p}^e$, where \dot{p}^e is the expected rate of inflation generated by the autoregressive model $\dot{p}_t^e = \alpha + \beta \dot{p}_{t-1}$. National income variables are deflated by the implicit GDP deflator (1970=100) and financial variables by the Consumer Price Index (1970=100).

There was a significant increase in the number of depository financial institutions in Jamaica between 1969 and 1974. Nine new commercial banks and four trust companies were established between 1967 and 1973, compared with four banks previously established early in the 20th century, and four banks established between 1959 and 1965. A stock exchange was established in 1969. Also, the flow of government securities and corporate equity substantially expanded. Despite these institutional developments, currency and deposits instruments still predominate in the financial asset portfolios of the private non-financial sector. For instance, flow of funds data reveal that in 1976, broad money comprised 60 per cent of total financial assets held by the household sector. Actuarial and trust funds accounted for 27 per cent.

There seems to be some correspondence between trends in some financial deepening indicators and economic growth. Financial deepening is multi-dimensional. The most widely used indicators are the ratio of real values of financial assets to real income or wealth, the maturity structure of financial instruments, real interest rates, and the ratio of real credit to real income. Table 1 shows that the Jamaican ratio of real money balances to real GDP increased unsteadily from 23 per cent in 1955 to 40 per cent in 1971, remained fairly stable at 40 to 43 per cent for the next six years, and then declined to 31 per cent in 1981 as the recession deepened. On the basis of this monetary velocity indicator, it can be concluded that Jamaica experienced considerable financial deepening between 1953 and 1974, but the process was arrested subsequently. Financial deepening in the first sub-period is also indicated by a pronounced downward trend in liquidity preference. Currency plus demand deposits declined as a proportion of real money balances from 51 per cent in 1955 to 27 per cent in 1974. (Table 1)

The trend in liquidity preference reversed itself after 1974, narrow money rising to 39 per cent of total real money balances by 1979.

According to Shaw (1973), real interest rates are the least ambiguous indicator of financial deepening. Real deposit rates of interest were negative in Jamaica in every year, except two, between 1955 and 1973, and became increasingly negative thereafter. Interest rate policy was inconsistent with monetary equilibrium in the post-1973 period. The nominal money stock expanded at an average annual rate of 18 per cent as the Jamaican government primed the pump in an attempt to maintain the growth of public sector real expenditures in the face of declining fiscal revenues. This rate of monetary expansion was not warranted by the behaviour of real income which was synchronously decreasing. Granted the contraction of real incomes, monetary equilibrium required substantial increase in real deposit rates of interest rather than the decreases which actually occurred.

The last financial deepening indicator to which attention is drawn is the ratio of real credit to real GDP (Table 1). This ratio rose steeply from 5 per cent in 1955 to 66 per cent in 1982. Until 1974 the private sector commanded most of this credit. By 1982, however, the government was the predominant borrower.

This review of a few central trends in growth and financial deepening suggests a not inconsiderable relationship between macro-finance and the economic growth performance of Jamaica during the course of almost three decades. The existence and strength of a causal relationship running from finance to growth is formally pursued in the next two sections of the paper.

A FORMAL MODEL OF FINANCIAL DEEPENING AND GROWTH

A convenient starting point is the open economy balanced growth equation:

$$(1) \quad \dot{Y} = \frac{s_D}{V} + \frac{s_F}{V}$$

where s_D and s_F are the ratios of domestic savings and foreign savings to national income, and V is the incremental capital-output ratio.

Following McKinnon (1974), the domestic savings ratio, s_D , can be represented as the sum of the ratio of incremental real money balances, ΔM , to real income and the ratio of other savings (including self-financed accumulation of physical assets) to real income, \tilde{s} .

Thus

$$(2) \quad s_D = \frac{\Delta M}{Y} + \tilde{s}$$

It is generally posited that $\frac{\Delta M}{Y}$ is qualitatively superior to \tilde{s} , so that a rise in real money balances relative to non-monetary savings constitutes an improvement in the quality of domestic savings. The demand for real money balances is therefore a central behavioral equation in the model. Assume that the demand for real money balances is a positive function of both the level of real income and real deposit rates of interest, i.e.

$$(3) \quad M^D = f(Y, i_D)$$

Then abstracting from all other influences, the domestic savings ratio can be specified as a positive function of the growth rate of income (\dot{Y}), and the real deposit rate of interest.

$$(4) \quad s_D = f(\dot{Y}, i_D)$$

In some situations, particularly those of credit rationing and disequilibrium interest rates, it may be preferable to posit an independent investment ratio function which incorporates financial deepening variables.

Specify for instance:

$$(5) \quad \frac{I}{Y} = f\left(\dot{Y}, i_D, \frac{CR}{Y}\right)$$

+ +/- +

where CR is the stock of real credit to the private productive sector as a proxy for the flow of credit to that sector. CR is expected to be positively signed.⁽⁴⁾ The theoretical relationship between the investment ratio and the deposit rate of interest is ambiguous: a rise in the real deposit rate (positively correlated with the real loan rate) discourages investment demand but encourages the supply of credit.

Equations (3), (4), and (5) constitute the basic structural model. A number of modifications are possible. The specifications of the domestic savings function and the investment function can be amended to incorporate the negative influence of foreign savings on domestic savings and the positive influence of foreign capital on domestic investment.⁽³⁾ Both functions may also be amended to incorporate the influence of expected or actual real rates of return on physical capital. Finally, one may add a variant of Fry's (1982) reduced form growth equation:

$$(6) \quad \dot{Y} = f(\dot{Y}^e, i_D)$$

+ +

where \dot{Y}^e is the expected growth rate of real income.

ECONOMETRIC RESULTS

Annual data for the period 1955 to 1982 were utilised to estimate versions of equations (3) to (6). Estimation was by ordinary least squares with corrections for first and second order autoregression whenever this seemed warranted. The results are presented below:

$$(3a) \ln M^D = -5.456 + 1.631 \ln Y + 3.642 r_D - 1.483 p^e$$

$$\quad \quad \quad (-7.14) \quad (13.78) \quad \quad \quad (2.09) \quad \quad \quad (-2.14)$$

$$\bar{R}^2 = .9413 \quad F = 145.33 \quad D.W. = 1.76 \quad RHO(1) = 0.381$$

$$(4a) \quad s_D = 0.153 + 0.224 \dot{Y} - 0.753 r_D + 0.601 p^e - 0.528 s_F$$

$$\quad \quad \quad (4.13) \quad (2.90) \quad (-1.76) \quad (3.49) \quad (-3.69)$$

$$\bar{R}^2 = 0.5249 \quad F = 8.46 \quad D.W. = 2.22 \quad RHO(1) = 1.325 \quad RHO(2) = -0.490$$

$$(5a) \quad \frac{I}{Y} = 0.164 + 0.228Y - 0.784 r_D + 0.605P^e - 0.037 \frac{DC}{Y} + 0.509 s_F$$

$$\quad \quad \quad (4.11) \quad (2.68) \quad (-1.76) \quad (3.26) \quad (-0.42) \quad (3.16)$$

$$\bar{R}^2 = 0.5296 \quad F = 7.08 \quad D.W. = 2.22 \quad RHO(1) = 1.276 \quad RHO(2) = -0.458$$

$$(6a) \quad \dot{Y} = -0.069 + 1.722 \dot{Y}^e + 2.083 r_D - 1.124 p^e$$

$$\quad \quad \quad (-1.98) \quad (3.91) \quad (2.45) \quad (-3.19)$$

$$\bar{R}^2 = 0.7540 \quad F = 28.58 \quad D.W. = 2.03 \quad RHO(1) = -0.365 \quad RHO(2) = -0.291$$

Some comments on these results are desirable. First of all, it should be noted that a semi-log form was assumed for the money demand equation. Furthermore, the nominal deposit rate of interest and the expected rate of inflation were specified separately in order to distinguish between the positive influence of nominal interest rates and the negative influence of the expected rate of inflation. Greater insight into the complementary policies of liberalization of nominal interest rates and commodity price stability or restraint is possible when the two variables are separately identified.

The regression coefficients in the money demand equation are all statistically significant at the 5 per cent level or better, and the equation is free of serial correlation. The signs of the coefficients correspond with theoretical predictions. In particular, the demand for real money balances responds positively to the nominal rate of interest and negatively to the expected rate of inflation. However, the computed interest rate and inflation rate elasticities are decidedly weak (0.193 and -0.141 respectively).

Although the domestic saving ratio equation is not free of serial correlation, the regression coefficients of the income growth rate, and the expected inflation rate are statistically significant at the one per cent level. The coefficient of the interest rate variable is significant at the 10 per cent level, and is signed contrary to theoretical expectations, suggesting that the regime of low nominal interest rates depressed the savings ratio. It is also interesting to note that the inclusion of the foreign savings variable yields results that confirm a negative association with the domestic savings ratio in the Jamaican economy.

The results for the investment ratio equation are also interesting. The coefficients for income growth, inflation, and foreign savings are statistically significant and correctly signed. The coefficient for the nominal interest rate variable is once more significant at the 10 per cent level, and is negatively signed. Thus it appears that the investment rate responds positively to the rate of growth of GDP, the expected rate of inflation, and the ratio of foreign savings to GDP, but responds negatively

to the nominal interest rate on bank deposits. A further feature of the statistical results is the statistical insignificance of the relationship between the investment ratio and the credit ratio. This result implies that monetary sector credit has no relationship to investment expenditures; a finding that is not altogether surprising, given the prediction of corporate enterprises to utilise bank credit primarily for working capital.

Finally, one notes the statistically significant and strong relationship between the financial deepening indicators (r_D and \dot{P}^e) and the actual growth rate of GDP. In each case, the coefficient, is statistically significant at the 5 per cent level, is correctly signed, and generates a sizeable response elasticity. The interest rate elasticity is 3.154; while the inflation elasticity is -3.051. These two estimates imply that domestic price inflation has approximately nullified the growth-inducing effects of nominal interest rates on bank deposits.

CONCLUSIONS

This paper has examined the financial deepening thesis in an economy which has experienced alternating periods of economic growth and economic recession. It has been shown that considerable financial deepening occurred during the period of rapid real economic growth and moderate price inflation, but the process of financial deepening was arrested or reversed in some significant respects during the economic recession.

Econometric tests for the existence of a strong positive relationship running from financial deepening to domestic savings, investment, and growth leads to the following conclusions. First, interest rate and inflation effects on financial asset accumulation have been weak. Income growth is the major influence on the demand for broad monetary assets. The income elasticity is positive and strong. Second, nominal interest rates have not encouraged either real domestic savings or real capital formation. On the other hand, inflationary expectations appear to have induced higher ratios of savings and investment to gross domestic product. Third, monetary sector credit bore no relationship to the investment ratio. This latter result reflects the continued tradition of commercial bank financing of working capital primarily. Most important, it also is a reflection of the government's large and growing absorption of monetary sector credit for the maintenance of public consumption expenditures. Finally, despite the weak or theoretically unexpected influences established for nominal interest rates and the expected rate of inflation in the structural equations for money demand, domestic savings, and investment, those financial deepening variables do turn out

to have strong and theoretically consistent effects on the economic growth rate. This latter result implies that a more fully elaborated model should be employed for investigating the role of financial deepening in economic growth in this kind of economy.

NOTES

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1. The seminal writings are by McKinnon (1973,1974) and Shaw (1973), but important contributions have been made by Galbis (1977,1979), Fry (1978,1982), Kapur (1967), Mathieson (1980), and Vogel and Buser (1976).
2. For a survey of the literature, see Fry (1982).
3. Dacey (1975) and Leff and Sato (1980) provide recent evidence on these relationships.
4. In LDCs, it is reasonable to assume that credit for working capital is complementary to credit for fixed investment, so that the coefficient of the total credit variable will be positively signed.

REFERENCES

1. Dacey, Douglas (1975): "Foreign Aid, Government Consumption, Savings and Growth in Less Developed Countries".
Economic Journal, 85, 1975.
2. Fry, Maxwell J. (1978): "Money and Capital or Financial Deepening in Economic Development?", Journal of Money Credit and Banking, 10, 1978: 464-475.
3. Fry, Maxwell J. (1982): "Models of Financially Repressed Developing Economies", World Development, 10, 1982: 731-50.
4. Galbis, Vincente (1977): "Financial Intermediation and Economic Growth in Less Developed Countries: A Theoretical Approach", Journal of Development Studies, 13, 1977: 58-72.
5. Galbis, Vincente (1979): "Money, Investment and Growth in Latin America, 1961-1973", Economic Development and Cultural Change, 27, 1979: 523-543.
6. Kapur, Basant K. (1967): "Alternative Stabilization Policies for Less Developed Countries", Journal of Political Economy, 84, 1967: 777-795.
7. Leff, Nathaniel H. and Kazuo Sato (1980): "Macroeconomic Adjustment in Developing Countries: Instability, Short-run Growth, and External Dependency" Review of Economics and Statistics, 62, 1980: 170-179.
8. Mathieson, Donald J. (1980): "Financial Reform and Stabilization Policy in a Developing Economy", Journal of Development Economics, 7, 1980: 359-395.
9. McKinnon, Ronald I. (1973): Money and Capital in Economic Development, (Washington ; D C: The Brookings Institution, 1973).
10. McKinnon, Ronald I (1974): "Money, Growth, and the Propensity to Save: An Iconoclastic View" pp 487-501 in George Horwich and Paul A. Samuelson (eds): Trade, Stability and Macroeconomics (New York: Academic Press, 1974).
11. Shaw, Edward S. (1973): Financial Deepening in Economic Development, (New York: Oxford University Press, 1973).
12. Vogel, Robert C. and Stephen A. Buser (1976): "Inflation, Financial Repression and Capital Formation in Latin America" pp 35-70 in Ronald I. McKinnon (ed) Money and Finance in Economic Growth and Development, (New York: Marcel Dekker, 1976).