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Financial Deepening as a Prerequisite to Investment Growth- The Case of Nepal

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INTRODUCTION

In an important book, Mckinnon (1973) stressed the basic complementarity between money and physical capital wherein money was viewed "as a conduit through which accumulation takes place..."[1]. In a test of the Mckinnon hypothesis, Fry (1978) concluded that one would have to look a long way "down the development ladder ... to some of the worlds least developed countries in a search for complementarity."[2] In this paper, a simple model is presented which is then used to test whether financial performance has made a substantial difference to the investment content of output. In the spirit of Fry's suggestion, the model is applied to the case of Nepal, one of the worlds least developed countries.

The Model

The traditional savings-investment gap approach expresses expost investment I as the sum of ex ante domestic savings S^* and ex ante foreign savings F^*. Over time t:

$$I_t = S_t^* + F_t^* \tag{1}$$

Ex post, where S_t represents realized domestic saving and F_t is realized foreign saving, then:

$$I_t = S_t + F_t \tag{2}$$

so that:

$$S_t + F_t = S_t^* + F_t^* \tag{3}$$

In equation (3), when potential savings are fully utilized and saving is an operational constant, an addition to F_t can improve investment performance. In the Mckinnon hypothesis, however, investment performance also depends upon the effectiveness of the money market in mobilizing savings. Equation (3), therefore, can be broadened to include a monetary aggregate as a determinant of the gap between potential and actual savings.

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Suppose that increments in S^* are some fraction, α, of increments in output income Y and that the proportion of given capital inflows channeled to the domestic capital market is β. In first differences we have:

$$(4) \qquad \Delta I_t = \alpha \Delta Y_t + \beta \Delta F_t$$

where $\Delta S_t^* = \alpha \Delta Y$ and $\Delta F_t^* = \beta \Delta F_t$. In the Mckinnon hypothesis, ΔI_t can vary for given values of ΔY_t and ΔF_t according to variations in money market activity as measured by ΔM_t. The proportion of an increment in M responsible for any improved investment performance can be designated Φ, where $\Delta M_t^* = \Phi \Delta M_t$, and:

$$(5) \qquad \Delta I_t = \alpha \Delta Y_t + \rho \Delta F_t + \Phi \Delta M_t$$

Division through by ΔY_t and the addition of a disturbance term e_t gives:

$$(6) \qquad \Delta I_t / \Delta Y_t = \alpha + \beta(\Delta F_t / \Delta Y_t) + \Phi(\Delta M_t / \Delta Y_t) + e_t$$

where $\Delta M_t / \Delta Y_t$ resembles Mckinnons indicator of financial deepening. In this model the monetary aggregate M is broadly defined since it represents the conduit between savings and investment.

In equation (6) the estimates of α, β, and Φ represent, respectively, the marginal savings rate, the marginal rate of foreign resource use, and the marginal tendency of increments in the money stock to promote investment. An estimate of $\Phi > 0$ would support the view that the economy is financially regressed with the growth of investment constrained by inefficient financial intermediation.

The Results

The application of ordinary least squares (OLS) to equation (6) should be sufficient given that the variables are detrended and descaled by the division of ΔY_t. However, Mckinnon suggests that the demand for money in a developing economy depends in part on the investment content of output because of the "lumpiness" of investment outlays and the incomplete monetization of the economy. In terms of equation (6) this implies that any increment in e_t which directly increases $\Delta I_t / \Delta Y_t$ also causes an increase in $\Delta M_t / \Delta Y_t$. If this is the case then e_t and $\Delta M_t / \Delta Y_t$ are positively correlated and OLS estimates will be inconsistent. To take account of this possibility both OLS and two-stage least squares (2SLS) estimates of equation (6) are presented in the Table 1. The data sources were Economic Survey (Ministry of Finance), various issues, and the International Monetary Fund's International Financial Statistics. The sample period was 1973/74 to 1985/86.

There is little difference between the two sets of results. In each case the coefficients are of a similar magnitude, carry the same sign and are statistically significant at the 1 percent level. The results indicate that domestic savings and financial intermediation have been important constraints on the growth of investment in Nepal. The estimates α and β, respectively, indicate a negative marginal savings rate of the order of 1.0 percent and a marginal rate of foreign resource use of greater than 60.0 percent. At the same time, the estimates of Φ suggest that the marginal tendency of increments in the money stock to promote capital formation was close to 100.0 percent over the sample period. This latter result is less surprising when it is considered in the context of the financial instruments available to mobilize savings for investment purposes. For most of the period bank deposits were the only significant savings instrument for the private sector. The Securities Exchange Centre was not opened until 1976 and although its activities expanded considerably they were concentrated on channelling funds to finance government deficits rather than to raise funds for direct investment.

CONCLUSION

OLS and 2SLS estimates of a simple investment-savings gap approach to the determinants of investment in Nepal suggest that capital formation has benefitted from money market activity that has been financially deepening. This role has been especially important in light of an apparently negative domestic savings rate and substantial recourse to foreign savings. The implication of the results is that measures aimed at raising domestic savings and furthering financial deepening would make an important contribution to raising the investment content of output.

$$\Delta I_t/\Delta Y_t = \alpha + \beta(\Delta F_t\ Y\Delta_t) + \Phi(\Delta M_t/\Delta Y_t) + e_t$$

Table 1

	α	β	Φ	R^2 1/	DW 2/	SE 3/
I. OLS results						
Coefficient	-0.0114	0.6703	0.9756	0.8518	2.1786	0.0065
t-statistic	(3.2401)	(6.1076)	(4.6887)			
II. 2SLQ results						
Coefficient	-0.0126	0.6262	1.0175	0.8736	2.4566	0.0063
t-statistic	(3.1373)	(4.6706)	(4.3887)			

1/ Coefficient of determination adjusted for degrees of freedom.

2/ Durbin-Watson statistic.

3/ Standard Error of the regression.

FOOTNOTES

1. Ronald I. Mackinnon, Money and Capital in Economic Development, The Brookings Institution (Washington D.C., 1973), p. 60.

2. Maxwell J. Fry, "Money and Capital or Financial Deepening in Economic Development ?" Journal of Money, Credit and Banking, Vol. 10, No. 4 (November, 1978), pp. 464-475.

3. The instruments used in the 2SLQ estimate were lagged values of the independent variables, first differences in per capita GNP and, because of their value as policy variables, first differences in the ratio of government expenditure to GNP and in the ratio of the Nepalese rupee/SDR exchange rate to GNP.