Financial Development and Economic Growth in India and South Korea*

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In recent years the role of financial development in the growth of developing countries has drawn considerable attention. Most of this attention can be traced to the works of McKinnon and Shaw. Broadly speaking, two different schools of thought with somewhat different policy prescriptions can be identified, namely, the 'structuralists' school (Goldsmith) and the 'financial repressionists' school (McKinnon; Shaw). The first school argues that a widespread network of financial institutions and a diversified array of financial instruments has a beneficial effect on the saving-investment process and hence, on growth. The 'repressionists' school, on the other hand, maintains that low real interest rates, caused by arbitrarily set ceilings on nominal interest rates and high and variable inflation rates, are the major impediment to financial deepening, capital formation and growth. According to this school, thus, the solution lies in freeing up the interest rates to find their equilibrium levels in a free market environment.

In recent studies I have examined these issues extensively (Gupta, 1984a, 1984b). Those works, however, were based on cross-section time series data on Asian and Latin American countries. The aim of this paper is more specific. Using the same model as developed in those studies, I examine the effects of

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Lagged Endogenous Variables

F1LR	:	one period lagged F1R
F2LR	:	one period lagged F2R
F3LR	:	one period lagged F3R
FSLR	:	one period lagged FSR
RSL	:	one period lagged RS
GCLR	:	one period lagged GCR
GRLR	:	one period lagged GRR
IMPLR	:	one period lagged IMPR

Exogenous Variables

NI	:	nominal interest rate
PE	:	rate of expected inflation
PU	:	rate of unanticipated inflation
IGR	:	government gross fixed investment
ISR	:	change in inventories
XR	:	exports

Since the model used is discussed in detail in my earlier studies (Gupta, 1984a, 1984b), to avoid repetition, only a brief outline is given here. The model consists of a total of fifteen equations. It is divided into four blocks. Block 1 consists of three equations which explain the behavior of the financial sector, that is, the behavior of F1R, F2R, and F3R. These equations capture the essence of the relationship between financial repression and financial deepening. The second block consists of two structural equations and four definitions which specify the role of financial liberalization in determining savings and their structure. The third block discusses the relationship between private investment and financial liberalization as well as the hypothesis of 'complementarity' a lá McKinnon. The final block consists of the remaining definitions and identities.

The data used are annual time series from 1960 to 1981 and, except for PE and PU are taken from Fry and from the various issues of *International Financial Statistics,* IMF. PE and PU are not, of course, observable. They were constructed as follows. A model of saving behavior was estimated for both countries (Gupta, 1984a). As part of the estimation procedure, PE was also calcualted and PU was defined as the difference between the actual and the anticipated rate of inflation (PE). Given the small

Table 1

STRUCTURAL ESTIMATES OF THE MODEL FOR INDIA

1. F1R = 9.829 + 0.117(YDR) - 0.959(VE) + 0.276(F1LR)
   (0.752)* (2.913) (-2.522) (1.769)

   $\bar{R}^2$ = 0.897
   DW = 1.85
   SSE = 1806.38

2. F2R = -86.209 + 0.148(YDR) + 1.602(N1R) + 0.807(F2LR)
   (-1.718) (1.913) (1.388) (5.163)

   + 1.602NI - 1.602PE

   $\bar{R}^2$ = 0.962
   DW = 2.00
   P = -1.01 (-4.04)**

3. F3R = 1.346 - 0.020(YRD) - 2.170(NI) + 0.303(PE)
   (0.491) (2.749) (-2.928) (2.043)

   -0.368(VE) + 0.885(F3LR)
   (-5.035) (6.346)

   $\bar{R}^2$ = 0.974
   DW = 2.45

4. FSR = 0.054(YDR) - 3.107(PE)
   (4.39) (-2.614)

   R^2 = 0.542
   DW = 1.934
   P = 0.111(0.473)

5. RS = 47.058 + 0.838(YDR) - 17.313(NI) + 3.290(PE)
   (1.839) (7.244) (-2.551) (2.022)

   + 0.184(RSL)
   (1.484)

   $\bar{R}^2$ = 0.991
   DW = 2.119
   P = -0.202(-0.797)

Table 2

STRUCTURAL ESTIMATES OF THE MODEL FOR KOREA

1. F1R = -171.47 + 0.034(YDR) - 0.127(NI) + 8.048(PE)
(-1.026) (2.125) (-2.403) (1.884)
+ 0.657(F1LR)
(3.545)
$\bar{R}^2$ = 0.587
DW = 2.110
P = -0.223(-0.886)

2. F2R = -7900.82 + 0.883(YDR) + 450.48(PE) - 179.28(VE)
(-2.035) (3.542) (4.276) (-3.768)
$\bar{R}^2$ = 0.624
DW = 1.613
P = 0.385(1.476)

3. F3R = 0.627(YDR) + 0.042(F3LR)
(7.043) (0.319)
$\bar{R}^2$ = 0.803
DW = 1.729
P = 0.775(5.383)

4. FSR = -964.49 + 0.309(YDR)
(-0.473) (1.863)
$\bar{R}^2$ = 0.127
DW = 2.105
P = -0.732(-2.525)

4b. FSR = 0.244(YDR)
(2.627)
$\bar{R}^2$ = 0.277
DW = 2.082
P = -0.739(-2.612)

5. RS = 957.33 + 0.691(YDR)
(0.469) (4.162)

Table 3

EFFECTS OF NI AND PE*

	Effect of NI		Effect of PE	
	India	S. Korea	India	S. Korea
F1R	(ns)	-(s)	(ns)	+(ms)
F2R	+(ms)	(ns)	-(ms)	+(s)
F3R	-(s)	(ns)	+(ms)	(ns)
FSR	(ns)	(ns)	-(s)	(ns)
RS	-(s)	(ns)	+(ms)	(ns)
IPR	+(ms)	+(ms)	(ns)	-(s)

* Source: Table 1, 2
s: significant at the 5% level.
ms: coefficient greater than its own standard error.
ns: coefficient smaller than its own standard error.

Table 4

STABILITY CONDITIONS OF THE MODEL

India			South Korea		
Eigenvalues	Modulus	Damping Period (years)	Eigenvalues	Modulus	Damping Period (years)
.73582	.73582	1.3590	.06723	.067233	14.874
-.02298	.02298	44.848	.04063	.04063	24.609
.26441	.26441	3.7819	.98899	.98899	1.0111
.10646	.10646	9.3934	.65700	.65700	1.5221
.37600	.37600	2.6596	.04200	.04200	23.810
.80700	.80700	1.2392			
.88500	.88500	1.1299			

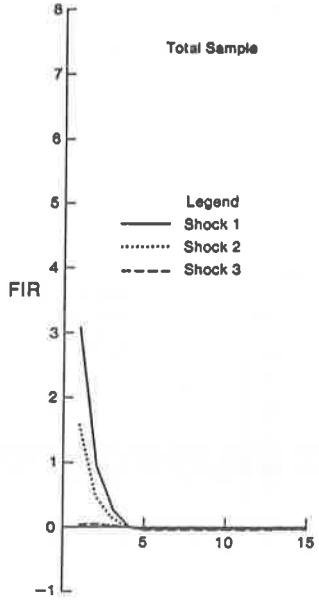
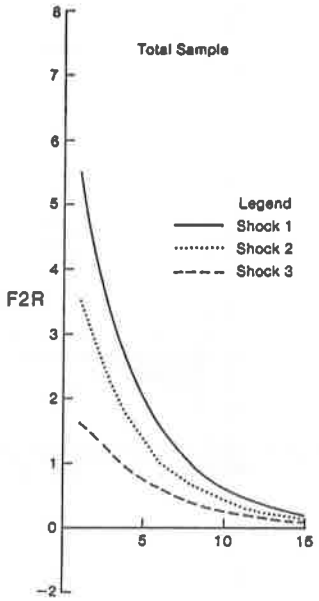


Figure 1



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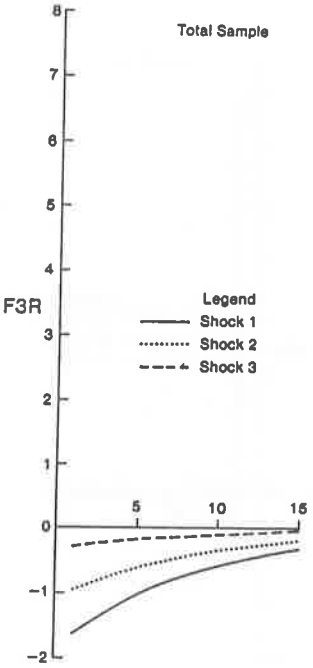

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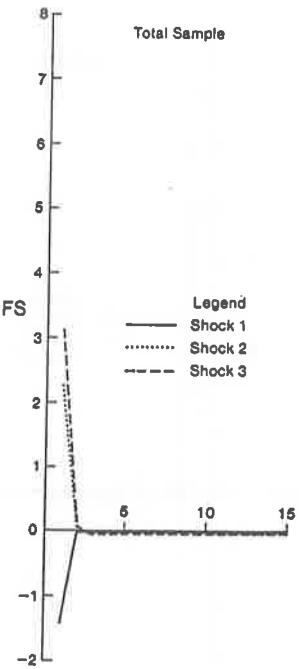

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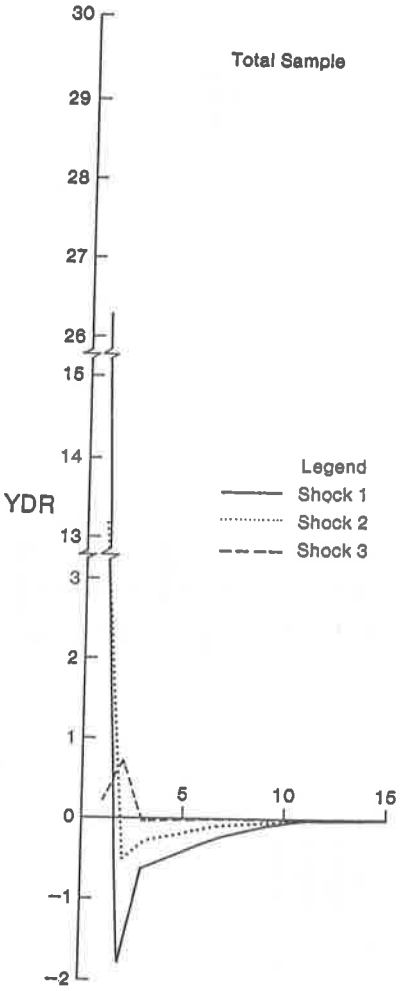

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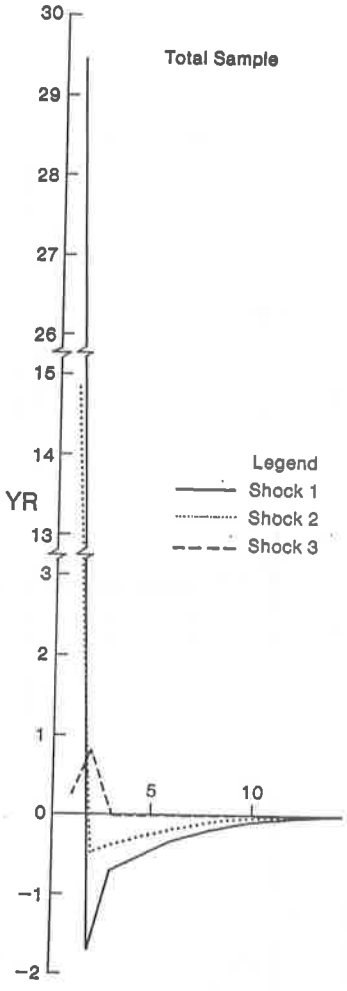

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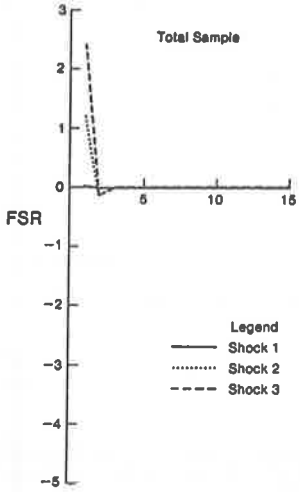

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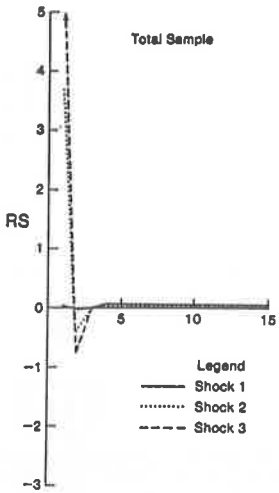

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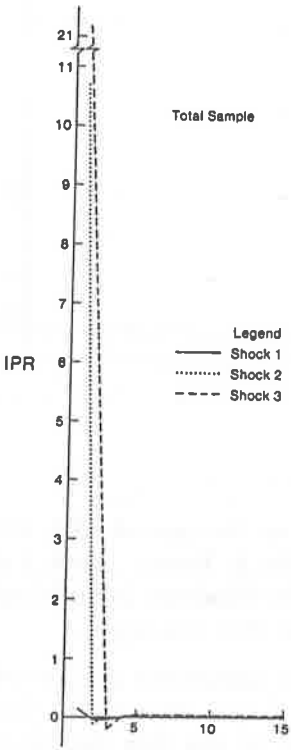

Figure 16

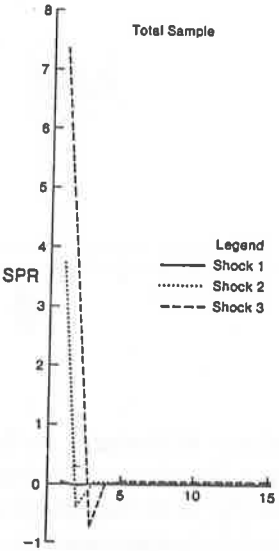

Figure 17

dominates. The positive effect on investment is noteworthy since it would appear to provide some support for the 'complementarity' hypothesis.

SPR: In terms of Figures 7 and 17, we can see that in the first few years, the effect of the three shocks is positive, then becoming negative and finally petering off. However, the negative effect lasts much longer for India than for S. Korea. It should be noted once again that shock 1 dominates the Indian case while shock 3 does for S. Korea.

SNR: Given that government savings do not constitute a major share of SNR, it is dominated by SPR, so that we can see from Figures 8 for India and 18 for S. Korea that the effects of the three shocks on SNR closely parallel those on SPR.

YDR and YR: Finally, we look at the effects on private disposable income and total income. These are given in Figures 9 and 10 for India and 19 and 20 for S. Korea. As would be expected, the two sets of Figures for both countries show parallel movements. Further these movements correspond to those displayed by the effects on gross private investment. The initial effect of the shocks is positive, concentrated in the first two to three years. Shock 1 dominates the Indian case while shock 3 does the S. Korean.

From the above discussion, we can draw a number of conclusions. First, on the whole, shock 1 dominates the effects on the Indian economy while shock 3 the S. Korean. In other words, if financial liberalization is to be used to expedite growth in the two countries, quite different strategies will be needed to achieve a given degree of financial liberalization in the two countries. The prescription recommended by McKinnon and Shaw would appear to be more appropriate for India than for S. Korea which is an interesting finding in view of the fact that originally the McKinnon and Shaw policy was recommended for and applied to, S. Korea. Second, in both cases, the effects of all shocks are concentrated in the few initial years, although there are some differences, as for example, in the case of F3R. Third, for both countries some complementarity is suggested between financial and physical capital, a lá McKinnon, in the initial years of a shock, but then the relationship becomes typically neo-classical. And finally, in both cases, control of inflation as a means of increasing real interest

Table 6

IMPACT AND LONG-TERM MULTIPLIERS FOR SOUTH KOREA

Endogenous Variables	Shock 1		Shock 2		Shock 3	
	Impact (7)	Long-term (8)	Impact (9)	Long-term (10)	Impact (11)	Long-term (12)
F1R	-0.125	-0.364	-3.920	-11.404	-7.715	-22.443
F2R	0.054	0.056	-220.886	-220.666	-441.826	-441.389
F3R	0.038	0.042	3.092	3.390	6.145	6.738
FSR	0.015	0.016	1.203	1.264	2.391	2.512
RS	0.046	0.048	3.723	3.911	7.400	7.773
GCR	0.0003	0.022	0.020	1.768	0.041	3.514
GRR	0.0005	0.001	0.040	0.045	0.079	0.089
IPR	0.132	0.133	10.711	10.764	21.290	21.396
IMPR	0.086	0.106	6.969	8.577	13.852	17.048
SPR	0.046	0.048	3.723	3.911	7.400	7.773
CPR	0.015	0.016	1.208	1.269	2.401	2.522
GSR	0.0002	-0.021	0.019	-1.723	0.038	-3.425
SNR	-0.046	0.027	3.742	2.188	7.438	4.348
YDR	0.061	0.064	4.931	5.180	9.801	10.295
YR	0.061	0.064	4.971	5.224	9.880	10.384

the lagest effect.

FSR, RS, SPR and SNR: From Table 5, the long-term effects of shock 2 suggest that savings in financial and real assets are substitutes for India but complements according to the two other shocks. But regardless, shock 3 dominates. For S. Korea, as shown in Table 6, all three shocks suggest a complementary relationship between the two types of savings with shock 3 being the dominant one. The net effect on private and national savings is highest for shock 1 for India and shock 3 for S. Korea. The quantitative impact is greater in case of S. Korea. But it should be noted that in both cases, the effect is stronger on the composition of savings than on aggregate savings.

IPR: The long-term effects support the hypothesis of complementarity for both countries, with shock 1 and shock 3 having the largest effect for India and S. Korea, respectively. It should be recalled that shock 3 had the most pronounced effects on savings

Korea, the direction is the same except for GSR. The quantitative effect is the sdame except that in a few cases the long-run effects are greater than the impact effects, Note particularly the effects on YDR and YR, a finding which is in conformity with the effect on IPR.

Shock 3: For India, the only exceptions are SPR and SNR, otherwise the direction of the effects of the two multipliers is the same. Quantitatively, all multipliers are very small in magnitude. For S. Korea, the only exception is GSR as far as the direction is concerned. The quantitative magnitudes of the two multipliers are very close with the long-run being marginally greater than the impact ones.

It is clear from this brief discussion that in order to analyze the effects of financial liberalization, the relevance of time horizon should be kept in mind. For it may well be the case that in the short run the effects are minimal, but in the long-run they are substantial, as for example, is the case with effects of all three shocks on F2R and F3R for India.

III. 'Crowding Out' Effects of Public Investment

In a recent paper, Sundrarajan and Thakur examined this issue for India and S. Korea and concluded that for India, the immediate (impact) effect of public investment on private investment was sizeable and negative and that it took nearly a decade for the multiplier to become nonnegative. For S. Korea, on the other hand, the multiplier effect was always positive. The relevant results from our estimates are given in Table 7.

It can be seen from this table that our results are just the opposite of those reported by Sundrarajan and Thakur. At, the

Table 7

'CROWDING OUT' EFFECT OF GOVERNMENT INVESTMENT

Type of Effect	India	South Korea
Impact	0.230	-1.143
Long-Term	0.162	-1.144