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Financial Deepening and Economic Growth in the Asia-Pacific Region

-- A Lesson from Financial Deregulation in Indonesia --

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ABSTRACT : The high economic growth in the Asia-Pacific region has been achieved by intensive investment. One of the prerequisites for intensive investment is financial deepening that establishes an efficient financial system to induce savings and mobilizes them to investors.

This paper first presents the relationship between investment and financial depth that is typically affected by real interest rate, using cross-sectional data on developing Asia-Pacific countries and time-series data on Indonesia, then reviews financial deregulation of Indonesia in the context of the order of deregulation.

The strategic implication of our findings is the importance of financial deepening and the sequencing of liberalization from real sector to financial market, as is proclaimed in McKinnon's treatise published in 1991.

1. Introduction

Since Ronald McKinnon and Edward Shaw advocated financial liberalization and deepening as growth-enhancing economic policies in 1973, there have been numerous theoretical controversies on and empirical tests of the McKinnon-Shaw model regarding a number of developing countries.

In this paper, we first summarize the theoretical framework of the McKinnon-Shaw model, then put it to test using a cross-sectional data on developing Asia-Pacific countries and a time-series data on Indonesia. We also review financial deregulation of Indonesia from the view point of the order of deregulation. The last section discusses policy implications based on the verification of the McKinnon-Shaw hypothesis and the review of financial deregulation of Indonesia.

2. Theoretical Framework

Here we present a theoretical framework to describe the relationship among economic growth, investment and financial depth in connection with real interest rate, applying the essence of the McKinnon-Shaw financial development model.

2-1. Growth Rate and Investment

The Harrod-Domar growth model presents aggregate product Y as a function of capital stock K and average productivity (a) as follows:

$$Y = a * K \quad <1>$$

This equation is valid in a labor-surplus developing economy where any increase in K is presumed to be associated with proportional increase in labor supply.

By differentiating Y with respect to time and dividing it by Y, we have:

$$dY/Y = a * I/Y + K/Y * da, \quad <2>$$

where $dK = I$.

The first term on the right-hand side is the contribution of quantity expansion of investment to the real growth, while the second is that of quality improvement of investment that represents an improvement in the efficiency of investment.

2-2. Investment and Real Interest Rate

Figure 1 describes the essence of the McKinnon-Shaw financial development model.

Savings SS_{gi} at a rate of economic growth g_i is an increasing function of real interest rate, while investment II is a decreasing function. Changes in real interest rate trace the savings function below its equilibrium level, and the investment function above that level.

Financial repression FF , which is administratively fixed interest rate below the equilibrium, limits investment to I_0 that is equal to the amount of savings under FF . Raising the interest rate ceiling from FF to FF' increases savings and investment. Easing the repression also improves the efficiency

of investment by substituting low-yield investments by high-yield ones. In this process, higher economic growth makes the savings function shift rightward to S_{g_j} . The increased quantity and quality of investment, therefore, interact in their positive effects on economic growth.

Financial Sector plays, in this context, the role to intermediate between savers and investors, in such a way as to: (i) mobilize savings to expand credit availability to investors and (ii) provide investors with the rationing device for greater investment efficiency.

2-3. Complementarity between Investment and Money

Under financial repression (Range I of the interest rate as shown in Figure 1), raising interest rate ceiling induces savings and increases investment through expansion of loanable funds. In this sense, money is complement to investment.

The complementarity does not hold in Range II where the interest rate is higher than the market equilibrium. This range is interpreted as a Keynesian regime where money is substitute for investment. Raising interest rate causes holding more monetary asset, instead of productive capital, hence reduced investment.

3. Empirical Analyses

Based on the above framework, we present empirical analyses of the relationship between investment and financial depth

affected by real interest rate, using two sets of data: a cross-sectional data on developing Asia-Pacific countries and a time-series data on Indonesia.

In this section, we may write the McKinnon-Shaw's quantity hypothesis as the causal-effective mechanism of real interest rate (R) to increase investment-GDP ratio (IOY) through the rise of the ratio of M2 to GDP (M2OY), and their quality hypothesis as the one of real interest rate (R) to accelerate incremental output-capital ratio (IOCR).

3-1. Verification of the McKinnon-Shaw Hypothesis Using Cross-Sectional Data on Developing Asia-Pacific Countries

The Asian developing region recorded an economic growth rate of 6.9% in 1980s that well surpassed that of the world average of 2.8%. This high growth was partly brought about by a high investment-GDP ratio of 26.5% which is greater than the world average of 22.1%.

The following section presents the estimates of the above-described relationships between investment and financial depth in two sub-periods (1981-85 and 1986-90) for twelve developing Asia-Pacific countries and areas: Nepal, India, Sri lanka, Indonesia, Philippines, Papua new guinea, Thailand, Malaysia, Korea, Taiwan, Hong kong and Singapore (see Table 1).

(i) Quantity of Investment

Since the difference in development phase may bring about

difference in effect of financial deepening on investment, the samples of countries and areas may be classified into two groups, Group A and B, based on their development phases. Group A consists of Nepal, India, Sri lank, Indonesia, Philippines, Papua new guinea, Thailand and Malaysia, while Group B consists of the Asian NIES of Korea, Taiwan, Hong kong and Singapore. The Asian NIES have in common a high non-agriculture sector share of 90% or more and per capita GDPs of more than 5,000 dollars. These characteristics resemble those of advanced countries.

(a) Complementarity between Investment and Money

$$\text{Group A: IOY} = 9.008 + 0.088*(\text{M2OY}) + 0.161*(\text{NAOY}) \quad (\text{RR}=0.40)$$

(1.6) (2.3)

$$\text{Group B: IOY} = -98.31 - 0.160*(\text{M2OY}) + 1.505*(\text{NAOY}) \quad (\text{RR}=0.59)$$

(-3.3) (3.0)

where NAOY denotes the share of non-agriculture sector to GDP.

(b) Money and Real Interest Rate

$$\text{Group A: M2OY} = 1.771*R + 2.696*(\text{M1OY}) \quad (\text{RR}=0.40)$$

(1.9) (9.5)

where M1OY denotes the ratio of money supply (M1) to GDP.

Looking at the results of (a) and (b), we find that Group A holds a positive correlation between quantity of investment and financial depth, as is implied by the McKinnon-Shaw quantity hypothesis shown in Range I of Figure 1, while Group B reveals a negative one that is compatible with a Keynesian regime shown in Range II. This finding is consistent with the fact that

developing Asia-Pacific countries, other than the Asian NIES, are still in the phase of financial repression.

Figure 2 depicts the relationship between IOY and NAOY-adjusted M2OY, ADM2OY, to show the contrast between Group A and B in investment-money relationship.

(ii) Quality of Investment

Observation of the data and several regression trials did not reveal any significant relationship between quality of investment represented by IOCR and real interest rate. We speculate the reasons of this as follows. IOCR, representing efficiency of investment, depends highly on institutional structure, such as state or public monopoly and government regulations, that is difficult to quantify. In addition, IOCR differs from country to country according to the preparation speed of non-economic infrastructure. Thus, a simple comparison of IOCR among countries hardly lead to significant findings.

It does not follow, however, that there is no correlation between IOCR and real interest rate. Just as Maxwell J. Fry (1988) and Alan Gelb (1989) obtained a positive association in their cross-sectional analyses, we found, in the following analysis of Indonesia, a positive correlation as well.

3-2. Verification of the McKinnon-Shaw Hypothesis Using Time-Series Data on Indonesia

Indonesia has taken a series of deregulation steps on the financial and real sector since the early 1980s, in an effort

to get out of her oil-dependent structure. This policy has contributed to the investment boom and the high economic growth in 1989 and 1990. In the following, we will verify this by estimating the relationship between investment and financial depth in Indonesia using annual data from 1975 to 1990 (See Figure 3).

(i) Quantity of Investment

(a) Complementarity between Investment and Money

$$IOY = 14.27 + 0.485*(M2OY) + 0.070*PXOIL - 3.003*DAF84 \quad (RR=0.93)$$

(11.2) (3.5) (-5.1)

where PXOIL denotes oil price, that has a significant influence on investment-GDP ratio through foreign reserves and fiscal revenue. The dummy variable DAF84 is introduced to deal with the revision of GDP statistics after 1983.

(b) Money and Real Interest Rate

$$M2OY = 33.63 + 0.496*R - 1.021*RES \quad (RR=0.93)$$

(6.8) (-7.0)

where RES denotes the minimum reserve requirement set by the central bank. The reduction of RES has a positive impact on the expansion of M2 through the rise of money multiplier. We will discuss the transition of RES in the later section reviewing financial deregulation in Indonesia.

(ii) Quality of Investment

$$IOCR = -0.331 + 0.005*R + 0.022*(OOY) + (0.030*TIME - 59.34)*DAF86$$

(2.5) (6.7) (3.4) (-3.4)

(RR =0.79)

where OOI denotes the share of oil and gas sector to GDP, TIME the year, and DAF86 the dummy variable for 1986 and after.

OOI is a proxy of a variable to specify development phase. Its highest level implies the primary phase where the economy depends on a single resource-oriented industry, while the lowest level implies the final phase, namely the takeoff where the economy diversifies her industries. A country has to go through intermediate phase of pre-takeoff with declining OOI. When a country remains in the pre-takeoff phase, she faces a decrease in IOCR because this phase requires a high cost of replacing traditional industries with new ones. The above-described positive correlation between IOCR and OOI suggests that Indonesia is still in her pre-takeoff phase. DAF86, the coefficient of which shifts with TIME reflects deregulation of the real sector since 1985.

The positive correlations between IOI and M2OI, between M2OI and R in quantity of investment, and between IOCR and R in quality of investment, reveal a consistent association between investment and financial depth in the Indonesia's economy. These estimates imply that Indonesia is in the process of financial deepening as shown in the McKinnon-Shaw hypothesis.

4. Financial Deregulation in Indonesia

The above estimation using time-series data of Indonesia shows that financial deepening has enhanced the quantity and

quality of investment. This does not mean that Indonesia has completely gotten rid of financial repression. We review the financial deregulation and current issues of financial sector, and discuss sequencing problem of economic liberalization.

4-1. Review of Financial Deregulation

Prior to 1983, Indonesia had a repressed financial system characterized by: (1) interest rate ceilings mostly at levels below inflation rates, (2) high reserve requirements by the central bank, and (3) discretionary credit rationing with subsidized interest rates by monopolistic state-owned banks and the central bank.

Financial deregulation started in 1983 to eliminate interest rate ceilings and reduce the discretion in credit allocation. This has been followed by consecutive deregulation packages: PACTO in 1988 stipulated lowering barriers on entry and branching, and reducing the minimum reserve requirement from 15% to 2%. Package in 1990 and 1991 stipulated various measures to improve banking management and supervision including the prudential regulation on Capital Adequacy Ratio (CAR).

4-2. Remaining Issues in Financial Sector

There still remain the following types of financial repression in Indonesia.

First is the high risk premium resulting from the prevailing

bad loans. The World Bank asserts in its 1993 Country Economic Report on Indonesia that the loan portfolio quality has deteriorated sharply since 1990, with estimates of "classified loans", including three categories of substandard, doubtful and loss, at about 15% of all bank loans in late 1992. The expanding bad loans are causing the spread between lending and deposit rate to widen to around 6% at the end of 1992, reflecting the increase in the risk premium. The unduly hike of the risk premium hampers efficient allocation of credit.

Second is the remaining subsidized credits provided by the central bank. They still occupy 11% of total credits at the end of 1992 although their share continue to fall. The subsidized credits distort the allocation of credit.

Third is the existence of credit rationing for specific borrowers. Banks are required by the government to lend 20% of their portfolio to small borrowers, and foreign and joint venture banks to lend 50% of their portfolio to exporters. These requirements may cause additional problem credits.

Financial deregulation has so far been successful in deposit side in that the removal of interest rate ceilings and the reduction in reserve requirements have contributed to the expansion of loanable funds as shown in a rapid annual growth of M2 at more than 20% since the early 1980s. The financial sector, however, still have the above-mentioned problems in the credit supply. These problems necessitate further improvements in banking management and supervision. The remaining difficulties in credit side, however, can never be tackled without deregulation in the real sector.

4-3. Sequencing Problem of Deregulation

McKinnon argued in his treatise in 1991 that fiscal restructuring should precede financial liberalization in the optimum sequencing of economic liberalization. In this context, Indonesia meets an initial condition of fiscal control because she has not depended on any inflation tax for her budget deficit since 1967. Indonesia does not necessarily secure the controllability of indirect government spending on off-budget balance, however, as implied by the fact that, according to the world bank estimate, the public enterprise sector represents 19% of GDP. It is, therefore, doubtful whether Indonesia's deregulation steps have followed the optimum sequencing in the McKinnon's terminology.

Financial deregulation that is not accompanied with structural reform in real sector, produces the following undesirable repercussions: (1) Under government regulation of productive investment, loanable funds expanded by financial deregulation cause speculation for non-productive assets, thereby destabilizing the economy. (2) Under non-competitive market in real sector, loanable funds expanded by financial deregulation are consumed by inefficient public enterprises and monopolistic groups, thereby causing bad loans to pile up. They also incur unduly high risk premiums or otherwise another money financing. (We can represent this case in Figure 1 by the investment schedule remaining at the FF level of marginal efficiency of

capital with savings increasing according to a shift from FF to FF'.)

Indonesia has experienced bubble phenomena and prevailing bad loans with high risk premiums in banking sector since late 1980s in the expansion process of loanable funds. These sufferings may be interpreted as the above-mentioned repercussions caused by the preceding financial deregulation. Here comes the urgent necessity to accelerate structural reforms of the real sector.

5. Concluding Remarks

We verified the McKinnon-Shaw hypothesis using cross-sectional analyses of developing Asia-Pacific countries and time-series ones of Indonesia separately. The results imply that in developing countries except for such highly industrializing ones as NIES, financial deepening led by high real interest rate is one of the essential factors to boost economic growth through enhancing quantity and quality of investment.

Financial deepening, however, jeopardizes stability and deteriorates efficiency, unless it is accompanied by structural reform of real sector, as Indonesia's experiences show. The order of economic liberalization has a vital importance in deregulation process.

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Figure 1. McKinnon-Shaw Financial Development Model

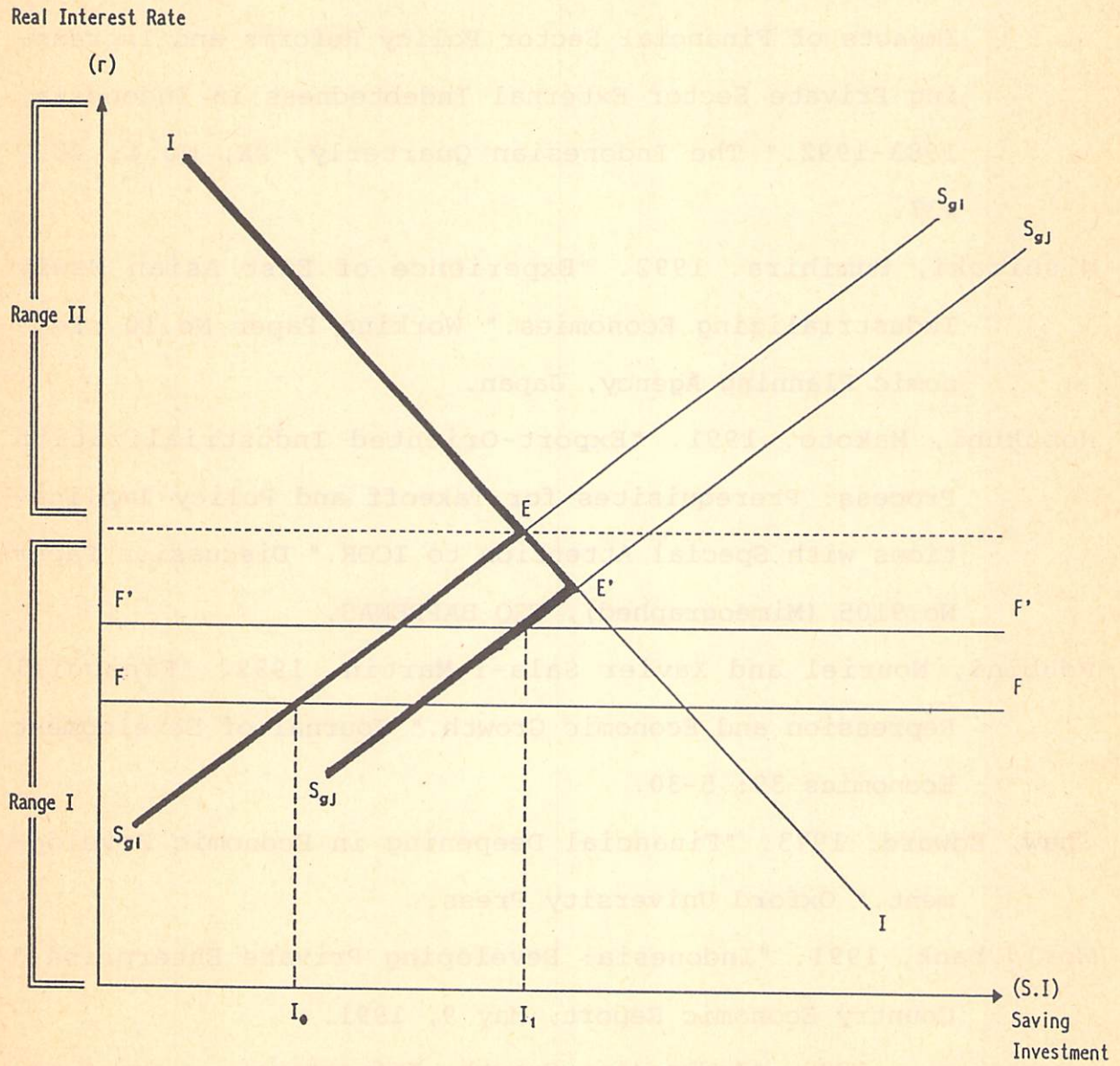


Table 1. Cross-Sectional Data on Developing Asia-Pacific Countries

	PCG90 US\$		IOY %	M2OY %	NAOY %	R %	M1OY %	IOCR
NEPAL	148	1981-85	18.3	25.7	39.8	0.9	13.8	0.65
		1986-90	18.3	32.1	43.0	-1.1	16.0	0.71
INDIA	363	1981-85	19.9	41.6	64.8	-2.9	15.9	0.61
		1986-90	21.4	48.1	68.0	0.2	17.0	0.62
SRI LANKA	458	1981-85	26.1	30.3	74.4	3.7	11.9	0.58
		1986-90	21.7	30.2	77.0	0.3	13.4	0.65
INDONESIA	577	1981-85	22.9	19.9	76.0	3.4	10.6	0.59
		1986-90	26.0	32.3	76.6	10.2	11.2	0.52
PHILIPPINES	730	1981-85	25.4	23.5	76.0	-2.9	7.4	0.65
		1986-90	18.9	25.0	76.9	3.3	7.8	0.64
PAPUA NEW GUIN	838	1981-85	26.4	27.1	66.2	1.7	10.5	0.26
		1986-90	23.0	32.7	70.5	3.4	10.6	0.19
THAILAND	1408	1981-85	24.1	49.2	80.9	6.4	9.1	0.33
		1986-90	27.8	66.4	84.7	5.3	9.8	0.47
MALAYSIA	2283	1981-85	34.0	60.5	78.6	4.5	18.4	0.21
		1986-90	27.2	74.1	79.3	3.1	20.2	0.29
KOREA	5662	1981-85	28.5	35.0	86.1	2.1	9.6	0.47
		1986-90	30.8	38.5	89.7	0.6	9.5	0.45
TAIWAN	7880	1981-85	23.3	84.0	93.1	4.4	28.3	0.41
		1986-90	20.5	137.2	95.0	5.0	48.3	0.48
HONG KONG	12510	1981-85	27.2	116.7	99.4	0.2	15.5	0.44
		1986-90	25.8	192.7	99.6	-1.7	19.9	0.52
SINGAPORE	13125	1981-85	45.7	69.3	99.0	4.0	23.5	0.17
		1986-90	36.1	87.8	99.6	2.5	24.6	0.27

Note: PCG90 ; per capita GDP in 1990
 IOY ; investment-GDP ratio
 M2OY ; the ratio of M2 to GDP
 NAOY ; the share of non-agriculture sector to GDP
 R ; real interest rate
 M1OY ; the ratio of M1 to GDP
 IOCR ; incremental output-capital ratio

Source: Asian Development Bank. 1992. "Key Indicators of Developing Asian and Pacific Countries"

Figure 2-1. Positive Correlation between Investment and Money
(Group A)

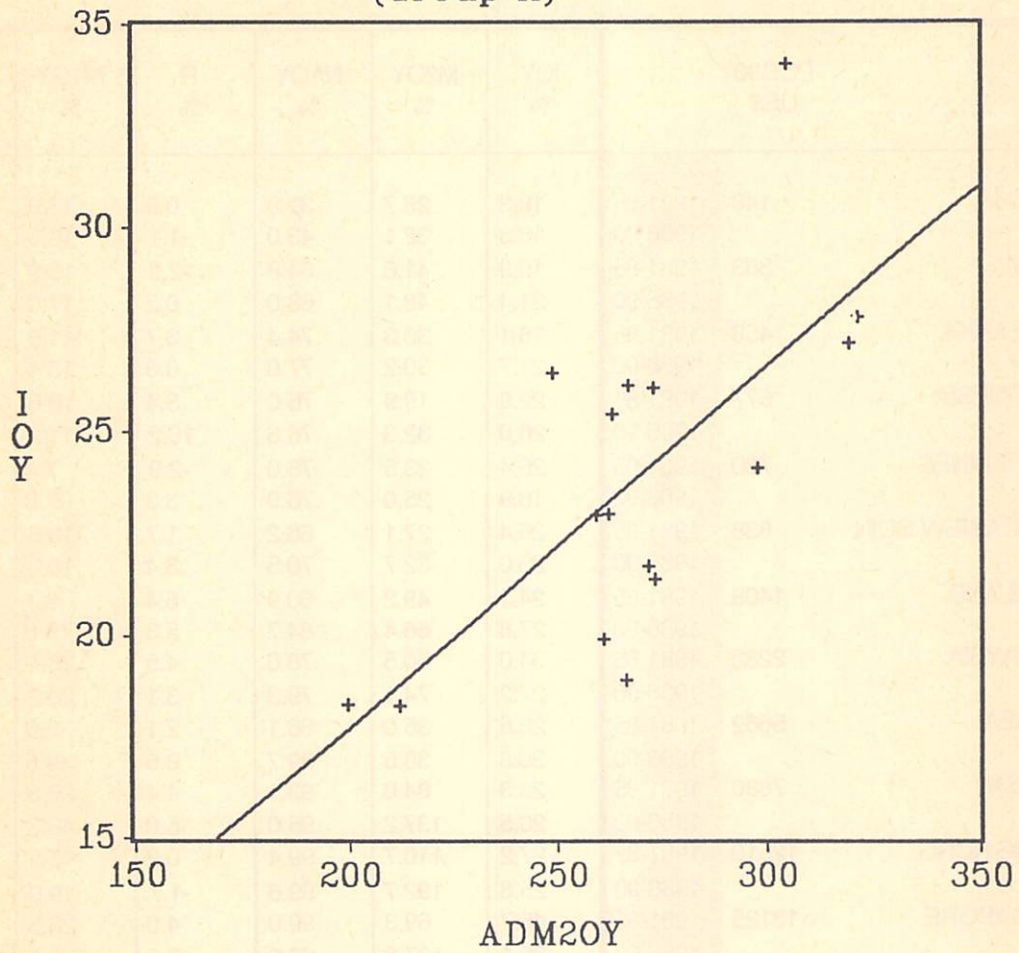


Figure 2-2. Negative Correlation between Investment and Money
(Group B)

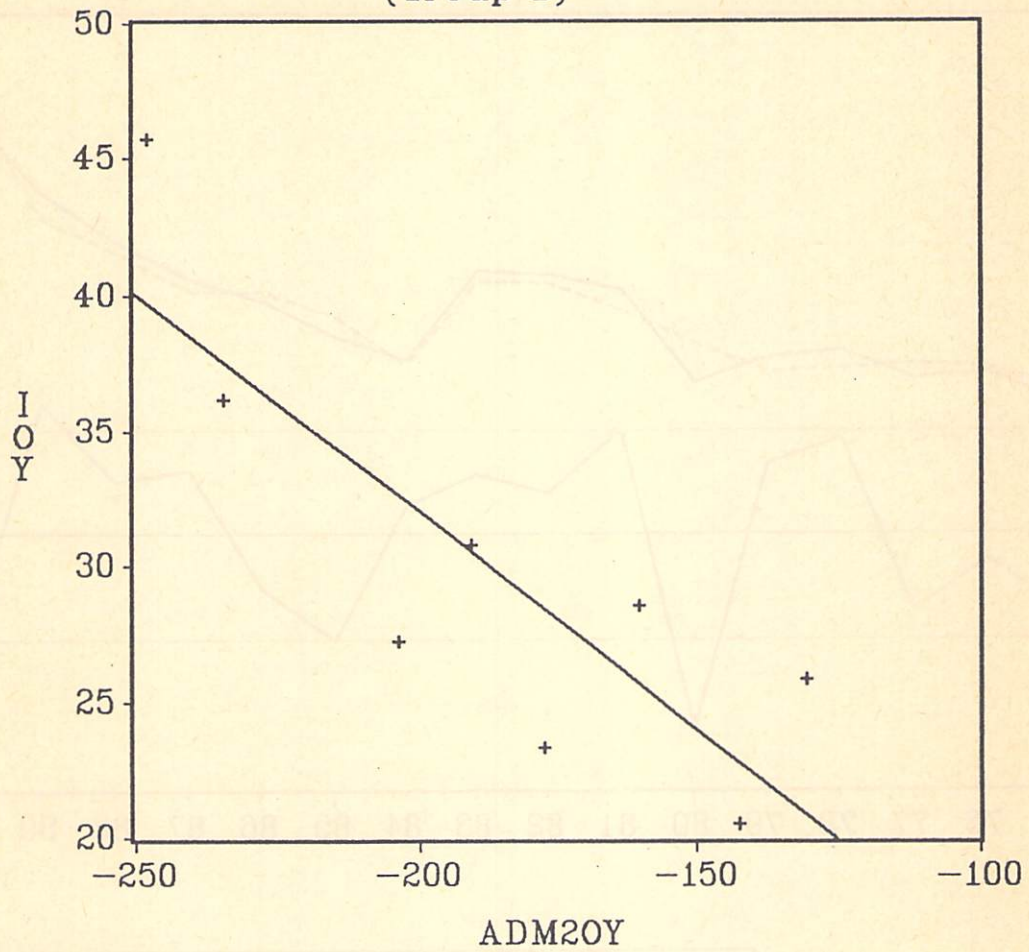


Figure 3-1. Correlation between Investment and Money

$$IOY = F(M2OY, PXOIL, DAF84)$$

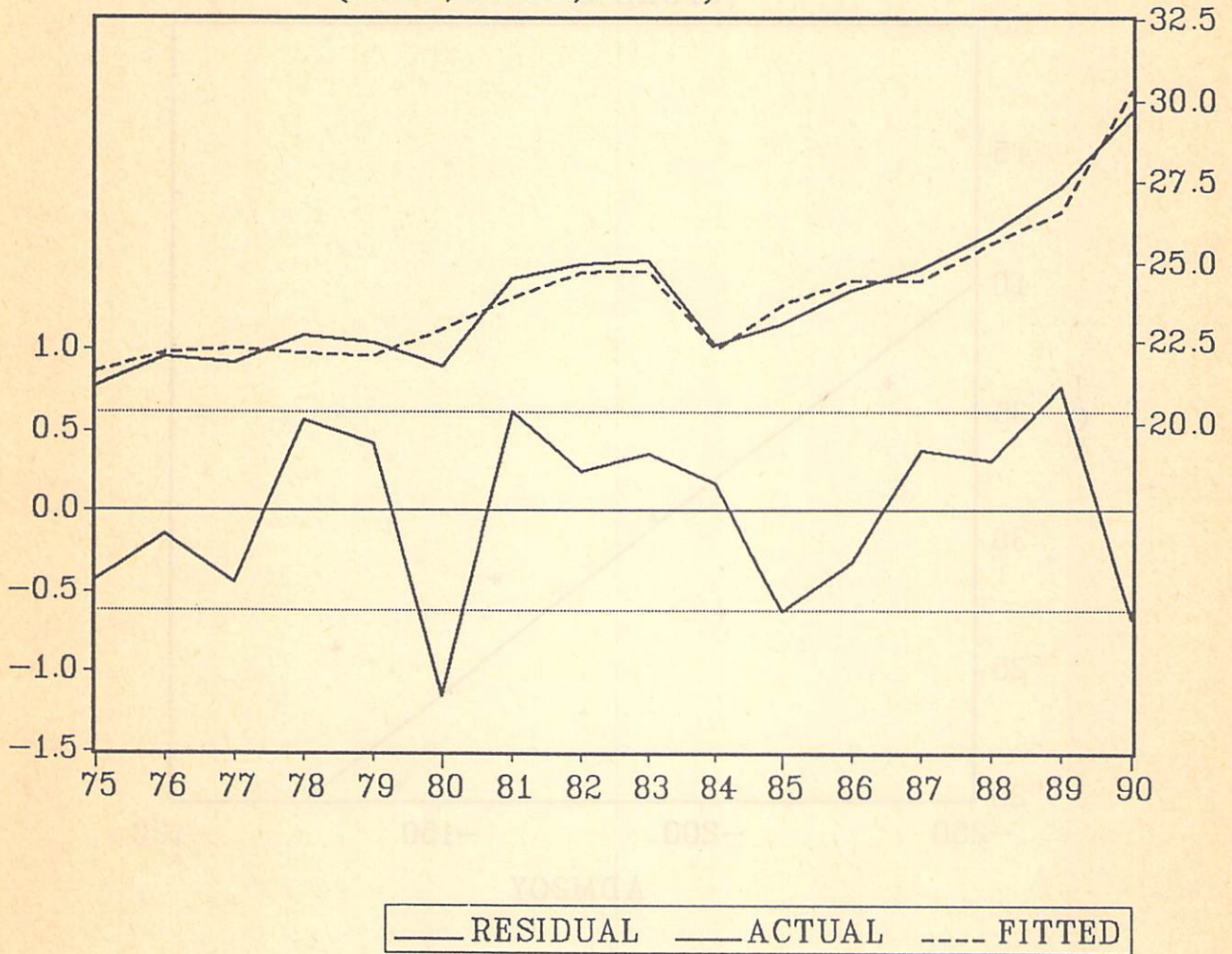


Figure 3-2. Correlation between Money and Real Interest Rate
 $M20Y = F(R,RR)$

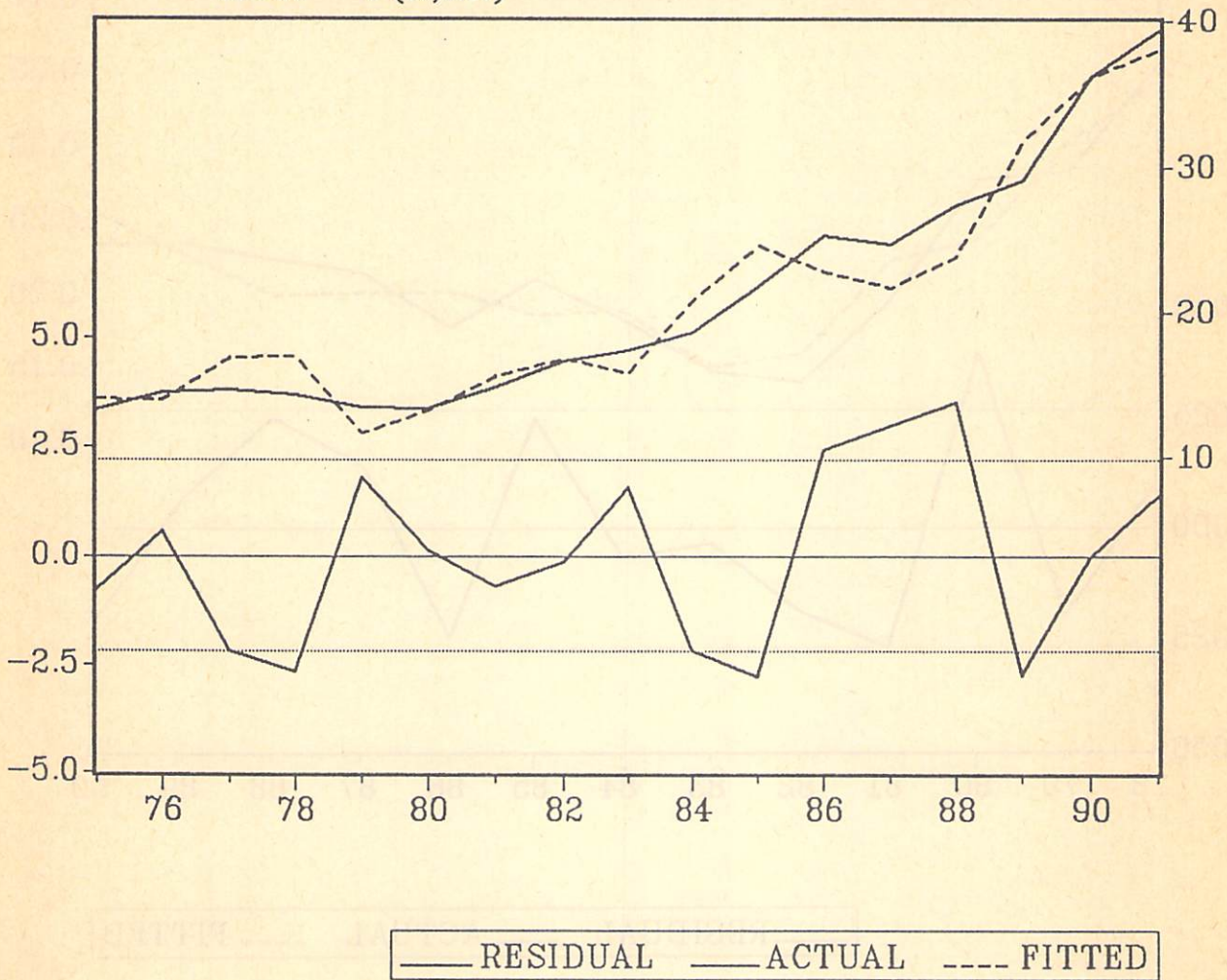
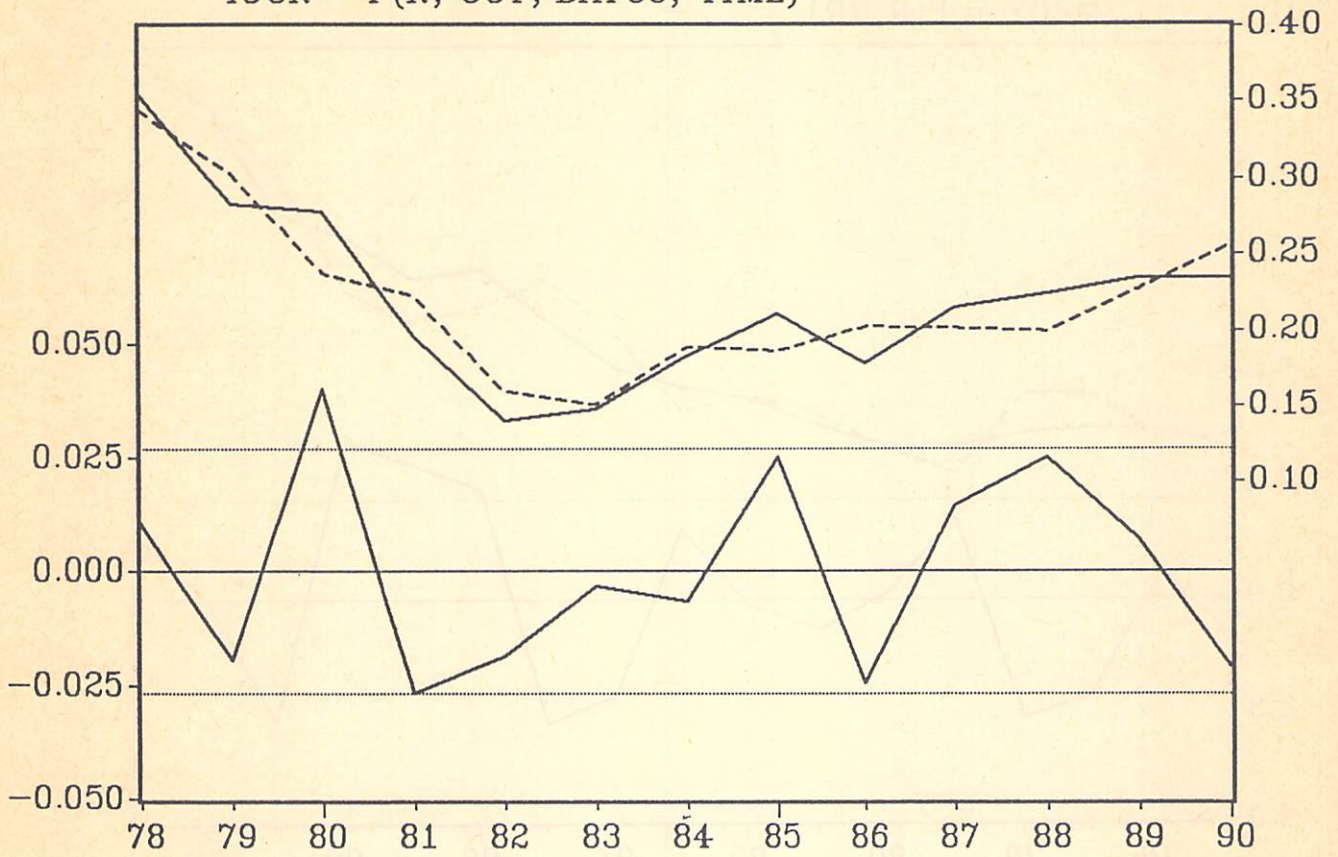


Figure3-3. Correlation between IOCR and Real Interest Rate
 $IOCR = F(R, OY, DAF86, TIME)$



— RESIDUAL — ACTUAL - - - FITTED