A QUEST FOR MONETARY AND FINANCIAL REFORMS IN INDONESIA

Mudrajad Kuncoro*

ABSTRACT

Indonesia in the 1980s provides an unusual and unique example of substantial, albeit gradual, deregulation and rapid development of a domestic financial system. The monetary and financial reforms were part of larger packages of economic reforms designed to stabilize and restructure the economy.

First of all, this paper reviews briefly the framework of financial repression theory. Secondly, It examines the major monetary and financial reforms undertaken by Indonesia during the 1980s. The next section discusses the Indonesian experience in the period financial repression and liberalization. The question may arise: how far the reforms have changed the financial sector. To test whether financial reforms influence the real economy, the last section will investigate the effect of financial liberalization on Inflation and economic growth.

The empirical investigations find that the positive relationship between Inflation and economic growth shows an evidence of short-run Phillips curve in Indonesia. The short-run Phillips curve is typical of a modified Phillips curve with the credit-availability effect added. The study also Indicates that the financial deregulation, triggering a period of positive real interest rates, has statistically affect the economic growth profoundly. Yet, the real deposit rates of interest does not Influence the growth of real GDP significantly.

The question whether financial sector played an important role in the economy has become a primary topic discussion among economists since the 1970s. Some argue that financial development does not affect economic development, by saying, "Finance does not matter". On the contrary, others believe that financial development can play an essential role in the economic

* I am grateful to Dr.Insukiridro who has given valuable and constructive comments on ealier version of this paper.

development. The last believes that "finance matters". Its supporters argued that the lack of a developed financial system restrains economic growth and, hence, government policy should be directed towards encouraging the growth of the financial system. This can be attained by giving provision of suitable financial environment, taking some measures to abolish interest rate ceiling, encouraging saving, and promoting financial deepening.

In this context, it would be interesting to examine the financial development with special reference to Indonesia. There are some reasons scrutinizing the Indonesian experience. First, Indonesia in the 1980s provides an unusual and unique example of substantial, albeit gradual, deregulation and rapid development of a domestic financial system. Second, in Indonesia, monetary and financial reforms were part of larger packages of economic reforms designed to stabilize and restructure the economy.[1] Third, unlike the Latin American counsince it followed a prudent external debt and macroeconomic management. The last is partly explained why Indonesia is not included in the *"Baker Plan"* although its debt outstanding was around US$ 52 millions in 1987.

First of all, I will summarize the framework of financial repression theory. Secondly, I will review the major monetary and financial reforms undertaken by Indonesia during the 1980s. The next section will discuss the Indonesian experience in the period of financial repression and liberalization. It would be interesting to discuss how far the reforms have changed the financial sector. To test whether financial reforms influence the real economy, the last section will investigate the effect of financial liberalization on inflation and economic growth.

Financial Repression Framework: An Overview

Two of the outstanding proponent in the financial development model is McKinnon (1973) and *Shaw* (1973), which focused their analysis on the financial repression.[3] Financial repression starts from the position that capital markets are not efficient or in equilibrium. Countries financially repressed when their financial markets were underdeveloped and prices of financial assets distorted, commonly through a government imposed interest rate ceiling below the market equilibrium

rate.[4] In such a repressed financial system, two major characteristics emerge: (1) real deposit rates of interest are often negative and are difficult to predict when inflation is high and unstable; (2) foreign exchange rates becomes highly uncertain. As a result, saving would be discouraged despite sound investment opportunities, shallow finance would commonly occur, and economic growth would be retarded.

The policy recommendations which spring from an analysis of financial repression are usually concerned with financial liberalization, leading to financial deepening. The advocates believe that financial liberalization can accelerate the rate of economic growth through:[5] First, freeing the interest rates from government controls (interest rate liberalization). Second, reducing reserve requirements of commercial banks. Third, ensuring that the financial system operates competitively under conditions of free entry. Fourth, improving the quality rather than the quantity of investment.

The *McKinnon-Shaw* model has influenced many governments throughout the world by what popularly called financial development, liberalization, or reform. However, recently this measure has been questioned and challenged. It stems from the facts that the financial liberalization in some developing countries did not materialize as expected; they experienced severe financial crash and distress. *Diaz-Alejandro* (1985), for instance, said, "Good-bye financial repression, hello financial crash", on his studies of Argentina, Columbia, Brazil, Mexico and Uruguay. Furthermore, *World Bank* (1989) indicated that some developing countries also experienced severe financial crash and distress in their process of financial reform and liberalization.

In this context, it would be interesting to examine the data collated by the World Bank covering 34 developing countries in Africa, Asia, and Latin America over the period 1974-1985. Table 1 indicates that 34 developing countries over the period 1974-85 experienced different levels of interest rates that can be categorized in 3 groups: positive interest rates, moderately negative interest rates (between 0 and -10 percent), and strongly negative interest rates (below -10 percent). It is fascinating to highlight that the countries with positively interest

rates have considerably more favorable macroeconomic indicators than those with negatively interest rates. The question may arise: what factors caused the better performance of the countries with positive interest rates?

Alan Gelb [6] postulated that there is a chain running from interest rates to financial depth and to saving, and from financial depth to the productivity of investment *(World Bank,* 1989, p.32). In other words, the higher the real interest rates the greater the financial depth and savings. However, the effect of increasing financial depth (i.e., financial assets will accumulate faster than non-financial assets) is more important in improving growth because it will lead to the availability of capital for more productive investment. Furthermore, Fry (1988, ch.6; 1989; 1990) emphasized that the effect of financial liberalization (an increase in the real deposit interest rates) on the quality of investment, or *Incremental Output Capital Ratio* (IOCR), appears to be far stronger than any effect on the quantity of investment (investment/GDP).

Table 1 seems to support *Gelb and* Fry's argument. Comparing the countries with positive interest rates and those with moderately negative interest rates, for illustration, shows that the higher average GDP growth rate (5.6% annually compared with 3.8% annually) in the countries with positive real interest rates is likely due to the higher investment/GDP ratio and the change in GDP/investment '(IOCR). The comparison between countries with positive interest rates and those with strongly negative interest rates also results in the same conclusion.

Table 1, furthermore, indicates the importance of financial deepening. The ratio of M3/GDP is commonly used as an indicator of financial growth. The Table shows clearly that countries with positive interest rates experience substantially higher M3/GDP than those with negative real interest rates. In addition, the increase in the stock of financial assets, as measured by the change in real M3/real saving (dM3/S), may be used as the other indicator of financial deepening. It can be seen from the Table that countries with positive real interest rates have a considerably higher dM3/S than those with negative real interest rates. The phenomena might be consistent with McKinnon and Shaw's financial repression

model. As they asserted, countries are financially repressed in their economy when their financial markets are underdeveloped and prices of financial assets distorted, commonly through a government imposed interest rate ceiling below the market equilibrium rate (Fry, 1988, ch.l; Meier, 1989, pp. 205-216). Typically, saving would be discouraged, despite sound investment opportunities, and economic growth restricted accordingly.

Although the table can obviously describe the role of financial development in the economy (money matters) one should not neglect the country specific characteristics that might be different from the general "trend" (for example see section 3).

The Major Financial and Monetary Reforms in Indonesia

Indonesia is typical of a country experiencing financial repression up to 1983. One of the major indicators of such repressed economies was the widespread prevalence of negative real interest rates. This was largely due to the inflow of oil earning from 1973 to 1982. The major concerns of the monetary authorities during the oil boom period were to control domestic credit expansion and to curb inflation. Inevitably, it led to the imposition of credit ceilings on each banks, maintaining high reserve requirement, and applying selective credit policies.[7] Domestic financial institutions became increasingly focused on state-owned banks serving state-owned enterprises or carrying out government-sponsored credit programs as so called *'agents of development'*. However, with the open foreign capital system, excess funds of banks, businesses, or individuals were easily invested abroad.

Table 1.
Growth rates and other economic indicators for countries with positive, moderately negative, and strongly negative real interest rates, 1974-85 (average annual percentage rates)

Indicator	Positive Real Interest Rates	Moderately Negative Real Interest Rates	Strongly Negative Real Interest Rates
Real interest rates	3.0	-2.4	-13.0
GDP growth rates	5.6	3.8	1.9
M3/GDP	40.3	34.0	30.5
Investment/GDP	26.9	23.2	23.0
Change in GDP/investment	22.7	17.3	6.2
Change in real M3/real saving	16.6	8.2	-0.9
Inflation rate	20.8	23.9	50.3

Source: World Bank (1989, Table 2.3, p.31); Alan Gelb (1989).
Note: Real interest rates were calculated from the following formula: [(1+r/100)/(1+p/100)-1]x100, where r is deposit interest rates and p is the inflation rate. Inflation is the percentage change in the consumer price index (CPI). M3 is currency plus the sum of nonbank deposits of the public at all identified deposit- taking institutions. Real saving is gross domestic savings deflated by the average annual CPI rate.

Since 1983 Indonesia has pursued a policy of financial reforms that constituted an integral element in the government deregulation measures.[8] The objectives of the reforms are to stimulate growth and improve the efficiency of the domestic financial system, within the context of an open foreign exchange system. The reforms involved financial system and monetary policy reforms (see Table 2). The key reforms were aimed at liberalizing interest rates, reducing control on credit, enhancing competition and efficiency in the financial system, strengthening the supervisory framework, and promoting the growth and deepening of financial markets.

From Financial Repression to Financial Liberalization*[1]

Table 3 shows that Indonesia over the period 1968-91 experienced different levels of real interest rates that can be categorized in two periods.- negative interest rates and positive interest rates. In Indonesia, the real interest rates were moderately negative during 1971-82 but have tended to be positive since 1983. Many observers believe that Indonesia is typical of a country experiencing financial repression up to 1983. One of the major indicators of such repressed economies is the widespread prevalence of negative real interest rates

(Fry, 1982, 1988; Meier, 1989, p.212). The question may emerge: Does the change in real interest rates affect economic growth and other key indicators?

Since financial liberalization were launched, real interest rates have been positive and considerably higher than the average real interest rates of the 34 LDCs over 1965-85 surveyed by the World Bank (1989).[9] Arguably, there are some plausible reasons for this: First, the average inflation rates are lower than those of countries; Second, nominal interest rates are higher than those of countries; Third, a rapid expanding in financial intermediation and, hence, financial deepening as a result of financial liberalization. Let us examine each of these reasons.

Indonesia had lower inflation rates than those of the 34 LDCs either in the period of financial repression (1971-82) and liberalization (1983-90): 16.37% and 8%, respectively, in average per annum. It is noteworthy that Indonesia has a substantially higher economic growth in the period of negative real interest rates than that of positive interest rates. Booth (1992, pp. 19-23) points out the most obvious explanation for the decline in growth rates was: (1) the decline in the world price of oil leading to a decline in the income terms of trade and in government revenues; (2) the imposition of OPEC quotas leading to reducing the volume of oil output and value added in mining sector GDP; (3) the generally more depressed state of the world economy in the 1980s; (4) government policy responses to the changing economic climate of the 1980s via cutting salaries and wages of government employees and development expenditures. On the other hand, in the period of positive interest rates, Indonesia has a considerably lower inflation rate than that of negative interest rates. One might conclude there is a positive relationship between economic growth and inflation. Fry (1981) explained that the standard positive relationship between inflation and economic growth, or the short-run Phillips curves, is caused by price exceeding expected price in the short run as inflation accelerates and expected inflation temporarily lags behind.

Table 2.
Financial deregulation in Indonesia

Reforms	Scope
Financial system reforms:	
Deregulation and competition	Deregulation in June 1983 and October 1988. Since 1986, there has been some easing of restrictions on the scope of allowed business activities. In 1988, licensing of branching requirements were relaxed and public enterprises were allowed to place deposits with nonstate banks. Gross assets of the organized financial sector grew by more than fourfold during 1983-89. At end-1989, Bank Indonesia (BI) and deposit money banks (DMBs) held over 95 percent of the total assets of the financial sector.
Financial market development	Money and capital markets expanded, particularly with issuance of central bank and private papers, but remained small relative to financial institutions. In 1988, there was progress toward more uniform tax treatment of various financial assets. A new private stock exchange was licensed in 1988.
Management and supervision	In 1988, prudential regulations (lending limits for single borrowers) were strengthened, the components of capital and foreign exchange activities were defined, and capital adequacy requirements were extended to all banks. In 1989, the Bank Supervision Department of BI was expanded and reorganized. The supervision of nonbank financial institutions (NBFIs) was centralized in BI. A Bank Indonesia Supervisory Monitory System (BISMS) was established to recommend corrective measures and sound banking practices, e.g., improving the asset evaluation processes, strengthening capital adequacy requirements, and training supervisory personnel.
Monetary policy reforms:	
Open market operation	Auctions of central bank bills (SBIs) introduced in 1984. Issuance of repurchase agreements (SBPUs) began in 1985. Investments' house (FICORINVEST) created in 1985 to intermediate in money market.
Reserve requirements	Reduced from 15 percent to 2 percent of deposit liabilities in 1988.
Credit controls	Largely lifted as part of the 1983 reforms.
Central bank financing	Liquidity credit facility, subsidizing priority sectors, reformed in 1983. General rediscount facilities introduced in 1984 to complement open market operations.
Liberalization of interest rates	Direct controls removed in 1983.

Source: Tseng and Corker (1991); Kuncoro (1993).

Table 3.
Key indicators during financial repression and liberalization: Indonesia 1971-82, 1983-90 (average annual percentage rates)

Indicator	Year	
	1971-82	1983-90
Real interest rates	-4.07	5.05
GDP growth rates	7.45	5.74
M2/GDP	15.85	28.02
Money multiplier	201.00	422.00
Change in domestic credit	30.36	36.33
National saving/GNP	27.22	29.09
Investment/GNP	21.66	32.17
Change in GDP/investment	34.74	17.46
Inflation rate	16.37	8.00

Source: International Monetary Fund (1992); World Bank (1992); Alan Gelb (1989) for real interest rates.

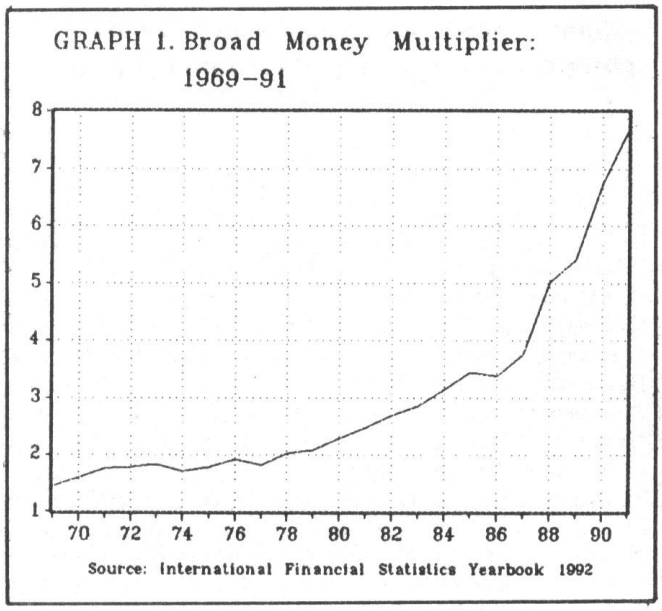
Note: Inflation is the percentage change in the consumer price index (CPI). M2 is M1 (currency plus demand deposit) plus quasi money. Investment is gross capital formation. Money multiplier is M2/reserve money.

Indeed, the Indonesian nominal interest rates were relatively high. To increase the mobilization of domestic savings, since October 1968, the banks had been required to pay high nominal interest rates on time deposits, but to provide credit at much lower rates to priority borrowers. The abundant liquidity from oil boom enabled the monetary authority to: (1) impose qualitative control of bank credit and directing credit to certain priority sectors; (2) subsidize priority borrowers through credit on concessional terms, and the state banks with their *inverted interest structure (Arndt,* 1981, ch. 11-12). The difference between the deposit and lending rates was covered partly by central bank subsidy. Interest rates ceiling were kept below the inflation rates leading to the negative real interest rates during 1971-82. However, the real interest rates have changed dramatically to be positive since the 1983 interest rate liberalization.

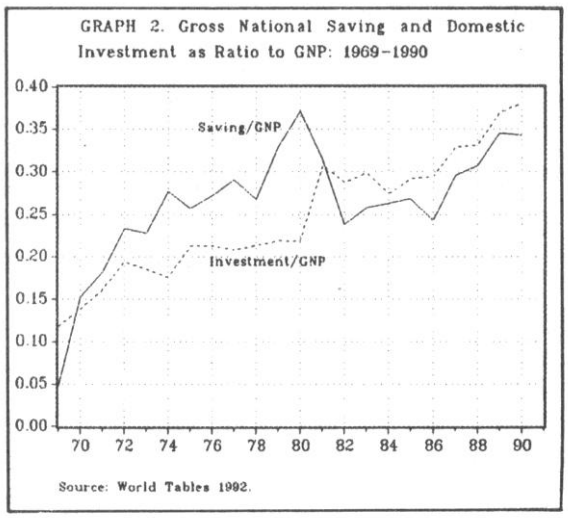
Table 3, furthermore, shows the greater financial depth (M2/GDP) caused by higher interest rates. In Indonesia, the average annual M2/GDP in the two periods is 15.85%, and 28.02% respectively. It indicates the nature and significant role of quasi money in the economy. The removal of interest rates and credit ceilings for state bank operations in June 1983 tended to raise the demand for time deposits dramatically, and in turn increased the quasi money. As a result, M2 increased steadily until 1986. After 1986 the M2 has increased more sharply then that of Ml as a result of the growth of the time and saving deposits as well as of the foreign currency deposits. This possibly stemmed partly from the Rupiah devaluation of 31% in September 1986. The monetary policy reducing reserve requirement from 15% to 2% in October 1988, moreover, seemed to accelerate M2 and Ml considerably.

Does the increase in quasi money (hence the M2) lead to the increase in money multiplier? Graph 1 demonstrates the money multiplier (m) increased from 1.75 in 1971, with steady rise during 1978-85 and sharp increase since 1986, to 6.74 in 1990. This represents that quasi money has a more and more important role in the Indonesian economy. The regression estimation indicates that deregulation in financial sector has significant positive effect on money multiplier, M2, and reserve money, while devaluation policies have no significant influence on those variables.[11] It seems that although devaluation increases real exchange rate, it has no impacts either on reserve money or money supply. This is likely due to the floating exchange rate during the period.

In Indonesia, the oil boom years (1974-82) were marked by a persistently high level of state intervention in credit market. The financial deregulation in 1983 and 1988 has resulted in a diminished role for the central bank (Bank Indonesia) in the allocation of credit with much greater autonomy and discretion being ceded to the commercial banks *(Madntyre,* 1991, pp. 30-32). Table 3 shows there is an upsurge change in total domestic credit, from the average 30.36% to 36.33%. In the financial deregulation period, credit to government sector increased steadily but private sector credit decline slightly.



One of major objective of financial liberalization is to promote domestic savings. The monetarists believe that high real interest rates would stimulate savings and thereby permit high rate of investments. Arguably, the end of financial repression would encourage various types of financial savings. In Indonesia, the national savings seem to correspond positively to the real interest rates. Graph 2 shows the upward trend of the ratio of gross national saving to GNP. The narrow gap between saving and investment partly stemmed from relatively low current account deficits.



One prediction of the model of financial repression is that a rise in deposit rate towards its free market equilibrium levels will increase the availability of private sector domestic credit in real terms and therefore stimulate investment. McKinnon (1992) and Fry (1988) postulate that higher real deposit rates of interest had their major impact through increased quality of investment (as measured by (lOCRs) rather than through increased investment or aggregate saving as share of national income.

The effect of change in real interest rates from negative to positive has caused greater financial deepening, more saving in real assets being transferred to financial saving. However, the greater financial depth does not bring a positive effect on the quality of investment. Table 3 indicates the quality of investment (IOCR) consistently decreased as the real interest rates increased; at the same time the ratio of investment/GNP in Indonesia increased from 21.66%, to 32.17%. In other words, the relatively higher quantities of investments are not followed by an increase in the quality of investment. The table shows a substantial declined in the change in GDP/investment (IOCR), as the indicator of the quality of investment, during 1983-1990 when the real interest rates increased. One may argue that the increase in real deposit rates of interests in Indonesia helped growth only by increasing the quantity of investment but not by improving the quality of investment.

Several factors may account for the decline in the quality of investment in Indonesia. First is the existence of widespread rent-seeking activities. Indonesia up till now have a large number of rent-seekers *(Kunio*, 1988, ch.4; *Robtson*, 1986, pp. 260-6), which partly stemmed from selective credit policy. The second factor is probably due to the foreign indebtedness. The capital productivity of the projects financed by foreign aid is likely to be very low because of a long gestation and payoff period, so that the IOCR decreased *(Rana and Dowling*, 1988). The third factor is the high concentration in banking industry that made the banking system less efficient and productive. This phenomenon is not surprising since the nature of the banking system in Indonesia is dominated by state-owned commercial bank. In addition, Cole and Slade (1991), who have calculated the

Herfindahl index as an indicator of Indonesian banking system concentration ratio, stated that the Herfindahl index moved from 0.118 at the end of 1983 down to 0.098 as of the end of June 1989, and is moving steadily downward. Despite deregulation measure in October 1988 (Pakto 1988) regulates *legal lending limit* to protect bank from using funds to finance their own groups, state-owned bank were excluded from this regulation 5 months later (March 1989). The exclusion is based on a reason that legal lending limit regulations will only give more benefit to the public who have access to the bank, while the majority of the public have low access to the bank, for example farmers. Therefore, state-owned banks, as 'agents of development', should give credit for those low productive activities, for those who have low access to the bank.

Financial Sector Reforms

Deregulation measures have changed the structure of banking industry in Indonesia. Although the Indonesian financial system is still heavily dominated by the banking sector, deregulation of the banking sector, as illustrated by Table 2, has reduced the role of state banks in the banking sector, in terms of assets, credits, and deposits.

The rapid growth and changing structure of the financial sector, as illustrated by Table 3, can be divided into two periods. At the beginning of the first period (1982-88), the financial system was dominated by banking, particularly by state commercial banks. The important of private commercial banks was boosted by the second round of reform in 1988-90 that focused primarily on reducing barriers to entry and special privileges for state banks. Since the lowering of entry barriers, 40 new domestic banks and 15 new joint venture banks have been established. No state banks have been created. Meanwhile, branches of banks have also grown significantly, from 1640 in April 1988 to 2842 in March 1990. The branches are particularly important in providing more even access to credit and other services. Consequently, the last development in financial sector leads to two new phenomena: (1) competition among banks for

loans and deposits has been keen; (2) reducing the costs of borrowers of a loan for any given payment to depositors.

It is noteworthy that deregulation measures has changed the structure of banking industry in Indonesia. During 1983-90, the private banks have flourished. In addition, their role in terms of assets, loans and funds generated has increased substantially (see Table 5), especially due to banking deregulation in June 1983 and October 1988.

The rapid expansion and strong competition created a *new* challenge: to consolidate banks' growth through strengthening the legal, regulatory, and human infrastructure of the financial sector. For financial institutions, the major constraints are: shortages of qualified staff, inadequate internal control, and sheer pace growth and quality of assets. For the monetary authorities, it is not easy to develop framework of legislation, prudential regulation and supervision to deal more effectively with a modern rapidly-growing financial sector.

The Impacts on Inflation and Economic Growth

Many believe that high and persistent inflation is harmful to economic growth. One frequently cited reason why inflation has a negative effect on economic growth is that inflation reduces capital accumulation, one of the key determinants for long-run growth. As far as the Phillips curve is concerned, the studies concerning the relationship between inflation and economic growth constitute a new paradigm, i.e. the post-third generation *of Phillips curve (Soekarno,* 1989). Yet, very few econometric evidence of the short run effects stabilization programs that incorporate features of the *McKinnon-Shaw* financial liberalization strategy exist. Recently, Fry (1981, 1988, 1990) has attempted to set up the models incorporating the interest rate reform to measure the effects of financial liberalization on inflation and the rate of economic growth in Turkey and other selected developing countries.

Table 4.
Structure & Growth of the financial sector, 1982-90

	Numbers in		Assets (Rp. bn)		Assets growth (% per annum)	
	1982	1990	1982	1990	82-88	88-90
Bank Indonesia	1	1	13,707	49,045	18.8	7.2
Deposit money banks	118	166	17,105	135,992	22.4	36.4
State commercial banks	5	5	12,257	64,760	19.7	24.3
Private foreign exchange banks	10	23	1,168	37,311	36.1	64.9
Foreign banks	11	26	1,172	9,777	16.8	55.6
Other commercial banks	60	80	720	10,823	32.2	38.9
Development banks	29	29	1,336	10,247	22.1	35.4
Saving banks	3	3	452	3,074	27.9	12.2
Nonbank financial institutions	13	13	805	4,730	22.3	21.7
Insurance companies	83	117	528	2,566	21.2	30.9
Leasing companies	17	83	114	2,711	45.4	22.3
Other credit institutions	5,808	5,994	86	856	33.4	14.8
All institutions	6,040	6,374	32,345	195,900	21.2	26.4

Source: Bank Indonesia and World Bank (1991)

In this study, I will employ and extend Fry's model to the Indonesian economy during the period 1969-1989. The models can be specified as follows:

$$INF = a1\ M2N + a2\ GR + a3\ DDR \qquad (1)$$

Table 5.
Share of Each Bank Group in Assets, Loans, and Funds: 1988-1991
(as percentage to total)

Group of bank	Assets			Loans			Funds		
	'88	'90	'91	'88	'90	'91	'88	'90	'91
State banks	68.9	63.2	45.2	69.0	66.4	41.5	63.4	52.5	41.5
Private banks	22.3	28.7	37.7	23.8	27.2	40.8	26.4	39.9	49.2
Development banks	3.1	2.4	9.3	2.9	2.6	9.8	2.9	3.7	6.1
Foreign banks	5.7	5.8	7.8	4.3	3.8	7.8	7.3	3.9	3.1

Source: Bank Indonesia, *Indonesian Financial Statistics*, various issues.

where INF is the continuously compounded rate of change in GDP deflator (DFL),M2N is the per capita money supply defined broadly, GR is the continuously compounded rate of growth in real GDP (1985=100), DDR is the change in the expected real deposit rate of interest defined as the change in (DR-INFE), DR is the expected real deposit rate of interest defined as the continuously

compounded 12-month deposit rate of interest minus INFE, INFE is the expected inflation estimated by a far-end constrained second-order polynomial distributed lag, PPE is the ratio of the actual to the expected price level defined as DFL(1+INFE), and DUMMY is the qualitative variable represented the period of financial liberalization, i.e., the period after 1983.

To avoid the "spurious regression" *(Granger and Newbold*, 1974; Granger, 1986; *Engle and Granger*, 1987), a test of unit root, cointegration, and Granger causality will be applied. The MicroTSP version 7.Of has provided all these time series tests. The unit root tests are important in examining the stationary of the time series. The UROOT command performs Augmented Dickey-Fuller (ADF) unit root tests when supplied with the name of a single series, and Engle-Granger cointegration tests when applied with a list of series names *(Hall*, et al, 1990).

The unit root test, as shown by Table 6, indicates the absence of a unit root and allows the acceptance of the hypothesis that INF and GR are stationary. Furthermore, INF is integrated of order 0, 1(0), while GR is integrated of order 1, 1(1). The cointegration test, as presented in Table 7, shows that inflation is cointegrated each other with its explanatory variables (M2N, GR, DDR), and so is the economic growth (GR with PPE, DR, DUMMY).

The Granger Causality test, in addition, demonstrated that there is no feedback mechanism between inflation and each explanatory variable, and between economic growth and each explanatory variable either (see Table 8). The causality test between inflation (INF) and economic growth (GR) indicates that inflation is caused by economic growth but economic growth is not caused by inflation. It implies that the appropriate model is not a simultaneous equation.

Table 6.
UNIT ROOT TESTS

1. UROOT(N,0) INF

Augmented Dickey-Fuller: UROOT(N,0) INF

Dickey-Fuller t-statistic	-4.4931	
MacKinnon critical values:	1%	-2.6889
	5%	-1.9592
	10%	-1.6247

2. UROOT(N,0) D(GR)

Augmented Dickey-Fuller: UROOT(N,0) D(GR)

Dickey-Fuller t-statistic	-5.2523	
MacKinnon critical values:	1%	-2.7158
	5%	-1.9627
	10%	-1.6262

Table 7.
COINTEGRATION TESTS

1. UROOT(N,0) INF M2N GR DDR

Engle-Granger Cointegration Test: UROOT(N,0)

—Cointegrating Vector—

INF	1.000000
M2N	-2.436487
GR	-1.278642
DDR	0.144897

Dickey-Fuller t-statistic	-4.8556	
MacKinnon critical values:	1%	-5.8472
	5%	-4.8278
	10%	-4.3598

2. UROOT(N,0) GR PPE DR DUMMY

Engle-Granger Cointegration Test: UROOT(N,0)

—Cointegrating Vector—

GR	1.000000
PPE	-0.004066
DR	-0.023166
DUMMY	0.027310

Dickey-Fuller t-statistic	-4.5225	
MacKinnon critical values:	1%	-5.8472
	5%	-4.8278
	10%	-4.3598

Table 8.
GRANGER CAUSALITY TEST

1. CAUSALITY BETWEEN INFLATION AND ITS EXPLANATORY VARIABLES:

Null hypothesis:	F-statistic	Probability
INF is not Granger Caused by GR	12.01909	0.0012
GR is not Granger Caused by INF	1.677431	0.2342

Null hypothesis:	F-statistic	Probability
INF is not Granger Caused by M2N	0.458253	0.6410
M2N is not Granger Caused by INF	1.039914	0.3776

Null hypothesis:	F-statistic	Probability
INF is not Granger Caused by DDR	6.827072	0.0145
DDR is not Granger Caused by INF	18.90971	0.0007

2. CAUSALITY BETWEEN ECONOMIC GROWTH AND ITS EXPLANATORY VARIABLES:

Null hypothesis:	F-statistic	Probability
GR is not Granger Caused by PPE	2.492402	0.1197
PPE is not Granger Caused by GR	1.606790	0.2491

Null hypothesis:	F-statistic	Probability
GR is not Granger Caused by DR	2.861100	0.0905
DR is not Granger Caused by GR	2.348170	0.1341

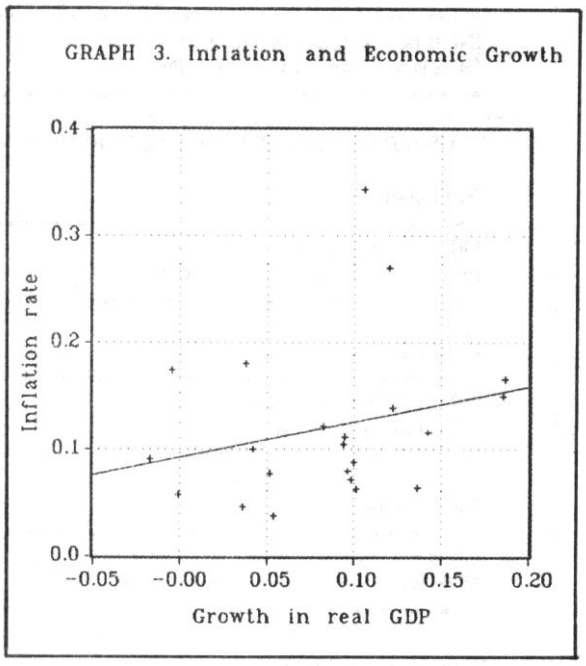
Null hypothesis:	F-statistic	Probability
GR is not Granger Caused by DUMMY	0.977149	0.4771
DUMMY is not Granger Caused by GR	2.630117	0.1250

Note: Number of lag is three.

The empirical findings can be summarized in Table 9 and 10. The coefficient of variables in equation 4 all agree with a priori expectations, except the coefficient of GR. The positive and statistically significance of GR coefficient supports the argument that there is a positive correlation between inflation and economic growth in the short run (Fry, 1981, p.8). However, when we consider the autoregressive and moving average (ARMA) model, as showed in equation 5, this relationship becomes insignificant statistically.

Table 9.
Expected inflation estimated by a far-end constrained second-order polynomial distributed lag

Order t	Expected Inflation Lag Coefficient (INFE) t-1			Sum t-2
2	0.861	0.176	-0.111	0.926
T-stat	(17.81)	(11.21)	(-7.19)	(21.83)



Equation 6 is a typical modified Phillips curve with the credit-availability effect added. The coefficient of PPE, ratio of actual to the expected price level, is positive and statistically very significant. This result also supported Fry's argument (1980; 1981) that an acceleration in nominal money growth raises the inflation rate (equation 4), and so PPE. This, in turn, appears to raise growth in real GDP (equation 6). In other words, it reflects the short-run Phillips curve showing the positive relationship between inflation and growth (see Graph 3). When we incorporate ARMA model, the result is consistent with that argument.

The equation 6 and 7 also suggests that the period of positive interest rate, as indicated by dummy variable, significantly affects the growth of real GDP. However, the effect of the real deposit rate of interest (DR) does not support the argument strongly. We cannot drop this variable because the cointegration test suggests the evident of cointegration. The insignificant effect of DR on economic growth probably stems from: (1) an increase in credit availability used for luxurious consumption purposes (e.g. buy luxurious car or house) rather than investment purposes; (2) the incremental output capital ratio decreased as a result of low productive investment (see table 3); (3) deregulation in the financial sector cannot be absorbed by the productive real sector because of a tight regulation in real sector.

Concluding Remarks

This paper has discussed the nature and impacts of monetary and financial reforms. There is no doubt that the reforms have contributed to financial deepening. In contrast to the earlier studies[11], the paper demonstrates the channel of financial liberalization to economic growth is through quantity of investment rather than quality of investment.

Financial sector reforms have been a central element in the Indonesian deregulation efforts. The removal of interest rate control and credit ceiling, and relaxation of barrier to entry led to accelerated growth, especially by the private sector banks, more diversified products and services, and greater competition and cost efficiency. This implies a more detailed supervision from the monetary authorities.

The empirical investigations find the positive relationship between inflation and economic growth shows an evidence of short-run Phillips curve in Indonesia. The short-run Phillips curve is a typical modified Phillips curve with the credit-availability effect added. The mechanism is: an acceleration in nominal money growth raises the inflation rates, and so the ratio of actual to ecpected price level; in turn, this would raise growth in real GDP.

Table 10.
The estimation of inflation and economic growth function

Equation	OLS Estimation (t values in parentheses)
4	INF = 2.443 M2N + 1.297 GR - 0.145 DDR (1.91) (2.21) (-1.46) R^2 = 0.36 F = 4.88 DW = 2.1
5	INF= 6.91M2N+0.07GR-0.27DDR-0.31 MA(1)+0.13 AR(4) (3.09) (0.10) (-1.48) (-0.78) (0.75) R^2 = 0.66 F = 5.55 DW = 1.88
6	GR = 0.08 PPE - 0.01 DR - 0.03 DUMMY (12.47) (-0.57) (-2.69) R^2 = 0.28 F = 3.36 DW = 2.19
7	GR= 0.09PPE+0.03DR-0.04DUMMY-0.48MA(1)-0.58AR(1) (16.28) 0.83) (-4.84) (-1.49) (-2.63) R^2 = 0.58 F = 4.12 DW = 1.97

The empirical results also indicate that the financial deregulation, embarking on a period of positive real interest rates, has statistically affect the economic growth profoundly. Yet, the real deposit rates of interest does not influence the growth of real GDP significantly. The last is likely due to: (1) an increase in credit availability used for luxurious consumption purposes (e.g. buy luxurious car or house) rather than investment purposes; (2) the incremental output capital ratio decreased as a result of low productive investment; (3) deregulation in the financial sector cannot be absorbed by the productive real sector because of a relatively tight regulation in real sector.

Notes

1. The most remarkable aspect of Indonesia's policy response to oil crisis during 1980s is that it was undertaken voluntary, quickly, and in a balance fashion.The structural adjustment package has been adopted since 1983 included exchange rate management, fiscal, monetary and financial policy

reforms, and trade and other regulatory reforms. Further discussion see, for example, *Djiwandono* (1988); *Nasution* (1991).

2. Woo *and Nasution* (1989) has identified three factors explaining why Indonesia did not experience a debt crisis in 1982-84 as did Mexico and Brazil: (1) a high proportion of Indonesia's external debt was borrowed at fixed concessionary rates; (2) the availability of significant amounts of other tradables prevented Indonesia's debt servicing capacity from collapsing as did Mexico's when the price of oil dropped in early 1982; (3) prudent management of the maturity structure of the debts.
3. Subsequent theoretical refinements and further empirical studies have been conveniently summarized by Fry (1988: ch. 1-3) and *Kitchen* (1986: ch.3).
4. Interest rate ceiling distort the economy in three ways: (1) low deposit rates of interest produce a bias in favour of current consumption and against future consumption, causing saving and investment below their socially optimum levels; (2) potential depositors may engage in relatively low-yielding direct investment instead of depositing money in a bank for subsequent lending to investors with higher-yielding projects; (3) bank borrowers able to obtain all the funds they want at low loan rates will choose relatively capital-intensive projects. Further detailed discussion see Fry (1989).
5. See for example Fry (1988, chapter 2-4); *McKinnon* (1991, chapter 2).
6. *Gelb* (1989) analysed thirty-four LDCs over the period of 1965-1985. Because of the sharp fall in productivity growth throughout the world economy after 1973, Gelb split his sample into two subperiods: 1965-1973 and 1974-1985. As with the ealier IMF study, Gelb first classified countries qualitatively according to whether their real deposit rates of interest were positive, moderately negative, or strongly negative for each subperiod. Then he tabulated average growth in real GDP and indicators of financial performance in each of the three interest rates categories. The results were published in the *World Development Report 1989* and are reproduced here as Table 1.
7. Those are the common features of government intervention in financial sector in both industrial and developing countries (Fry, 1988: ch. 12 and 16).

8. From the microeconomic point of view, deregulation in Indonesia has three meanings. The first is the *lessening barrier to market entry.* Many 'strategic' activities which were formerly the preserve of state are now open for private participation. Although this issue is known as 'liberalization' in economic literature, the Indonesian government avoids using this term since 'liberalization' has a negative connotation in Indonesia's political jargon. The second meaning of deregulation is *to reduce the rules and constraints governing the activities of business sector.* The third aspect of deregulation in Indonesia is *priatizatlon* in the sense of transfer of public ownership to the private sector. Further discussion see Nasution (1991; 1990).
9. For comparison to Table 3 see Table 1. The real interest rates data are taken from *Alan Getb's* study (1989).
10. When we examine the behaviour of money multiplier and money supply in Indonesia during 1971-90, the results are (t values in parentheses):

log(m) =	0.70- 0.08	dev +	0.71 dereg
	(-0.62)		(6.91)
Adj	R^2=0.71	F=23.9	DW=0.71
log(M2)=	7.99- 0.60	dev +	2.55 dereg
	(-1.23)		(6.35)
Adj	R^2=0.67	F=20.32	DW=0.42
log(RM)=	7.28- 0.52	dev +	1.83 dereg
	(-1.3)		(-5.55)
Adj	R^2=0.61	F=15.67	DW=0.32

where m=money multiplier (M2/RM), M2=Ml+quasi money, RM=reserve money, dev=dummy variable for devaluation (i.e. equals to 1 for years 1971, 1978, 1983, 1986; otherwise is zero), dereg=dummy variable for deregulation (i.e. equals to 1 for over the periods 1983-1990; otherwise is zero).

11. Fry (1990) and Me Kfnnon (1991) pointed out that the release of financial repression has a major impacts on economic growth through the increased in the quality of investment (IOCR) rather than the quantity of investment (I/GDP).

References

Amdt, H.W. (1981), **The Indonesian Economy: Collected Papers,** Chopmen Publishers, Singapore.

Booth, Anne (ed.), **The OH Boom and After: Indonesian Economic Policy and Performance in the Soeharto Era,** Oxford University Press, Singapore, 1992.

Cole, David C. and Betty F. Slade (1991), *Development of Money Markets in Indonesia,* **Development Discussion Paper** No. 371, Harvard Institute for International Development, Harvard University, January.

Diaz-Alejandro, Carlos (1985), *"Good-bye Financial Repression, Hello Financial Crash",* **Journal of Development Economics,** 19(1-2), pp. 1-24.

Djiwandono, J. Soedradjad (1988), *"Recent Indonesian Experience in Economic Development",* **The Indonesian Quarterly,** Vol. XVI: 2, pp. 166-189.

Engle, R.F. and C.W.J. Granger (1987), "Cointe-*gration and Error Correction: Representation, Estimation, and Testing,"* **Econometrica,** 55, pp. 251-276.

Maxwell J. (1980), "Money, *Interest, Inflation and Growth in Turkey",* **Journal of Monetary Economics,** 6(4), October, pp. 535-545.

_____(1981), *"Inflation and Economic Growth in Pacific Basin Developing Economies",* **Federal Reserve Bank of San Franscisco Economic Review,** fall, pp. 8-18.

_____(1982), *"Models of Financially Repressed Developing Economies",* **World Development,** 10(9), pp. 731-750.

_____(1988), **Money, Interest, and Banking in Economic Development,** the John Hopkins University Press, Baltimore and London.

_____(1989a), *"Financial Development Models for and Recent Financial Developments in Developing Countries",* **Oxford Review of Economic Policy,** 5(4), Winter, pp. 13-28.

_____(1989b), *"Foreign Debt Instability: an Analysis of National Saving and Domestic Investment Responses to Foreign Debt Accumulation in 28*

Developing Countries", **Journal of International Money and Finance,** 8, pp. 315-44.

Gelb, Alan H. (1989), "Financial *Policies, Growth and Efficiency",* **World Bank Working Paper,** Country Economics Department, no. WPS 202.

_____(1989), **Forecasting in Business and Economics,** 2nd edition, Academic Press Inc, Boston.

Granger, C.W.J. and P. Newbold (1974), "Spurious Regressions in Econometrics", **Journal of Econometrics,** 2(2), pp. 111-120.

Hall, Robert E., Jack Johnson, and David M. Lilien (1990), **MicroTSP User's Manual Version 7.0,** Quantitative Micro Software, California.

Insukindro (1990), **The Short- and Long-Term Determinants of Money and Bank Credit Markets in Indonesia,** University of Essex, Essex, unpublished Ph.D dissertation.

International Monetary Fund (1992), **/nternational Financial Statistics Yearbook 1992,** IMF, Washington DC.

Kitchen, Richard L. (1986), **Finance for the Developing Countries,** John Wiley & Sons, Chicester.

Kuncoro, Mudrajad (1989), *"Dampak Arus Modal Asing Terhadap Pertumbuhan Ekonomi dan Tabungan Domestik",* **Prisma, 9, pp.** 26-47.

Granger, C.W.J (1969), "/nuestigafing Causa/ *Relations by Econometric Models and Cross-Spectral Methods,"* **Econometrica,** 37, pp. 24-36.

_____(1986), *"Development in the Study of Co-integrated Economic Variables,"* **Oxford Bulletin of Economics and Statistics,** 48, pp. 213-228.

_____(1991), *"Foreign Loans and the Dilemma to Maintain the Momentum of Development",* **Business News,** August 6 & 13.

_____(1993a), *"Indonesia Menjelang Tahun 2000: Sebuah Renungan",* **Analisis CSIS,** XXII(2), pp. 91-101.

_____(1993b), **Financial Liberalization in Chile and Indonesia: A Comparative Study,** University of Birmingham, Birmingham, _____

(1994), *"Structural Adjustment in Indonesia: A Survey of Recent Development"*, **Kelola,** IH(5), pp. 84-106.

Kunio, Yoshihara (1988), **The Rise of Ersatz Capitalism in South-East Asia,** Oxford University Press, Singapore.

Maclntyre, Andrew J. (1991), *"The Politics of Finance in Indonesia: Controls, Confusion and Competition"*, **Mameo Cript,** Griffith University, Brisbane, October.

McKinnon, Ronald I. (1973), **Money and Capital in Economic Development,** Brookings Institution, Washington DC.

_____(1992), **The Order of Economic Liberalization: Financial Control in the Transition to a Market Economy,** The John Hopkins University Press, Baltimore and London. Thorbecke Southeast Asian Studies, Singapore.

_____(1990), **Tinjauan Ekonomi Atas Dampak Paket Deregulasi Tahun 1988 pada Sistem Keuangan Indonesia,** PAU-Ekonomi-UI and PT Gramedia, Jakarta.

Permono, Iswardono S and Mudrajad Kuncoro (1990), "Kebfjafcsanaan *Moneter. Dari 'Financial Repression' Hlngga Bahaya 'Financial Crash'", (Monetary Policy: From Financial Repression to the Danger of Financial Crash),* **Jurnal Ekonomi dan Bisnis Indonesia, 2.**

Rana. Pradumna B., and J. Malcolm Dowling, Jr. (1988), *"The Impact of Foreign Capital on Growth: Evidences from Asian Developing Countries"*, **The Developing Economies,** 24(1).

Robison, Richard (1986), **Indonesia: The Rise of Capital,** Alien and Unwin, Sydney.

Meier, Gerald M. (1989), Leading Issues in Eco- Soekarno (1989), *'Inflasi dan Pertumbuhan* **nomic Development,** 5th edition, Oxford University Press.

Nasution, Anwar (1983), **Financial Institutions and Policies in Indonesia,** Institute of

Ekonomi: Analisis Pasca Kurva Phillips Generasi Ketiga', in Sjahrir, et al., **Menuju Masyarakat Adil Makmur: 70 Tahun Prof. Sarbini Sumawinata,** PT Gramedia, Jakarta