BANK CREDIT AND FORESTRY OUTPUT: DO BANKING DEREGULATION AND ECONOMIC CRISIS MATTER?

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ABSTRACT

The article investigates the effect bank credit extended to the forestry sub-sector to the sub sector's output, and whether banking deregulation and the economic crisis have any impact on such a relationship. Research findings shows that bank credit is found to have positive influence on forestry output. Bank credit to the forestry sub-sector, paradoxically continues to rise in the wake of the economic crisis, before it plummets. There is also evidence of an augmenting effect of banking deregulation on forestry output, proof that deregulation indeed works. The economic crisis however, is found to have led to a tumultuous decline in output as expected. Policy implications were drawn basing on research findings.

Key words: Economic Crisis; Deregulation

INTRODUCTION

The forestry sub-sector comprises a significant component of the agricultural sector In Indonesia. The forestry sub-sector has of course been influenced by motley of macroeconomic policies put in motion by the government over time. The era of non-oil export promotion which begun in the wake of the 1983-1984 oil price decline is one among such factors. One of course should not forget the role of commercial policies the effect of which was seen in the slapping of increasingly high export taxes on logs between and 1980 and 1985, culminating into the eventual abolishing of the log exports from Indonesia in 1985 (Rodgers 1996,161). Since a good proportion of export proceeds are exported, a series of devaluations conducted in 1978, 1983, 1986, as well as the precipitous depreciations of the Rupiah in the wake of the 1997 economic crisis have played their part in shaping the forestry sub-sector. Banking deregulation that reached its pinnacle in the 1988 banking deregulation; promulgation of the 1998 banking law No. 10, which reduced considerably state subsidies to the agricultural sector, as well as allowing banks more opportunities besides offering traditional banking services, have had their share of effects on the way the forestry sub-sector conducts its activities. A lot of criticism is leveled on the door of commercial banks for not playing the role they should, in fostering productive activities, preferring trading and other economic activities with short duration as they are considered not too risky. Forestry sub-sector being one such economic activity, it should be interesting, and challenging too, to find out the extent to which bank credit has contributed to the ebb and flow of the forestry sub-sector. In line with contemporary theory on bank credit, the influence of the 1988 banking deregulation and 1997 economic crisis on both bank credit extended to the forestry sub-sector and on forestry output will be investigated. This research in the main therefore investigated the influence of forestry sub-sector output on bank credit extended to the sub-sector, banking deregulation, and economic crisis on the value of forestry sub-

sector output as well as the impact of bank credit, banking deregulation and economic crisis on the forestry sub-sector output in Indonesia. Section two describes the developments in the forestry sub sector 1986-1999, which is followed by section three which explores developments in bank credit supply to the forestry sub sector during 1986-1999 period. Theoretical framework is delved into in section four. Section five presents the methodology used, which encompasses data source, model specification, and analysis procedures used during the research. Empirical results are presented in section six. The penultimate section presents the presents the discussion of results. Section eight draws the conclusions and policy implications.

DEVELOPMENTS IN THE FORESTRY SUB-SECTOR 1970-1999

Areas under Forestry are categorized into permanent forests and conversion forests. Permanent forests are subdivided into i) protected forests, ii) preserved and tourism forests, iii) limited production forests, and iv) permanent production forests. Plywood experienced an increase in production in the 1984/1985 through 1995/1996 fiscal years, with a precipitous decline setting in 1996/1997 fiscal year. Production level picks up again in 1998/1999 (Figure 1 and Figure 2). The case for sawn wood shows a decline between 1982/1983-1984/1985 period, with slight turnaround in performance setting in 1986/1987 reaching the peak in 1988/1989. The decline rears its ugly head once again in 1990/1991-1996/1997 period, and picks up significantly in 1997/1998 before production nosedives in 1998/1999 fiscal year. Logs on the other hand show a general upward trend reaching crescendo in 1997/1998. Some declines however, are registered in 1985/1986, 1988/1989-1989/1990, 1991/1992-1993/1994, and 1998/1999.

Figure 1. Timber production by type from 1982/1983 to 1998/1999

Year	Logs	Sawn wood	Plywood
1982/1983	13376513	3686400	2309000
1983/1984	15208568	2710682	2605141
1984/1985	15957641	2119074	2400110
1985/1986	14551451	2643403	4322443
1986/1987	19758494	7442000	5302000
1987/1988	27565919	9750000	6400000
1988/1989	26428819	1023750	6560000
1989/1990	22168443	3919249	7078510
1990/1991	26127874	2802263	7067909
1991/1992	23809761	3006047	9123454
1992/1993	26049496	4276532	9149059
1993/1994	26848010	2910459	9924438
1994/1995	24027277	2707721	5195282
1995/1996	24850061	2014193	9122401
1996/1997	26069282	2426740	1094763
1997/1998	29520322	2613345	6709836
1998/1999	19026944	2707221	7154729

Source: Central Bureau of Statistics

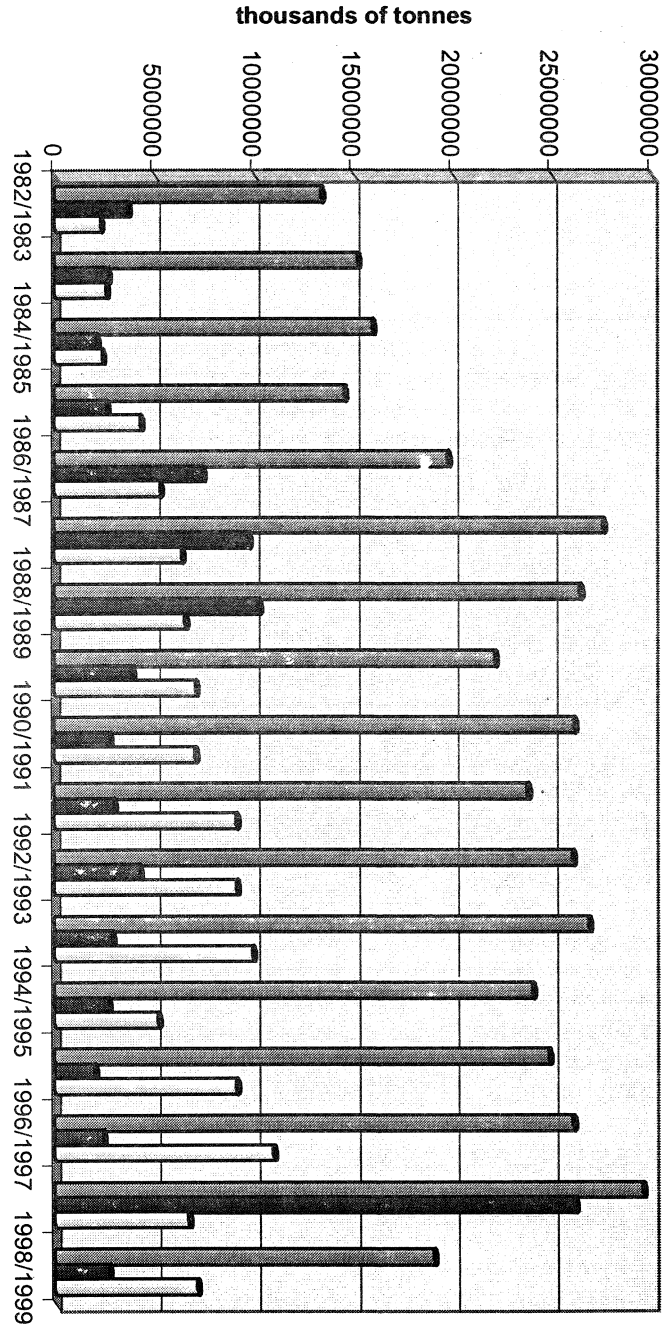

Figure 2. Timber production by type in Indonesia 1982/1983-1998/1999 (in thousands of tones)

DEVELOPMENT IN BANK CREDIT EXTENDED TO THE FORESTRY SUB-SECTOR 1986-1999

Bank credit extended to the forestry sub-sector Figure 3, experienced gradual increase between 1986 and 1988. The level of bank credit extended to forestry shot up in 1990 to Rp.426.6 billion from Rp. 244. Billion in 1989, an increase of 74 per cent. Some decline in bank credit to forestry suffered a slight decline in 1991 to Rp. 411 billion, before it bounced back with vengeance in 1992 to Rp. 764 billion: an increment of 86 per cent. The increase in 1992 however, pales into insignificance when compared with the level of bank credit extended to the forestry sub-sector in 1997 and 1998, an eye – popping Rp.2.82 trillion and 3.04 trillion respectively. The level, of bank credit extended to the forestry sub-sector registers a precipitous decline once again in 1999 registered a stunning decline of 64 per cent.

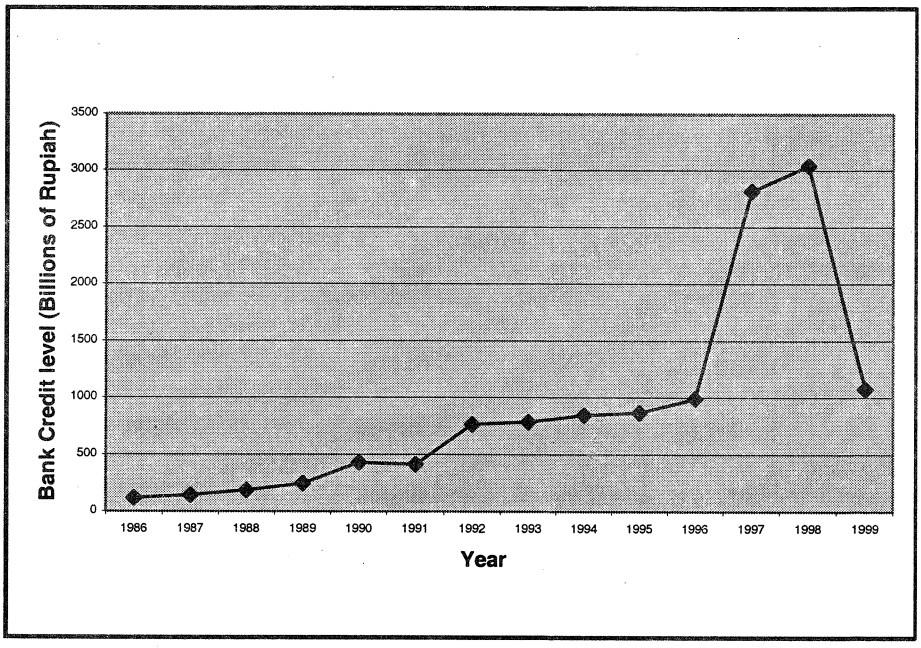

Figure 3. Development in Bank Credit Extended to the Forestry Sub-sector 1986-1999 (Billions of Rupiah)

THEORETICAL FRAMEWORK

The distinguishing feature of commercial banks from other incorporated business entities lies in their ability to create money in form of deposits and making loans (Miller and Van Horne 1993:120-127). Commercial banks utilize deposits to create loans by crediting the account of the borrower, which by so doing creates more deposits as well as investments. Checks are drawn against the deposit by the borrower creating deposits in other banks (Hefferman, 1998:15). The newly created funds find their way into the entire banking system. The total volume of deposits in the banking system

declines by the amount of each loan repaid. The ability of the bank to extend loans and make investments depends on its excess reserves; this being the difference between deposits minus required reserve kept in the central bank vaults. It is expected that the higher the excess reserves of the banking system, the greater its potential to generate funds and investment funds.

Extremely high reserve requirements, however, aren't good either. This is because under such conditions, there is low excess reserve available for loan extension and investment. The money creation process continues until the initial deposit is tied up in the banking system as required reserve money. The removal of deposits likewise dries up funds for loans and investment expansion. The money creation capacity of commercial banks is principally influenced by the Central bank's policy in facilitating economic progress and stability (Miller and Van Horne, 1993; Hemmel and Simonson, 1998). The extent of the impact of commercial bank credit creation capacity on the credit availability mechanism to the real sector (farming community) is determined by; 1) the degree of flexibility in the money creation process that enables the availability of funds for farmers arising from unanticipated changes in demand for funds; 2) ability of commercial banks to provide loans to merchants, traders, dealers, and processors, who in turn provide credit to farmers; 3) influencing investment policies of commercial banks, thus affecting the flow of credit to farmers through other lending institutions. The capacity to lend by commercial banks is thus, principally influenced by two factors 1) reserves, and 2) bank capital. While the amount of reserves limit the aggregate volume of loans and investments a bank can undertake, the level of bank capital limits the size of the loan given to an individual or enterprise. The size of the loan given to an individual is a certain percentage prescribed by law as a certain proportion of the bank's capital and surplus

a) Determinants of bank credit supply to the agricultural Sector

The supply of credit on a macro level is, among other factors, a function of changes in autonomous deposits, and reserve money. It is expected that the operations of the banking system are underpinned by the desire to maximize profits, which is a prerequisite for increasing the value of the banks for shareholders. Under such a framework, the level of credit provided by the bank should be at the point whereby the marginal cost of providing credit is equal to the marginal revenue to the bank. The bank operating under a multitude of liquidity and asset ratios is availed the opportunity to allow for the changes in those ratios in such a way that return to the bank is maximized. It should be noted that bank ratios in turn are significantly influenced by the dictates of monetary authorities, the rate of interest, the yield on other saving or investments, degree of credit rationing, and the behavior of savers. Thus, in parenthesis, bank credit supply is a function of; 1) rate of interest on credit; 2) rate of interest on alternative investment, thus constituting the opportunity cost of saving in banks; 3) rate of interest on bank deposits determining the floor rate at which funds are secured; 4) the size of bank capital raised from shareholders, individuals as well as the public in case of banks that have gone public; 5) Scale constraint, which is a measure of the ability of the bank to attract deposits and own capital that can be transformed into loans and investments.

The supply of bank credit to the agricultural sector is laid out in the guidelines under which a bank provides loans to agriculture are generally laid out in its farm loan policy. Farm loan policy is an outcome of both the legislation under which the bank is established and by the regulations issued by the regulatory agency. Farm loan policy is necessary since different parties are involved and therefore affected by the way, the bank operates. For depositors, their interest lies in the safety of deposits; borrowers, have keen interest in the bank loan for it outlines the conditions of the loans channeled as well as the scope covered; and stockholders are keen to ensure the safety and profitability of their investment.

Farm policies may differ from one bank to the other depending on management, and area of focus. Bank farm credit policy is a microcosm of the bank's general investment policy, which outlines the distribution of the bank's earning assets between loans and investments, farm loans and non-farm loans. The credit policy outlines the criteria followed in making and servicing of loans, covering the interest charges and other costs, monitoring, credit delivery and collection of repayments. Nonetheless, in general the supply of agricultural loans is influenced by, among other factors: 1) Levels and distributions of income; 2) propensities to save; 3) mobilization capacity of savings; 4) return on alternative assets; and 5) levels of government subsidies and government guarantees.

b. Banking deregulation and bank credit supply

Deregulation which more often than not, comes in the form of policies such as those tailored towards market integration, saving deregulation, permission of free entry to induce competition and the wider dissemination of financial services, stimulate the performance of the banking sector which in turn promotes economic growth and development (King and Levine, 1993; Fukuchi, 1995; Bencivenga and Smith, 1991; Berger et al., 1995; Fry, 1996; Agarwal, 2001). McKinnon, one of the most celebrated pundits on financial development, propounded the view that the real deposit rate of interest affects saving, investment and growth. With firms, in McKinnon 's model confined to self-financing in investments that are characterized by among other things, huge indivisibilities as articulated in Fry (1995), investors have to accumulate money balances, which form the critical mass to be used in making the future investment. The level of investment made is influenced by the level of opportunity cost of accumulating real money balances; that is the lower it is the higher the level of investment. This implies that high real deposit rates positively influence savings, which in turn feeds into investment. On an aggregate level McKinnon hypothesizes that due to the indivisible nature of investment aggregate demand for money will be greater the larger the proportion of investment in total expenditure. On the other hand, Shaw, though pointing towards the same outcome, views the role of an increase in deposits in quite a different way. Shaw regards deposits as an avenue to improve on the effectiveness of financial intermediaries in allocating resources resulting from financial liberalization. The larger the money stock in the economy, Shaw adds, the higher the level of financial intermediation between savers and investors in the banking system. The high rates of interest on deposits raise the incentives to save, which goes into investment, and at the same time raise the level of efficiency of any given investment. Shaw with his debt

intermediation view espouses the notion that financial intermediaries should provide the credit needed by investors through liberalization of the banking system. Thus, external finance is emphasized by Shaw as a *sine quo non* for the process of capital accumulation. The banking system, according to Shaw becomes more efficient in its operations as an increase in deposit rates increases the cost of funds to the bank, which has at the same time to make sure that it channels such loans emanating from deposits in as effective and efficient a manner.

c. Determinants of agricultural credit demand

The demand for bank credit can be explained as a consequence of the desire of the individual to maximize his utility function based on his preference between present and future consumption subject to the constraint that his total consumption must equal to his total income. The individual who consumes more in the present period than his current income warrants, has to take recourse to borrowing, which is influenced by a number of factors among others: 1) the endowment possessed by the individual, which includes income, land, wealth, and present value of other earnings; 2) level of permanent income; 3) transitory income; 4) interest rate on credit; 5) size of land owned; 6) the amount of the loan required; 7) borrower transaction costs, which comprise of the actual cash outlay (expenses, application fees, food; and the opportunity cost of time spent in applying for the loan (time spent on applying for the loan and traveling to and from the bank premises); 8)the individual's liquidity requirement for consumption purposes manifested in the Size of the household, number of dependants, and level of education of the family head; 9) the type of bank borrowed from; the policy in which the loan is required; 10) Credit from informal sources.

In parenthesis as is explicit in Insukindro (1990), De Guia-abaid (1993), and Kochar (1997) it can be stated that the demand for credit in aggregate is as a function of the a multiplicity of factors, inter alia; 1) nominal value of the credit needed; 2) rate of inflation; 3) expected rate of change in inflation; 4) nominal permanent income; 5) nominal transitory income; and 5) rate of interest on the bank credit. According to Koutsoyannis (1977), and Insukindro (1990), the demand for credit is analyzed with the assumption that the individual tries to maximize his utility, based on his preference between present and future consumption subject to the constraint that his total consumption must be equal to his total income.

The demand for credit therefore is influenced by among other factors, positively by his individual endowment, permanent income, and negatively by transitory income, and interest on bank credit. The gross real domestic income dominates the factors that influence the demand for credit by the non-bank public, substantiating the fact that the transactions motive underlies the demand for credit in Indonesia. The Demand for agricultural loans in particular being in the main production loans, is a function of 1) conditions of loans and rates of interest plus other costs; 2) timing of production loan repayments in relation with the flow of net products from the assets financed; 3) variability in income flows; and 4) lender's understanding of all borrower's loan needs to ensure that farm economic plans as well as consumptions plans are well executed.

d. Macroeconomic Risk and Credit Supply and Demand

Agriculture is considered a risky undertaking. This is a situation, "... when the decision maker exhibits diminishing marginal utility for increases in expected wealth." The likelihood that disutility of losses will outweigh the utility gains assumes equal magnitude. Agriculture is vulnerable to producer price risk; marketing risk; yield risk; idiosyncratic risks dependent on region, crop, age, labor employed; financial risk comprising of credit risk, liquidity risk, interest rate risk, leverage risk, basically from using borrowed funds (credit) in running the farming; and regulatory risk arising from government deregulation policies which reduce subsidy support, open the economic activity to entry from both domestic and foreign agents (Kurosaki 1997; Saha et al., 1994; Smith and Umal, 1985; Hempel and Simonson, 1998: 91; Martin, 1996).

It is for example because of farmer's risk- averse behavior towards production risk that explains the reluctance of farmers to use inputs up to the recommended optimum levels. This is because the increases in yield variability, which puts the farmer at great risk (Brorsen et al. 1987). It is also argued that in case of temporal risk and sunk cost risk arising from the irreversibility of investment once executed, increases the farmer's reluctance to carry out farm investment (Hueth and Lugon, 1999). The conditions in an economic crisis such as the one that has hit Indonesia since 1997 compound the problems affecting agriculture. Declining demand for products, exacerbated by high inflation sparked off high interest rates on bank credit. This in turn increased the cost of credit to producers of agricultural products, which led to further decline in output. Exporting produce became hard to undertake due to the high uncertainty that enveloped the decrepit non-performing loans and debt saddled banking system, which had in effect become insolvent *en masse* making it difficult to provide acceptable letters of credit to businessmen (Cole and Slade, 1998; Sadli, 1998). Importation of inputs was likewise hit by the highly depreciated Rupiah by increasing the cost. High interest rate regime and fiscal stringency were pursued by the government in order to induce macroeconomic stabilization, which had the undesirable effect of reducing directed bank credit to agriculture.

It should be noted that due to the existence of multiplicative risk, there is a lower marginal return to input use and an inward shift of the supply curve, which implies that credit used in purchasing the inputs will be difficult to repay due to lower output and attendant lower farmer incomes. Increase in yield risk that ensues on new technology adoption reduces the attractiveness of new technology in form of modern seed varieties, modern farming practices, planting and harvesting machines. One should expect risk-averse farmers to use fewer inputs than optimal because of high yield variability (Smith and Umal, 1985, Kurosaki, 1997). In an open economy the source of macroeconomic shocks in form of rising interest rates, fluctuating commodity prices, and frequent technological breakthroughs widen the sources of risk the farmer faces.

The demand for and supply of bank credit to agriculture depends partly, on the capacity of the farmer to repay both the interest and principal when it is due. It is an established fact that anything that induces uncertainty in the agricultural practitioners' income such as fluctuation in product price and output is bound to affect the bank credit demand and supply process as the following exposition elucidates (Brorsen et al,. 1987; Feder and Onchan, 1987; Hueth and Ligon, 1999).

The impact of openness on agriculture is well illustrated in the case of Indonesia. In the wake of financial deregulation in Indonesia, the agricultural sector begun to be considered as too risky an investment by commercial banks thanks to high interest rate costs which could not be covered through harvest sales at below market prices as determined by the government. In fact the risk of a bank's loan portfolio could be derived from the proportion of total credit that was channeled to the agricultural sector or to the region where agriculture constitute the main economic activity (Susanto, 1992). Bank credit extension weans constrained, by among other factors; 1) the agricultural sector being a recipient of subsidized program credit; 2) the difficulty for farmers to obtain credit due to their lack of collateral security as well as failure to fulfill a motley of other rigid requirements imposed by banks; 3) ignorance of the availability of such credit; 4) risk of defaulting on obtained credit which would engender disaster for the farmer and his family. The perception of the banking sector with regard to agriculture took a turn for the worse in the event of the economic crisis that begun in late 1997, which was caused by among other factors; excessive borrowings, macroeconomic imbalances, overvalued local currency, gross bank mismanagement, high domestic interest rates, and uncontrolled capital flows, which in turn sparked off banking crisis (Cole and Slade, 1998; Alburo, 1999; Medhi, 1999). Higher inflation meant that farmers required more funds than before to pay for inputs, some of which no longer benefited from state subsidies. The demand for higher liquidity could hardly be met by the banking industry owing to its reduced capital reserves, huge non performing loans, increased risk of the agricultural sector due to higher cost of credit at the time of output contraction (Williamson 1988).

The perception of agricultural sector as a highly risky investment by banks translates into demand for high interest rate on credit extended to agricultural activities, part of which constitutes risk premium. Thus with the advent of the 1997 economic recession, the cutbacks in government subsidies to the agricultural sector under the Bank Indonesia law No. 23 of 1999; forestry being part and parcel of agriculture, created the perception of increased risk as all forestry activities, like other activities in agriculture, from then on had to rely entirely on the forces of the free market. This compounded the already adverse macroeconomic conditions were far from congenial to productive economic activities. These were manifested in high in inflation, which translated into high interest rate regime; highly depreciated local currency; and severe contraction in GDP, which hit –13 per cent in 1998. The effect of the depreciation on the forestry sub-sector can be positive in the wake of the 1997 economic crisis since lower currency exchange rate of the Rupiah against the dollar could in principle stimulate forestry exports. This of course depends on the responsiveness of the production capacity in the sub-sector to exogenous changes. Since risk cannot be glossed over in the agricultural sector. Taking account of risk in the demand for credit equation therefore, translates the demand for agricultural credit to be a function of: 1) Risk-less rate of return, 2) expected rate of return on risky investment, 3) the level of initial wealth, 4) interest on loan (debt), 5) proportion of wealth invested in risk-less assets, 6) amount of debt, 7) size of investment (Turvey and Weeirisink, 1997).

METHODOLOGY

Secondary data that were used in the research. Data on bank credit, Bank Indonesia certificates held by commercial banks, and bank reserve requirements were obtained from the research department of Bank Indonesia Jakarta, while data on value of forestry output was obtained from publications of the bureau of statistics BPS. The research covered the period between 1986 to 1999. This period was dictated by the absence of bank credit data forestry sub-sector before that date. Data on the level of bank Indonesia certificates before 1986 wasn't available since the monetary instrument came into effect in 1985. To cover the period beyond 1999 was inhibited by lack of data on bank credit extended to the sub-sector, which isn't published and has therefore to be obtained directly from the department of Research and development, Bank Indonesia

a). Model specification and delineation of variables

The model for estimating the effect of banking deregulation and economic crisis on the level of bank credit extended to the forestry sub-sector was a hereunder:

$$LBCFOREST = \beta 0 + \beta_1 LFOREST + \beta_2 LSBI + \beta_3 BRES + \beta_4 CRIS + \beta \psi + \mu \quad (1)$$

Whereby *BCFOREST* is the level of bank credit extended to the forestry sub-sector as the dependent variable; *FOREST* is the value of forestry sub-sector output; *SBI* is the level of bank Indonesia certificates held by commercial banks; *BRES* is the level of bank reserve requirements; ψ represents other variables that influence bank credit supply.

While the model for estimating the impact of bank credit, banking deregulation and economic crisis on the forestry sub-sector output was as hereunder:

$$FOREST = \beta_0 + \beta_1 BCFOREST + \beta_2 CRIS + \beta_3 DER + \beta \psi + \mu \quad (2)$$

Whereby *FOREST is* the value of forestry sub-sector output; *BCFOREST* is the level of bank credit extended to the forestry sub-sector; *CRIS* is the dummy for the 1997 economic crisis taking the value of zero before 1997 the value of one thereafter; *DER* is the dummy for the 1988 banking deregulation taking the value of zero before 1988 and one thereafter; and ψ represents other variables that influence forestry sub-sector output.

Data was transformed into natural logarithms prior to conducting the estimation. This transformation means that coefficient estimates take the form of elasticities. For estimating model coefficients the weighted least squares model was used for estimating the coefficients of the two models. This was because of the method's capability to remove serial correlation that was found strong in the series used in the research. The level of statistical; significance used was 5 per cent error. Nonetheless, on reporting the results, the 1 per cent, 5 per cent and 10 per cent significance levels were used in interpreting the results

PRESENTATION OF EMPIRICAL FINDINGS

a. The influence of banking deregulation, economic crisis on bank credit supply on forestry output

Estimates of the impact of banking deregulation and economic crisis on the level of bank credit extended to the forestry sub sector are presented hereunder (see Figure 4):

Figure 4. Empirical results on the impact of the 1988 banking deregulation, 1997 economic crisis on bank credit extended to the forestry Sub-sector

Dependent Variable LBCFOREST				
Coefficient	Magnitude	*p*-value		
LBCFOREST(-1)	1.05**	.00		
	(3.02)			
LFOREST	.13*	.06		
	(2.16)			
LSBI	-.32	.33		
	(-1.04)			
DER	.68*	.08		
	(1.96)			
			R^2	.84
			R^2	.79
			DW	1.70
			F-ratio	16.00
			p-value	.00

T-statistics in parenthesis; *** 1 % significant level, * * 5 % significant level, * 10 % significant level

It is found out that bank credit extended to the forestry sub-sector is significantly influenced by the level of forestry output. The LFOREST, the coefficient of which registers a magnitude of .13, T-statistic of 2.16, and p-value of .06, which is significant at 10 per cent significant error level (see Figure 2). The lagged variable of the level of bank credit extended to the forestry sub-sector, *LBCFOREST(-1)* is highly significant, registering a magnitude of 1.05, T-statistic of 3.02, and p-value of .00. Banking deregulation is found to have an augmenting effect on bank credit extended to the forestry sub-sector. The dummy for the 1988 banking deregulation shows a magnitude of. 68, T-statistic of 1.96, and p-value of .08. The effect of the economic crisis on the level of bank credit extended to the forestry sub-sector is found to paradoxically stimu-

late an increase in bank credit extended to the forestry sub-sector contrary to expectations. Due to the low level of statistical significance the dummy for the 1997 economic crisis, CRIS is removed from the specification which improves the results further Thus the final specification excludes the economic crisis dummy. The level of bank Indonesia certificates, LSBI an opportunity cost of bank credit extended to the forestry sub-sector, shows the expected negative sign, but falls short of becoming significant. The same applies to the level of bank reserve requirements, which should reduce bank credit available to the forestry sub-sector.

b. Impact of bank credit, banking deregulation and economic crisis on forestry output

Results of the estimates on the impact of bank credit on forestry output are presented in Figure 5.

Figure 5. Impact of Bank Credit, 1988 banking deregulation and 1997 economic crisis on forestry output

Coefficient	Magnitude	p-value		
LBCFOREST	.20** (2.52)	.04		
CRIS	-.24* (-2.14)	.07		
DER	15.68*** (29.31)	.00		
			R^2	.49
			R^2	.32
			DW	2.01
			F-ratio	2.63
			p-value	.12

T-statistics in parenthesis; *** 1 % significant error, ** 5 % significant error, 10 % significant error

As for the influence of bank credit toward the forestry sub-sector, the results in Figure 5 provide unequivocal evidence of the importance of bank credit to the forestry sub sector. The level of bank credit extended to the forestry sub-sector is found to have positive influence of the level of forestry sub-sector output. The LBCFOREST which is the level of bank credit extended to the forestry sub-sector registers a positive and significant influence with the magnitude of .20, T-statistic of 2.52, and p-value of .04. This indicates that bank credit significantly influences forestry sub-sector output. Bank

ing deregulation of 1988 seems to have had strongly augmenting effect on the level of bank credit extended to the forestry sub-sector as is expected. The dummy for the 1988 banking deregulation DER registers a magnitude of 15.68, T-statistic of 29.31 and p-value of .00, all indicate that in the wake of the 1988 banking deregulation, the value of forestry sub-sector output experienced a dramatic increase compared to the situation before the policy came into effect. This could be the result of an increase in bank credit supply, which made more production activities possible. The 1997 economic crisis on the other hand, caused a reduction in the value of forestry output as is expected. The dummy for the 1997 economic crisis CRIS registers a magnitude of -.24,T-statistic of –2.14, p-value of .07, which is only significant at the 10 per cent level of significant error.

DISCUSSION

From the research findings it is undeniable that bank credit plays a significant role in fostering forestry output. Bank credit is essential for financing both the long-term investment in machinery used in providing infrastructure in form of roads, machinery for logging, transporting the bulky timber. It should be noted that huge a mounts of funds are needed in the construction of sawmills, and pulp wood treatment plants. The level of credit available is however affected by the type of monetary policy pursued by the monetary authority. The pursuit of a highly restrictive monetary regime manifested in high interest rate on bank Indonesia certificates as well as high reserve requirements constrains bank credit supply to the forestry sub-sector. This is as expected since the level of bank Indonesia certificates held banks, being highly liquid, flexible, risk-free investment increase with the level of interest rate return offered, reducing bank funds available for credit extension to the forestry sub-sector. The effect of high bank reserve requirements on bank credit supply is to increase the cost of each Rupiah lent out which has the effect of dissuading banks from extending credit to the forestry sub-sector. This underscores the importance of a *sync* between monetary policy and real sector policies.

Banking deregulation by increasing the level of bank credit available reduced the constraint of funds on forestry operations. This therefore, clears the air, on what is at issue inn developing countries. The cost of credit may not be the real issue, since in principle it has to be high due to the scarcity of funds in LDCs, rather the availability. Deregulating the banking sector stimulates economic growth by availing more funds in form of savings, which are transmuted into investments by investors.

The effect of states of nature still looms large, however. The effect of the 1997 economic crisis on the forestry sub-sector was to spark off severe contraction in output, which definitely undermines the capacity of the sub-sector to contract bank credit due to plummeting incomes. On the contrary, the effect of the 1997 economic crisis on the level of bank credit extended to the forestry sub-sector though eventually plummeted in 1999 paradoxically experienced dramatic increase in 1997 and 1998. This can be explained by a number of reasons. It could as a result of the time lag between monetary policy implementation and the effect on real economic activity, which takes on average three quarters. Hence, though the economic crisis caused a change of policy by banks, this change could not immediately come into effect because of such a lag. It could also

underscore, the fact that the forestry sub-sector being dominated by holders of concessions who are conglomerates with significant influence in the banking community because of their long standing relationships, continued to receive more bank credit than even before. Long-term relationships between borrowers and banks usually culminate into commitment by banks to provide credit to their trusted clients for an agreed up on period of time. Such commitments are had to cancel unilaterally unless conditions of *force majure* prevail. In 1997 and 1998, the crisis was possibly still being considered by banks as temporary and so no need to cancel their long-term commitments. Its continuance in 1999 should have sent the strongest message to bankers that all was not well, as more evidence that the crisis was to stay for a while sank in, which had the effect of considering some re-writing of contracts made under pre-crisis conditions. This meant the tightening of loan terms to adhere to the dictates of the newly promulgated banking law No.10 1998 as well as taking into account the nosedive in producers' credit worthiness in the wake of the crisis.

CONCLUSION.

Bank credit to the forestry sub-sector plays an important role in fostering production, processing, transportation, and marketing of activities therein. The role of the government in ensuring the existence of a conducive climate for economic activities is crucial as manifested ion the case banking deregulation, monetary policy pursued reflected in the level of bank reserve requirements required of banks, and the level of interest rate on bank Indonesia certificates. Bank credit promotes economic performance provided the macroeconomic conditions permit. Deregulating the banking sector apparently increases forestry output, which translates into high national output. Research findings are in line with theoretical underpinnings. It is found out that in the wake of banking deregulation an increase in forestry output is registered. The economic crisis however, leads to a tumultuous decline in output as expected. Bank credit is found to have positive influence on forestry output, which is evidence that banking deregulation stimulates growth. Bank credit to the forestry sub-sector, paradoxically continues to rise in the wake of the economic crisis, before it experienced an eventual decline

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