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**Interest Rate Spreads and Mandatory Credit
Allocations: Implications on Banks Loans to
Small Businesses in Indonesia**

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Indonesia Program

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Interest Rate Spreads and Mandatory Credit Allocations: Implications on Banks Loans to Small Businesses in Indonesia

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ABSTRACT:

Recent studies have consistently shown that the East-Asian crisis-stricken countries have suffered from different degrees of credit crunch, particularly during the early stages of the crisis. However, only few of them have looked closely into the breakdowns of the loans and the roles of different groups of banks in explaining the rise and fall of bank lending, particularly to the small businesses during the post-1997 financial crisis. This paper aims to fill this void by looking at closely the recent development in Indonesia.

Key Words: Small-Scale Enterprises, Bank Loans, Interest Spreads, Mandatory Credit Allocation, State and Private National Banks, Indonesia

JEL Classifications: E51, E52, E58

1. Introduction

Recent studies have consistently shown that the East-Asian crisis-stricken countries have suffered from different degrees of credit crunch, particularly during the early stages of the crisis.¹ Reversals of international capital movement, unprecedented exchange rate devaluations, tight monetary conditions (reflected by high key domestic interest rates), flights to quality (shifting of assets toward less risky ones such as government securities) and impositions of higher and stricter capital adequacy ratios have frequently been listed as some of the key determinants of a credit crunch.²

However, hardly any of these recent studies have looked closely into the breakdowns of the loans and the roles of different groups of banks in explaining the rise and fall of the bank lending in any of these East Asian crisis-affected economies during the post-1997 crisis. Only few studies have also been done to evaluate the availability of credit to the small businesses during the recent credit crunch in East Asia.³ As small enterprises form an essential pillar to the economies, the knowledge on how different factors or policy measures affect the supply of small business loans will inarguably be very valuable for the policy makers of these Asian countries.

This paper aims to fill this void by looking at closely the recent development in Indonesia as a study case. We have evidence that the resurgence of bank credits in this most-populated country in East Asia during the post-1997 crisis has, in fact, not been felt by all sectors of the economy. In particular, we want to show that the growth

¹ Refer to Agenor, Aizenman and Hoffmaister (2000), Borensztein and Lee (2002), Ding, Domac and Ferri (1998), Agung *et.al* (2001), Bank Indonesia (2000) and Ghosh and Ghosh (1999), Fane and McLeod (2002)).

² In addition to those studies listed in footnote #1, some of these aspects have been fully addressed by various studies such as Bernanke and Low (1992), Bernanke, Gertler and Gilchrist (1996), Kashyap, Stein and Wilcox (1993) and Mishkin (1991). Refer to (http://www.stern.nyu.edu/globalmacro/acad_res/studies_banking_crisis.html) for more relevant studies.

³ Hancock and Wilcox (1998) have looked at the implication of the credit crunch on the availability of credit to small business in the United States from 1989 to 1992. Borensztein and Lee (2002) review the presence of credit crunch at the firm levels in Korea during the 1997 financial crisis. Patten, *et.al* (2001) looks at various loans (including microfinance and small business loans) by one key state bank (the Bank Rakyat Indonesia) in Indonesia during the recent East Asian crisis.

rates of nominal and real loans to small businesses in particular have remained unstable and failed to keep up with the growths of the loans to the rest of the economy (Figure 1a and 1b)⁴. This is despite the fact that the small industry has been the most vibrant sector of the Indonesian economy during the peak- and the post-1997 financial crisis (Table 1).⁵

As in any developing and developed nations, this industry in Indonesia relies heavily on the banking sector for its working capital.⁶ During the pre-1997 crisis, the private and state banks contributed almost equal shares to their total of around 90 percent of the small enterprise credit outstanding by the banking sector (Figure 2).⁷ In addition, there have always been *strong* and *positive* correlations between the monthly growth rates of small loans and that of the total outstanding credit for both groups of banks during the pre-crisis.

Yet, despite the return of much-needed annual growths of outstanding credits by both groups of banks, their shares of the small loans experienced few opposing trends since the beginning of the crisis (Figures 2 and 3)). While the quarterly average of credit outstanding to the small enterprises by the state banks increased by about 8 percent in 2001 from its level in 1997, the quarterly average of small enterprise loans by the private national bank severely dropped by over 50 percent for the same period. The substantial decline in the supply of loans by the domestic

⁴ Real loans are nominal loans adjusted by the price level (the consumer price index).

⁵ According to the Small Business Law of the Republic of Indonesia number 9/1995, small businesses cannot have assets (exclusive of building and land) of more than 200 million rupiah and sales of more than one billion rupiah. This enterprise must be owned by an Indonesian citizen, and standing on its own, not part of a business affiliation or business branch owned or dominated or having affiliation directly with medium and big businesses. With the collapses of domestic conglomerates and large corporations in 1998 and 1999 (the two worst years of the 1997 financial crisis), the contributions of the small business sector in the economy of Indonesia increased steadily, reaching its highest at 43 percent of the total gross domestic products in 1999 (Table 1). More importantly, in average around 90 percent of the annual total employment and entrepreneurs were associated with the small businesses between 1997-2001.

⁶ Refer to Samolyk (1997); Brewer *et.al* (1996); Mishkin (1995); Bernanke and Gertler (1995) ; Huang (2003); and Pangestu and Habir (2002).

⁷ As for the rest, the regional development bank supplies the majority share. The contribution of the foreign private banks is very insignificant ---less than one percent of the annual average of the total outstanding credits to the small enterprises in the last 10 years.

private banks has contributed to the reported 13 percent drop in the quarterly average of total outstanding small loans by the banking sector in 2001 from its level in 1997.⁸ Between 2001 and 2002, small loans from both groups of banks experienced steady declines, albeit the drop in the state bank loans was more moderate.⁹

What has been the underlying factors generating these periodically contrasting trends in the supply of loans by the two major groups of banks? What were the causes of the overall drops in the small business loans in late 2001 and 2002? Timberg (1999) and Musa (1998) reveal that small firms have other non-banking financial resources. The availability of the non-banking sources of fund for the small-scale firms certainly could reduce their dependence on the banking sector. It does not however adequately explain the sharp fall of the percentage loans to the small firms by the private banks in one hand, and the significantly much stronger flow of loans to the small enterprises by the state banks on the other (Figure 2 and 3).

Undoubtedly, to answer these questions, it is imperative that we look into the demand side of the loans. But, the lack of readily available relevant data on small firms precludes us from evaluating the demand for the small business loans.¹⁰ Based on the findings of previous studies on the overall bank loans in Indonesia and the strong performance of the small businesses during the crisis, one can however

⁸ Moreover, despite the sharp falls during the first six months of the crisis, the quarterly average share of the state bank outstanding small business loans was still at a respectable rate of around 27 percent from 2000 to 2001, roughly four percentage points higher than its highest pre-crisis average, reported from quarter 1, 1996 to quarter 1, 1997 (Figure 3). In contrast, with the exception for the last six months of 2000, the quarterly average share of small enterprise credits by the private banks during the crisis period has been substantially below the level reported during the last two years of the pre-crisis period.

⁹ The reported shares of the small business loans by the private banks for the second quarter of 2001 onward had hovered back to the lowest levels of the crisis period (at the first two quarters of 1999). Conversely, the small loan share by the state banks at the first quarter of 2002 was still about the same level reported during the pre-crisis period of first quarter of 1997.

¹⁰ Timberg (1999) has also acknowledged the limited availability of data on the small and medium enterprises.

argue that the source of the drop in the small-scale loans would likely to come from the supply side.¹¹

One supply side phenomena that will obviously be worth mentioning is the impact of the closure of several insolvent banks at the early stage of the 1997 financial crisis on the loans to small firms. To our knowledge, no study has looked into this particular issue. This factor has undoubtedly contributed to the fall in the actual *total* nominal and real value of outstanding bank loans to the small firms, especially in 1998-1999 (Figure 1a and 1b). But it is also inadequate in explaining the ups and downs of *the percentage share* of the small enterprise loans by the existing private banks (Figure 3).

Agung *et.al* (2001), Bank Indonesia (2000), Ghosh and Ghosh (1999), Azis and Thorbecke (2002), and Siregar (2003), have found that fluctuations of key domestic interest rates have largely been responsible for the sharp drops in the overall bank lending during the early and worst stages of the crisis in Indonesia. In particular, these studies have shown that a rise in key domestic interest rates exacerbated and provoked a large decrease in lending, consistent with the overall conclusions of Mankiw (1986) and Greenwald and Stiglitz (1993).

Supporting the findings of those early studies, Figures 1a, 1b, 4 and 5 show convincingly that the return of more conducive interest rate structures in the banking sector, reflected by the positive interest spreads (particularly between the lending rate and the deposit rate; and between the lending rate and the rate of the certificate of Bank Indonesia (SBI)) in early 1999, was followed by the onset of relatively robust positive growth rates of total credit outstanding by the banking sector starting late 1999.¹² The small business credits have, however, continued to stagnate or even

¹¹ Early studies have consistently confirmed that the growths of credit have been largely explained by the supply-side factors (Agung *et.al* (2001), Bank Indonesia (2000) and Ghosh and Ghosh (1999)).

¹² The certificate of Bank Indonesia is the key monetary policy instrument that the central bank employs to conduct its open market operations.

experienced negative quarterly growth rates, particularly since the first quarter of 2000.

To generate a better account of the driving forces behind the fluctuations in the small enterprise lending, we consider a “third factor”: the Bank Indonesia Policy of January 2001 which has effectively abolished a stringent condition whereby each public bank (state and private) must allocate at least 20 percent of their total credit outstanding for the small enterprise loans.¹³

In this paper, a profit maximization model is constructed to explicitly show the potential roles of the three monetary policy related variables (the two interest rate spreads and the mandatory credit allocation) in explaining the fluctuations of the small business loans by the state and private banks. We then empirically evaluate the significance of those three explanatory factors in explaining the quarterly percentage share of the small business loans in the total outstanding credits of: a) private and state banks combined; b) private banks only; and c) state banks only during the pre- and post-1997 financial crisis.

By way of preview, we find the three listed factors influenced significantly the shares of loans to the small enterprises by these two groups of banks. In general, the results confirmed the adverse implication of the tight monetary policy and also the flight to quality phenomena (Bernanke, Gertler and Gilchrist (1996)). Interestingly, the result for the state bank seems to suggest that this group of bank was able to continue expanding its share of small loans despite the negative spread between the lending rate and the deposit rate at the peak of the 1997 financial crisis. The share of the small loans by the private bank, on the other hand, had been adversely affected by the negative spreads. These contrasting findings partly explain the rise (and fall) in the share of the small loans by the state (and private bank) from 1997 to 2000. Furthermore, they also seem to suggest that the basic assumption of profit-

¹³ Bank Indonesia Policy No.3/2/PBI/2001. Under this latest regulation, Small enterprise loans are those credits up to 500 million rupiah.

maximization behaviour is only applicable for the private banks, not for the state banks.

As for the post 2001 period, the abolishment of the mandatory credit allocation to the small businesses has largely been responsible for the declines in the small loan shares by these two groups of banks. The impact of this policy measure, has, however, affected the private bank small loans more severely than those of the state banks. Due to their focus only on total loans by the banking sector, early studies fail to capture all of these critical contrasting results.

The next section of the paper will briefly review a number of stylised facts on the three potential determinants of the supply of bank credits to the small enterprises. In section 3, we introduce a theoretical framework that captures a number of possible relationships between the supply of credits and its key determinants. The empirical section conducts two sets of unit-root tests (the Augmented Dickey-Fuller and the Banerjee, Lumsdaine and Stock (BLS) rolling test). Based on the unit-root properties of the series, both the Johansen cointegration tests and the autoregressive distributed lagged (ARDL) error correction model test for the long-run and short-run analysis are conducted. Section 5 of the paper presents further policy analyses based on the test results. A brief concluding remark section ends the paper.

2. Brief Reviews of Trends and Stylised Facts

2.1 Interest Rate Spreads

2.1.2 The Lending and SBI Spreads

One of the extensive debates that have taken place in Indonesia at the initial and worst stages of the 1997 financial crisis was on the desirability of rising key interest rates to defend the local currency and to manage the growth rate of the base money.¹⁴ At its highest level reported in August 1998, the one-month central bank security (1-month SBI rate) rate went beyond 70 percent. During the peak period of

¹⁴ Johnston (1998).

the crisis (1998 and 1999), the interest returns of one-month SBI was in fact significantly higher than the lending rate, by an average of more than 20 percent for the private national banks and 30 percent for the state banks (Figure 4).

Between June 1999 and April 2000, the one-month rate of the central bank security reported a steady decline and reached its lowest rate at around 11 percent in April 2000. However, the rate has reverted back to a rising trend since June 2000. In the last 6 months of 2001, the one-month SBI rate reached an average level of well above 17 percent. In early June 2003, the SBI rates have hovered back to levels between 10 to 11 percent.

2.1.1 The Lending and Deposit Spreads

The combination of the high inflationary pressures and the tight monetary policy to defend the local currency particularly at the first two years of the crisis pushed the deposit rate to increase proportionally to ensure the real interest rate to be marginally above zero. The lending/ working capital rate, on the other hand, could not rise as much to prevent further defaults on the loans. Subsequently, as the deposit rate exceeded the lending rate in the early 1998, the domestic banking sector in Indonesia experienced a costly period of negative-interest rate spreads (Figure 5). From January 1998 to December 1998, the six-month deposit rate was in average around 7 percent higher than the lending rate. In October 1998, the negative spread was at a staggering rate of 19 percent. The negative spread continued during the first seven months of 1999, with the average spread rate at 2.2 percent. Only starting the second half of 1999 that the spread of lending and deposit rates returned to positive levels.

2.2. Central Bank Policy of January 2001

For about three decades prior to the 1997 financial crisis, Bank Indonesia had to coordinate both roles of being the monetary policy maker and the agent of development. Under the Act of Bank Indonesia, No. 13/1968, Bank Indonesia directly

involved in formulating credit policy to small enterprises, providing direct capital assistance and also technical assistance. In its January 1990 policy package, the central bank imposed a mandatory requirement for the commercial banks (state and private) to allocate 20 percent of their total outstanding loans to small-scale businesses.

To push further the reform in the banking sector and the independence of the central bank as targeted by the Central Bank Law no.23/1999, the Letter of Intents (LOIs) between IMF and the government of Indonesia signed in January 2000 stipulates a future plan to phase out mandatory requirements on the commercial banks lending to SMEs.¹⁵ Following through with its commitment, Bank Indonesia issued its regulation in January 2001 which officially abolished any requirement for commercial banks (state and private) to place at least around 20 percent of its total credit outstanding to the small enterprises.¹⁶ It is important to note here however that the central bank remains active in providing funding and technical supports to the small businesses through the two state banks (BRI and BTN) and a newly established institution (PT PMN).¹⁷

3. Basic Theoretical Framework

The objective of this section is to introduce a theoretical framework that incorporates three key potential determinants of the supply of bank loans to the small enterprises. In a competitive model, banks are expected to maximize their profits at each period (Π). We acknowledge that the basic underlying assumption of competitive and profit maximization institution may not be necessarily fully applicable to our groups of banks. In particular, the state banks in Indonesia are often involved

¹⁵ This Letter of Intents can be downloaded from <http://www.imf.org/external/np/loi/2000/idn/01/index.htm>.

¹⁶ Bank Indonesia Regulation No. 3/2/PBI/2001.

¹⁷ These commitments of Bank Indonesia were emphasized also by one of the Deputy Governors of Bank Indonesia, Maulana Ibrahim (BISNIS INDONESIA (a daily local Newspaper), June 17, 2001). For more insights to the operations of the BRI (Bank Rakyat Indonesia), refer to Patten, et.al (2001).

in activities that may not necessarily be profitable, such as financing poorly performed state owned enterprises and various government policies. To keep the model simple and to focus on objectives stated in the introduction, our model will mainly incorporate the three possible determinants of the supply of bank loans (the interest spreads and the mandatory credit allocation). As will be elaborated in the empirical section, the testing results on these three determinants are able to capture evidences of non-profit maximizing characteristics of the state banks.

Banks absorb deposit from the local economy, and they hold two forms of assets: loans (small enterprise loans (L^s) and medium and large enterprise loans (L^{ml})), and central bank securities (CBS).¹⁸ Total loans can be expressed as ($L = L^s + L^{ml}$). As price takers, each bank takes as given the rate of loans (r_L), the rate of deposits (r_D), and the rate of central bank securities (r_G). Note here, the loan rates for small and medium to large enterprises for each group of the banks in Indonesia are relatively the same and equal to (r_L). Hence, the choice between extending the loans to the small or the medium-large enterprises will depend on the cost associated with each type of loans.

We assume that the only source of fund to be channelled into lending, reserve, and government security is the deposit that they absorb from the public. Deposit (D) = loans (L) + reserve (R) + central bank securities (CBS). Banks must keep a (res) percentage of its deposit in its reserve, and will extend a (l) percentage of its deposit as loans. Hence; $R = res.D$, $L = l.D$, and $CBS = [(1 - res).D] - L$.

The total cost of the bank ($C(L, CBS, D)$) covers all the expenses associated with the management and the risks/uncertainties of its assets (the costs of small enterprise loans ($C(L^s)$) plus the cost of the medium and large enterprises loans

¹⁸ Since we are not interested on looking at the loans to medium and large enterprises in this study, we lump them into one category.

$(C(L^m))$; the government securities $(C(CBS))$; and its liabilities $(C(D))$.

Incorporating all of the key factors, we can express the profit function of the bank as:¹⁹

$$\Pi = r_L L + (CBS)r_G - (D)r_D - C(L, CBS, D) \quad (1)$$

As discussed, prior to January 2001, the central bank of Indonesia requires the private commercial banks to channel a percentage of their total loans (gg) to the small enterprises. Failure to meet the set share will result in a *penalty*. On the other hand, if the bank successfully extends a (ga) percentage of its total loans to small enterprises, where ($ga > gg$), the bank will receive a *reward* from the central bank. We can express the cost (reward) of not following (adopting) the credit mandatory policy as: $CP((gg - ga)L)$. If ($gg > ga$) then $CP((gg - ga)L) > 0$, and vice versa.

$\frac{\partial CP}{\partial (ga.L)} < 0$, that is as the realized total supply of small loans ($ga.L$) increases, the

penalty cost will decline.

Adding the “policy cost function” ($CP(.)$) and expressing deposit (D) as

$(L + RES + CBS)$ and government security (CBS) as

$CBS = [(1 - res).(L + RES + CBS)] - L$, the profit equation (Equation 1) can be

further modified as follow (Equation 2):

$$\Pi = r_L L + [(1 - res)(L + RES + CBS) - L]r_G - (L + RES + CBS)r_D - C(L, CBS, D) - CP((gg - ga)L)$$

3.1 Interest Spreads and Small Enterprise Loans

¹⁹ For a comprehensive analysis on the economic theory of banking, refer to Freixas and Rochet (1997).

To generate the profit-maximizing amount of loans that the bank should supply to the small enterprises, the first order condition (F.O.C) of the profit function with respect to (L^s) is derived:

$$\frac{\partial \Pi}{\partial L^s} = 0 = (1 - res)((r_L - r_D)) + (res)[r_L - r_G] - \frac{dCost(.)}{dL^s} - \frac{dCP(.)}{dL^s} \quad (3)$$

Note: $0 < res < 1$; and $(1 - res) > 0$.

The F.O.C denotes that a competitive bank will adjust its volume of small business loans in such a way that the corresponding marginal revenue $(1 - res)((r_L - r_D)) + (res)[r_L - r_G]$ equals to the marginal management cost of the loan to the small enterprises $[\frac{dCost}{dL^s}]$ plus the marginal policy cost $\frac{dCP(.)}{dL^s}$.

We can derive the analyses on the two interest rate spreads and supply of loans from Equation (3).

a). A rise in the spread between the lending rate (r_L) and the deposit rate (r_D) entails an increase in the supply of loans.

b). A rise in the spread between the lending rate (r_L) and the government security rate (r_G) is going to increase the supply of loans.

3.2 Mandatory Credit Allocation and Supply of Small Enterprise Loans

Next, we need to derive the implication of mandatory credit policy on the supply of small business loans. To do so, we need to carry out a comparative analysis between the F.O.C of the profit function with the credit policy (Equation 3)

and without the credit policy $\frac{\partial \Pi^{NP}}{\partial L^s}$ (Equation 4).

$$\frac{\partial \Pi^{NP}}{\partial L^s} = 0 = (1 - res)((r_L - r_D)) - res[r_L - r_G] - \frac{dCost(.)}{dL^s} \quad (4)$$

With $\frac{dCP(.)}{dL^s} < 0$ (i.e. an increase in the supply of small loans should reduce

(increase) the penalty (reward) that the bank will receive), we can argue for the following.

(i). For the case with credit policy:

$$(1 - res)((r_L - r_D)) - res[r_L - r_G] - \frac{dCost(.)}{dL^s} = \frac{dCP(.)}{dL^s} < 0 \quad (5)$$

The marginal revenue minus the marginal cost of management is negative.

(ii). For the case without credit policy:

$$(1 - res)((r_L - r_D)) - res[r_L - r_G] - \frac{dCost(.)}{dL^s} = 0 \quad (6)$$

The marginal revenue minus the marginal cost of management equals to zero.

Given the standard assumption of diminishing marginal profit, Equations (5 and 6) imply that the supply of small loans with the presence of “credit policy” is *larger* than the level without the policy. In another word, the enforcement (the abolishment) of the credit mandatory policy will lead to a larger (smaller) amount of loans to the small enterprises by the commercial banks.

4. Empirics

4.1 Working Model and Data²⁰

Based on the theoretical framework in section 2, the following regression of the semi-log equation will be tested:

²⁰ The author wishes to thank Saut Simanjuntak of Bank Indonesia for providing most of the key data series for this section of the paper.

$$PL_{it}^s = \beta_0 + \beta_1(r_L - r_D)_{it} + \beta_2(r_L - r_G)_{it} + \beta_3gg_t + \beta_4crisis_t + \varepsilon_t \quad (7)$$

The crisis dummy variable ($crisis_t$) is added to capture the changes in the overall domestic economic condition due to the 1997 financial crisis in Indonesia. (β_0) and (ε_t) are the constant parameter and the error term, respectively. (t) denotes the time, and (i) represents the three groups of small credit share for: state and private banks combined; state bank only; and private bank only. The test will cover the period from quarter 1, 1993 to quarter 2, 2002. The availability of quarterly series on the loans to small enterprises dictates our choice of testing period.

(PL_{it}^s) are the percentage shares of loans allocated to the small enterprises at time (t) by both state and private banks combined and by each group of banks individually. The data are sourced from the Bank Indonesia Data Base. Variable PL_{it}^s are in the log-forms.

($r_L - r_D$)_{*t*} is the spread between the lending and the deposit rate at time t .²¹

The lending rates for the private and the state banks are the average working capital for 12 months offered by each group of banks. The deposit rates are the average of the annual 3, 6 and 12 months time deposit rates for both the state and the private banks. The data sets are taken from the Bank of Indonesia Data Base. As for the case of the total small enterprise loans of the private and state banks combined, we construct the following weighted interest rate index:

$$(r_L - r_D)_t^T = \left(\frac{priv}{priv + stat} \right) (r_L - r_D)_t^P + \left(\frac{stat}{priv + stat} \right) (r_L - r_D)_t^S \quad (8)$$

²¹ Given the negative interest spreads for some periods, the log-forms of the variables cannot be calculated.

Where: (*priv*) and (*stat*) are the total credit outstanding to the small enterprise by the private and state banks, respectively. $(r_L - r_D)_i^P$ and $(r_L - r_D)_i^S$ are the lending and deposit spread rates for private and state banks, respectively. From the theoretical framework (section 2), we therefore expect that ($\beta_1 > 0$).

$(r_L - r_G)_{it}$ represents the spread between the interest returns of the loan and that of the central bank security at time t .²² The rate of central bank security is the average of 1 month and 3 month Bank Indonesia Security (SBI) rate. Both of these series are adopted from the Bank of Indonesia Data Base. β_2 is expected to be positive. For the case of private and state banks combined, we construct the following weighted interest rate index:

$$(r_L - r_G)_i^T = \left(\frac{priv}{priv + stat} \right) (r_L - r_G)_i^P + \left(\frac{stat}{priv + stat} \right) (r_L - r_G)_i^S \quad (9)$$

The definitions of (*priv*) and (*stat*) are the same as before. $(r_L - r_G)_i^P$ and $(r_L - r_G)_i^S$ are the lending and SBI spread rates for private and state banks, respectively.

(*gg*_{*t*}) represents the mandatory small business credit allocation policy imposed by the central bank on the domestic commercial banks. To capture this change in policy, we introduce a dummy variable for (*gg*) where it is equal to one prior to quarter 1, 2001 and equal to zero otherwise. Based on our theoretical analysis, β_3 is positive.

(*crisis*_{*t*}) is the dummy variable. It is equal to zero for quarter 1, 1993 to quarter 1, 1997, and equal to one, otherwise. Given the political uncertainty and the

²² See footnote #12.

fragility of economic recovery in the country, we can confidently argue that the impacts of the 1997 financial crisis continue to be felt in 2003. Higher investment risks are expected during the crisis period, and will therefore likely to deter any expansion of the supply of loans into the economy. We therefore expect β_4 to be negative.

4.2 Test Results

We perform three sequential sets of testing: a) the unit root test; b) the Johansen cointegration test; and c) the autoregressive distributed lags (ARDL) error correction model test. This sub-section will focus mainly on highlighting key empirical findings. As for further “interpretations” and policy related analysis, section 5 of the paper will cover them.

4.2.1 The Unit Root Tests

The commonly used Augmented Dickey Fuller (ADF) testing is first carried out. The results confirm that all relevant series are stationary at first differenced --- Integrated of Order (1), except for variable $(r_L - r_G)_t$ of the private bank, an I(0) series (Table 2). However, given the potential presence of structural breaks associated with the 1997 financial crisis, the low power of the ADF test may not be sufficiently sensitive to differentiate a stationary series from one that is non-stationary, *especially* at the level.

In order to evaluate the unit root property more structurally for each variable at its level, we apply the next set of tests introduced by Banerjee, Lumsdaine and Stock (1992) ---henceforth BLS. The BLS test provides a more in-depth investigation of the possibility that aggregate economic time series can be characterised as being stationary around “ a single or multiple structural breaks”. The BLS test extends the Dickey-Fuller t -test by constructing the time series of rollingly computed estimators

and their t -statistics. Following the BLS, we can compute the smallest (minimal) and the largest (maximal) Dickey-Fuller t -test statistics from the rolling test, both of which are compared to their respective critical values (Table 2B). The test results confirm the findings of the ADF tests. It also finds that the null hypothesis of non-stationary at the 5 percent critical value cannot be rejected for $(r_L - r_G)_{it}$ of the private bank at the level. Overall, we can therefore conclude that all variables are integrated of order 1.

4.2.2 The Long-Run Determinants of Small Enterprise Loans

Given the unit-root properties of the relevant series, the presence of a long-run relationship among the variables in Equation 7 for each group (total, state and private) will have to be evaluated. For each testing, the time trend variable is added into the regression equation. If the variable is found to be insignificant, then it will be excluded from the final testing. The Johansen Cointegration test results are reported in (Tables 3 - 5).

In all three cases, we find one cointegrating relationship at 1 percent significant level for both the “total” regression and the state bank; and at 5 percent level for both regressions of the private bank. Due to their significant Chi-square statistics ($\chi^2(1)$) at 1 percent, the time trend (t) is included only for the state bank case. As for the “total” and “the private bank” regressions, the time trend variable is insignificant, hence it is dropped from the final testing. In all three regressions, the crisis dummy variable is excluded due to its insignificant ($\chi^2(1)$) statistics. The signs of the coefficient estimates of all key variables for both groups of banks are consistent with the theoretical framework, with the exception of the $(r_L - r_D)_{it}$ for the state bank regression (Table 4).

The results also suggest that the long-run coefficient estimate for the spread rates between the loan and the SBI are significant at 1 percent level of $\chi^2(1)$ for both

the private and state bank individually, and at 5 percent for the total regression. As for the spread rates between the loan and deposit, the coefficients are significant at 1 percent level for the state, but only at 5 percent for the private bank and at 10 percent for the “total” case.

Conflicting results are reported from the cointegration testing on the “policy requirement” (gg_t) variable. For the total regression, this variable is found to be theoretically consistent and significant in explaining the long-run supply of the loans to the small enterprises at 1 percent level (Table 3). When we regress the individual group of banks, the variable (gg_t) is found to be insignificant for the state banks, but it is significant at 5 percent level of $\chi^2(1)$ statistics for the private banks (Tables 4 – 5).

4.2.3 The Autoregressive Distributed Lag Error Correction Model

Next, the ARDL Error Correction Model testing is conducted to analyse the short-run determinants of the supply of small enterprise loans for all three cases. This approach is adopted to allow us to evaluate not only the significance of the determinant factors, but equally important, the “timing” of the impacts. We follow the general to specific approach of Hendry (1974 and 1977) by starting with four lags and dropping the insignificant lags.²³ The ARDL error correction model can be expressed as the following: (Equation 10):

$$\Delta PL_{it}^s = c_0 + \sum_{k=0} \alpha_{i(t-k)} \Delta PL_{i(t-k)}^s + \sum_{k=0} \beta_{i(t-k)} \Delta(r_L - r_D)_{i(t-k)} + \sum_{k=0} \delta_{i(t-k)} \Delta(r_L - r_G)_{i(t-k)} + \sum_{k=0} \phi_{i(t-k)} gg_{i(t-k)} + \chi crisis_t + \lambda ec m_{t-1} + \varepsilon_t$$

We add the lags of the dependent variable ($\Delta PL_{i(t-k)}^s$) to capture the impacts of the previous quarters of loans ---the adjustment component. The coefficient estimate for

²³ Given the number of observations and the degree of freedom, we only include four lags. As the test results show that at most only up to three lags are found to be significant for both sets of regression estimates (Table 5 and 6).

this lagged dependent variable is expected to be negative, as a substantial growth in the supply of loans at (t-1) will likely to be followed by a lesser amount at time (t). As for the rest of the explanatory variables, the coefficient estimates are expected to be consistent with the theoretical frameworks discussed in section 3. The error correction component (ecm_{t-1}) represents a long-run relationship, and is expected to have a significant and negative coefficient estimate.

$$\sum_{k=0} \alpha_{i(t-k)} < 0, \sum_{k=0} \beta_{i(t-k)} > 0, \sum_{k=0} \delta_{i(t-k)} > 0, \sum_{ki=0} \varphi_{i(t-k)} > 0, \gamma < 0, \text{ and } \lambda < 0.$$

Confirming the fundamental role of the key explanatory variables, Tables (6 – 8) report significant and theoretically consistent coefficient estimates for the lending and the SBI spread rate variable and (gg_t) at 1 percent to 10 percent critical levels. The coefficient estimate for (gg) is significant at time (t) and at ($t - 2$) for the case of private and state banks, respectively. As for the spread between the lending rate and deposit rate, the coefficients are all significant at either 1 percent or 5 percent, but coefficients for the total loans (Table 6) and the state bank (Table 7) are negative, inconsistent with the prior theoretical expectation.

The significance and negative coefficients (λ) for all three regressions confirm the presence of a long-run relationship between the relevant variables. The sizes of the coefficient indicate that the convergence to the long-run trend is more rapid in the case of the private national banks than that of the state banks. For the lagged variable of loan outstanding ($\Delta PL_{i(t-k)}^s$) and the crisis dummy, we find a

significant case only for the private national banks and for the state bank, respectively.²⁴

Several key diagnostic statistics, including the Durbin-Watson (DW), the Ljung-Box Q statistics, the adjusted R-squared, the F-statistics (and its probability), the Engle's ARCH test for heteroscedasticity and the Jarque-Bera normality test, are presented for each regression. The adjusted R-squared suggests that the changes in the independent variables explained at least around 65 percent of the fluctuations in the small loans, arguably a respectably high R-squared for a short-run analysis. Similarly, the F-statistics indicate that the probability is at least 95 percent that one or more of the independent variables are non-zero. The Durbin-Watson statistics and the Q-statistics indicate that the serial correlations are not a problem in any of the regression results. The ARCH results conclude the absence of heteroscedasticity in general. Lastly, the Jarque-Bera test statistics confirm the normality of the disturbances.

4.2.3.1 Testing the Implicit Assumption of Exogeneity

The validity of the econometrics test results posted in tables (6 - 8) crucially depends on the implicit assumption that the right-hand side variables in Equation (10) are statistically exogenous to supply of credits for each of the groups of banks. To test for the statistical exogeneity, we employ the one-sided procedure to test for causality in the sense of Granger (1969). This one-sided Granger causality test is chosen here from a number of alternative causality techniques in the light of the Monte Carlo evidence reported by Geweke, Meese, and Dent (1983).²⁵

To be consistent with the ARDL error-correction model tests, we consider only the significant variables posted in Tables 6 - 8. Furthermore, since the Granger

²⁴ When we include $(\Delta PL_{i(t-k)}^s)$ for the state bank regression, the overall results of the test actually worsened. So we opted not to include this variable, and only focused on the primary explanatory variables.

²⁵ The same procedure was also employed by Darrat and Arize (1990).

test is narrowly interpreted here as a test for statistical exogeneity of particular variables within a given model, it seemed more prudent to maintain the same lag specifications as in the early results shown in Tables 6 - 8 when applying the Granger test.²⁶ From the test results, we can conclude that the implicit assumption of exogeneity for the explanatory variables is generally found to be applicable in all cases. For the sake of brevity, we do not report the test results. But the results can be made available upon request.

5. Policy Implications

5.1 The Loan and SBI Spread Rates

Given high uncertainties facing the local industries, especially at the peak of the crisis in 1998 and 1999, the availability of the Certificate of Bank Indonesia, a relatively secure investment instrument with respectably high interest returns has attracted banks to accumulate a rather generous proportion of their assets in terms of the SBI. In 1999, the ratio of outstanding SBI to total bank credit reached well above 40 percent (Bank Indonesia (2000)). The database of Bank Indonesia also shows that by the end of November 2002, around 23 percent and 45 percent of the outstanding SBI in the domestic economy are being held by the state and the private commercial banks, respectively. The large holding of central bank certificate confirms the presence of a flight to quality, shifting assets toward less risky ones (Ding, Domac and Ferri (1998) and Bernanke, Gertler and Gilchrist (1996)).

The positive coefficient estimate for variable $(r_L - r_G)_t$ in all three regressions suggests that the high holding of SBI, particularly by the private commercial banks, reduces the pool of loans to local industries, including those for the small businesses. These findings underscore the adverse consequence of the tight monetary policy

²⁶ We experimented with different lag structures, and consistent overall results were obtained.

adopted by the central bank on the supply of credits to the small enterprises at the early stage of the crisis in particular. They also confirm the findings of early studies on these issues such as Greenwald and Stiglitz (1993), Mankiw (1996), Kashyap, Stein and Wilcox (1993) and Bank Indonesia (2000).

5.2 The Loan and Deposit Spread Rates

The positive and significant coefficient estimate for $(r_L - r_D)_t$ for private banks suggests the undesirable consequences of the much sharper increase in the rates of the deposit than those of the lending rates on the *levels* and *shares* of the small business lending (Table 8). Our test results support the claims of Cameron (1999) and Siregar (2004).²⁷

However, for the state bank, the coefficient for $(r_L - r_D)_t$ is found to be significant and negative (Table 7). Given the share of the state bank loans to small enterprise in average larger than that of the private bank, the coefficient for the spread between lending and deposit is also significant and negative for the “total” case (Table 6).

The finding for the state bank is theoretically inconsistent, and more importantly, it suggests that the state banks in Indonesia do not necessarily behave like a profit-maximizing banks. After experiencing a sharp drop at the early stage of the crisis (the last two quarters of 1997 and first quarter of 1998), the share of the small business loans of the state banks immediately grew positively (Figure 2). This was despite the much more severe and lasting negative spreads between the loan and deposit rates experienced by the state bank than those reported for the private banks (Figure 5).

²⁷ These two studies, particularly Cameron (1999), do not provide much of empirical testing to support their findings.

Arguably given the full supports of the government and the increase of public deposits in the state banks, particularly at the early stage of 1997 financial crisis, the state banks were able to endure the heavy cost of the negative spreads and became the main source of loans to the domestic industries in general, and to the small businesses in particular. Even with the central bank guarantee on all deposits of the commercial banks (private and state), savers appeared to want to avoid the potentially long delayed on the withdrawals of the savings when a private bank was being restructured (Patten *et.al* (2001)). This explains the massive transfer of deposits from the private to the state banks, especially at the height of the crisis.²⁸

As shown in Figures 2, the share of the small enterprise credits by the private bank, on the other hand, did not report any positive growths until early 1999 when the spread rates have returned to positive levels. By end of December 1997, the total outstanding credits extended by the private bank in Indonesia was about 169 trillion rupiah compared to around 132 trillion rupiah of the state bank. At the end of December 1999, the outstanding loans of the private bank dropped severely to around 56 trillion rupiah, while the number of the state bank dropped at a much less significant rate to around 112 trillion rupiah.²⁹

²⁸ With the closures of key private banks, leading to bank run on the private banks at the early stage of the crisis, and under the wide perception that the state banks would be protected by the government, a large share of bank deposits in the country moved from the private to the state banks. Patten *et.al* (2001) shows that total saving at the Bank Rakyat Indonesia (a state bank) increased from 8.3 trillion rupiah at the end of October 1997 to 17.9 trillion rupiah at the end of October 1999. The data on demand, saving and time deposits for different groups of bank can be downloaded from the web-site of Bank Indonesia (www.bi.go.id).

²⁹ Subsequently, the much sharper rise in the short-term deposit (such as one month rate) than the longer term (such as one year) had created a substantial and destabilising shift in the time deposits.²⁹ Between late 1996 to July 1997, the proportion of longer-term deposits (6 month or 12 months) in the domestic banking sector was around 45-50 percent of the total time deposit, with one-month deposits constituting less than 30 percent (Evans (1998)). By July 1998, the share of one-month deposit reached almost 70 percent of the total deposit, while the 6 and 12 month deposits dropped to less than 15 percent. The dominance of very short-term deposits add further element of instability to bank operations, through mismatch between short-term funds and long-term loans. This unfavourable position largely contributes to the worsening of the level of non-performance loans and negative profits experienced by the domestic banking industry in 1998 and 1999 (Siregar (2003)). Overall, the banking industry in Indonesia had experienced a total gross loss of as much as Rp178 trillion by December 1998. Coincide with the end of negative spread rates in early 2000, the banking industry started to post positive gross profits in 2000 and 2001. Reflecting the improvement in

5.3 Bank Indonesia Policy of January 2001

Based on the significant and positive coefficient estimate of variable gg_t of the Johansen test for the private bank, the central bank policy of January 2001 will likely to have *long-run* unfavourable consequences on the share of the outstanding credits to small enterprises by the national private banks, but not for the state banks (Table 3 and 5). Furthermore, the adverse long-run implication of the abolishment of any mandatory credit allocation to the small enterprises by the private banks seems to have generated the unfavourable consequence of the January 2001 policy on the “total” credit outstanding extended by the state and the private banks combined (Table 3). We recognize however the results for the long-run cases may not be robust due to the available short sample period.

Another interesting analyses can be drawn from the short-run flows. The coefficient estimate of variable (gg) of Table 7 suggests that the abolishment of the mandatory credit allocation policy did not have an immediate impact on the supply of small enterprise loans by the state banks. The test result indicates that there are six months (two quarters) lags. As for the private banks, an immediate implication is reported, with none of the lagged variable (gg) is found to be significant. The less severe impacts of the abolishment of credit mandatory allocation policy to small enterprise on the state banks than on the private banks can be attributed to the roles of two state banks (BRI and BTN) and also the indirect supports by the central bank to those two state banks.

The empirical findings for the short-run cases are consistent with the stylised facts. The percentage share of credit outstanding to the small businesses by the private banks started to fall in the first quarter of 2001, while those of the state bank

the profitability of the banking industry, the percentage of the gross non-performing loans over the total loans of the group of private national banks under the Indonesian Bank Restructuring Agency improved to the level of 18 percent at the end of 2000 from the worst level of 50 percent reported between December 1998 and March 1999.

only reported substantial declines starting the third quarter of 2001 (Figure 2). By the end of the third quarter of 2001, the average share of the loan outstanding to small businesses by the private banks has dropped to around 12 percent, while that of the state bank still hovered around 27 percent, significantly higher than the abolished 20 percent requirement.

Our overall test results in general, and for the private sector in particular, validates the concerns shared by the parliament members on the need to reintroduce the mandatory loan requirement for the small enterprises. In fact, the parliamentary debates in late 2002 and early 2003 had even brought up the possibility of 40 percent allocation of commercial bank loans to the small - and medium-scale enterprises.³⁰

6. Future Challenges and Concluding Remarks

This study introduces a profit-maximization model that captures three primary determinants of the supply of bank loans to the small enterprises by the private and the state banks in Indonesia. The empirics confirmed the consequences of negative spreads of key interest rate spreads on the supply of the small enterprise loans. With the more moderate monetary policy stance starting late 1999, these key interest spreads have returned to positive numbers.

The test results also suggest that the abolishment of the mandatory credit allocation has been responsible for the decline in the share of small enterprise loans by the private and state since first quarter 2001. Debates have emerged on this issue, both in parliament and various ministries. Should Indonesia reinstate the policy of mandatory credit allocation to small enterprises on all commercial banks (private and state)?

Recent studies have stressed a number of adverse implications of government interventions, connected lending, and lack of prudential regulation and supervision on the performance of domestic banks and in explaining episodes of

³⁰ *BISNIS INDONESIA* Daily Newspaper, November 15, 2002.

banking crisis in 1980s and 1990s (Goldstein and Turner (1996) and Demirguc-Kunt and Detragiache (1997)). In particular, there is widespread agreement that government directed lending contributed to the banking sector problems such as distortion in credit allocation and pricing in Japan, Korea, Turkey, China and other countries over the past two decades.³¹

Furthermore, which institution should be responsible for monitoring the implementation of the policy? With the lack of any other legitimate and independent authority to assume this role, Bank Indonesia seems to be the only natural candidate.³² Despite, the transfer of responsibility from the central bank to BRI, BTN and a new institution to monitor and to ensure adequate supply of loans to the small and medium enterprises, the indirect role of Bank Indonesia remains arguably significant. Will this create hindrances to the on-going efforts of creating an independent central bank? From the past experiences of Bank Indonesia, the responsibility of administering credits for domestic industries in general have often clashed with the conduct and target of the monetary policy.

To design appropriate measures to deal with the small business loans, further researches certainly have to be performed. Just looking at the present trends, it is clear however that the role of regional development banks should be enhanced. At the end of December 1997, the small business loans of the regional banks only contributed less than 7 percent of the total small loans by the banking sector. During the crisis, their share had steadily increased and reached around 20 percent by June 2002, only few percentage points lower than the share of the private national banks. The local nature of small business lending requires local expertise for monitoring borrower-specific risks, etc., and hence, appears to suit the inherently more local

³¹ See for example: Borensztein and Lee (1999), Lindgren *et.al* (1999) and Huh and Kim (1993).

³² Starting May 2003, there have been intensive discussions in the country on initiatives to create an independent institution that has the full responsibilities of monitoring the operations of the domestic financial institutions. Most agree that there is a need for this type of institution. But many also acknowledge that the establishment of this type of institution will require a good number of years.

focus of the regional development bank. Furthermore, as private banks get larger through mergers and consolidations, their business focus is expected to shift toward larger commercial customers.³³ The commitment by the local and central governments in Indonesia to push for the decentralization process, through delegations of much larger autonomies from the central government to the provincial government, should largely shape the role of the regional development banks as a provider of financial services to the local industries in each province, including the small businesses in the near future.³⁴

²³ The ongoing consolidation of the banking industry in the United States for instance has shown evidences that as banking organizations grow in size; the needs of smaller business customers may not be met (Peek and Rosengren (1996), Samolyk (1997), Strahan and Wetson (1998), and Avery and Samolyk (2000). Berger et.al (1998) find that small business lending increases following small bank mergers but falls following large bank mergers.

³⁴ In general the implementation of regional autonomy is regulated by Law No. 22, 1999 on "Local Government" and Law No. 25, 1999 on "The Fiscal Balance Between the Central Government and the Regions". The initial stage of the implementation of the regional autonomy started in January 2001.

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Table 1:
Share of Small, Medium and Big Scale Enterprises

Share of Small, Medium and Big Scale Enterprises in Total GDP (in %)¹					
	1997	1998	1999	2000	2001
Small Scale	40.45	41.83	43.08	39.93	39.40
Medium Scale	17.41	16.03	15.65	15.23	15.34
Large Scale	42.14	42.15	41.27	44.84	45.26
Share of Small, Medium and Big Scale Enterprises in Total Entrepreneurs (in %)²					
	1997	1998	1999	2000	2001
Small Scale	99.84	99.85	99.86	99.85	99.85
Medium Scale	0.15	0.14	0.14	0.14	0.14
Large Scale	0.01	0.01	0.01	0.01	0.01
Share of Small, Medium and Big Scale Enterprises in Total Employment (in %)³					
	1997	1998	1999	2000	2001
Small Scale	87.62	88.66	88.75	88.79	88.59
Medium Scale	11.78	10.78	10.71	10.67	10.85
Large Scale	0.60	0.58	0.54	0.54	0.55

Source: Database of Bank Indonesia

Note:

^{1/} For instance; Share for small scale firms=(total gross output of small firms/total GDP)*100%

^{2/} For instance; Share for small scale firms=(total small scale entrepreneurs/total entrepreneurs)*100%

^{3/} For instance;

Share for small scale firms=(total employment in the small firms/total labour forces employed in the economy)*100%

Table 2:
ADF Unit-Root Test

Variable	Statistics	# of Lags ^a	Remarks
Private Bank:			
L_{it}^s	-1.8532	4 (with intercept)	I(1)
	-4.1157	3 (none) ^b	
$(r_L - r_D)_{it}$	-2.9069	1 (none)	I(1)
	-5.1788	1 (none)	
$(r_L - r_G)_{it}$	-2.7842	1 (none)	I(0)
State Bank:			
L_{it}^s	-2.6717	1 (with intercept)	I(1)
	-3.2016	1 (none)	
$(r_L - r_D)_{it}$	-1.8379	1 (none)	I(1)
	-3.3802	1 (none)	
$(r_L - r_G)_{it}$	-2.4058	1 (none)	I(1)
	-3.6070	1 (none)	
Total:			
L_{it}^s	-2.4093	1 (with intercept)	I(1)
	-3.5220	1 (none)	
$(r_L - r_D)_{it}$	-2.8706	1 (none)	I(1)
	-3.5461	1 (none)	
$(r_L - r_G)_{it}$	-2.9135	1 (none)	I(1)
	-4.7143	1 (none)	

^a/ The number of lags is determined by the Akaike Information Criterion statistics. ^b/None: without both intercept and time trend.

Table 2b:
BLS Rolling Unit-Root Test at the Level*

		Total	Private	State
L_{it}^s	Maximum	-0.0439	0.9707	-1.3987
	Minimum	-0.9782	-0.1475	-3.5880
$(r_L - r_D)_{it}$	Maximum	-0.3289	-0.4746	-1.0207
	Minimum	-0.8068	-3.2977	-4.6666
$(r_L - r_G)_{it}$	Maximum	-0.3162	-0.1591	-0.3975
	Minimum	-0.5194	-0.4779	-0.4009

* At the first difference, these variables are all stationary. Hence we can conclude, all of them are I(1) series. The results for the first difference can be made available upon request to the author. Number of lags included here are consistent with the size that we use for the ADF. Critical Value for # of Obs < 100 at 5 percent level: At Maximum: -1.49; at Minimum: -5.01

Table 3:
Johansen Cointegration Test for Total Outstanding Credits (Private and State)

Eigenvalue	Likelihood Ratio	1 Percent Critical Value	Number of Cointegrating Equations
0.5879	63.98	47.21	None*
0.4349	32.96	29.68	At most 1
0.2413	12.98	15.41	At most 2
0.0903	3.31	3.76	At most 3
(*) indicates 1 cointegrating equation at 1% significance level. # of lags = 2; Log Likelihood = -96.00 Normalized Cointegrating Coefficients: $L_t^s = 2.981 + 0.172gg_t + 0.015(r_L - r_D)_t + 0.009(r_L - r_G)_t$ <div style="display: flex; justify-content: space-around; width: 100%;"> (15.28)* (3.52)*** (3.92)** $\chi^2(1)$ </div>			
*significant at 1 percent ** significant at 5 percent; *** significant at 10 percent.			

Table 4:
Johansen Cointegration Test for the State Banks

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	Number of Cointegrating Equations
0.752	82.16	62.99	None*
0.345	31.91	42.44	At most 1
0.294	16.68	25.32	At most 2
0.109	4.17	12.25	At most 3
(*) indicates 1 cointegrating equation at 1% significance level. # of lags = 1, Log Likelihood = -127.23 Normalized Cointegrating Coefficients: $L_t^s = 2.813 - 0.082(r_L - r_D)_t + 0.093(r_L - r_G)_t + 0.017gg_t + 0.011t$ <div style="display: flex; justify-content: space-around; width: 100%;"> (10.75)* (19.99)* (0.024) (13.44)* $\chi^2(1)$ </div>			
*significant at 1 percent ** significant at 5 percent; *** significant at 10 percent.			

Table 5:
Johansen Cointegration Test for the Private National Banks

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	Number of Cointegrating Equations
0.8547	82.87	47.21	None*
0.2230	17.28	29.68	At most 1
0.1939	8.70	15.41	At most 2
0.0396	1.37	3.76	At most 3

(*) indicates 1 cointegrating equation at 5% significance level.

of lags = 3; Log likelihood: -34.64
Normalized Cointegrating Coefficients:

$$L_t^s = 0.073(r_L - r_D)_t + 0.085(r_L - r_G)_t + 0.250gg_t + 2.381$$

(3.54)**
(47.97)*
(6.30)**
 $\chi^2(1)$

*significant at 1 percent ** significant at 5 percent; *** significant at 10 percent.

Table 6:
ARDL Error Correction Test for Total Credit Outstanding (State and Private)

Dependent Variable: ΔL_t

Variable	Coefficient	Std. Error	t-Statistics	Probability
Δgg_{t-2}	0.0935	0.0481	1.9421	0.0623
$\Delta(r_L - r_D)_t$	0.0138	0.0049	2.7976	0.0092
$\Delta(r_L - r_D)_{t-1}$	-0.0232	0.0068	-3.4123	0.0020
$\Delta(r_L - r_G)_t$	0.0126	0.0021	5.8483	0.0000
$\Delta(r_L - r_G)_{t-2}$	0.0127	0.0029	4.3832	0.0001
ECM_{t-1}	-0.3244	0.1360	-2.3845	0.0241

Total Number of Observations: 38
Adjusted R-squared: 0.693
Durbin-Watson Stat: 1.927; Prob(Q(1))=0.978; Prob(Q(2))=0.952;
Prob(Q(4))=0.0.992 ARCH(Prob(LM)): 0.884; F-stat: 13.808; Prob (F-stat): 0.0000;
Prob(JB) = 0.101

Table 7:
ARDL Error Correction Test for The State Banks

Dependent Variable: ΔL_t

Variable	Coefficient	Std. Error	t-Statistics	Probability
$\Delta(r_L - r_D)_{t-1}$	-0.0301	0.0057	-5.3221	0.0000
$\Delta(r_L - r_G)_t$	0.0174	0.0022	7.8591	0.0000
$\Delta(r_L - r_G)_{t-2}$	0.0096	0.0023	4.1240	0.0003
$\Delta(gg)_{t-2}$	0.1365	0.0474	2.8772	0.0077
ECM_{t-1}	-0.2197	0.0398	-5.1557	0.0000
$Dummy_t$	-0.4422	0.0954	-4.6365	0.0001
Total Number of Observations: 38 Adjusted R-squared: 0.661 Durbin-Watson Stat: 2.436; Prob(Q(1))=0.068; Prob(Q(2))=0.161; Prob(Q(4))=0.300 ARCH(Prob of LM): 0.698; F-stat: 10.48; Prob (F-stat): 0.0000; Prob(JB) = 0.547				

Table 8:
ARDL Error Correction Test for the Private National Banks

Dependent Variable: ΔL_t

Variable	Coefficient	Std. Error	t-Statistics	Probability
ΔL_{t-1}	-0.6609	0.1188	-5.5613	0.0000
$\Delta(r_L - r_D)_{t-2}$	0.0176	0.0083	2.1154	0.0431
$\Delta(r_L - r_G)_t$	0.0312	0.0036	8.7922	0.0000
$\Delta(gg)_t$	0.1173	0.0531	2.2077	0.0353
ECM_{t-1}	-0.2276	0.0430	-5.642	0.0000
Total Number of Observations: 38 Adjusted R-squared: 0.698 Durbin-Watson Stat: 1.861; Prob(Q(1))=0.742; Prob(Q(2))=0.422; Prob(Q(4))=0.132; ARCH(Prob(LM)): 0.150; F-stat: 16.729; Prob (F-stat): 0.0000; Prob(JB): 0.726				

Figure 1a:
Growth Rate of Nominal Loans (Small and Total)
by the Private and State Banks Combined.

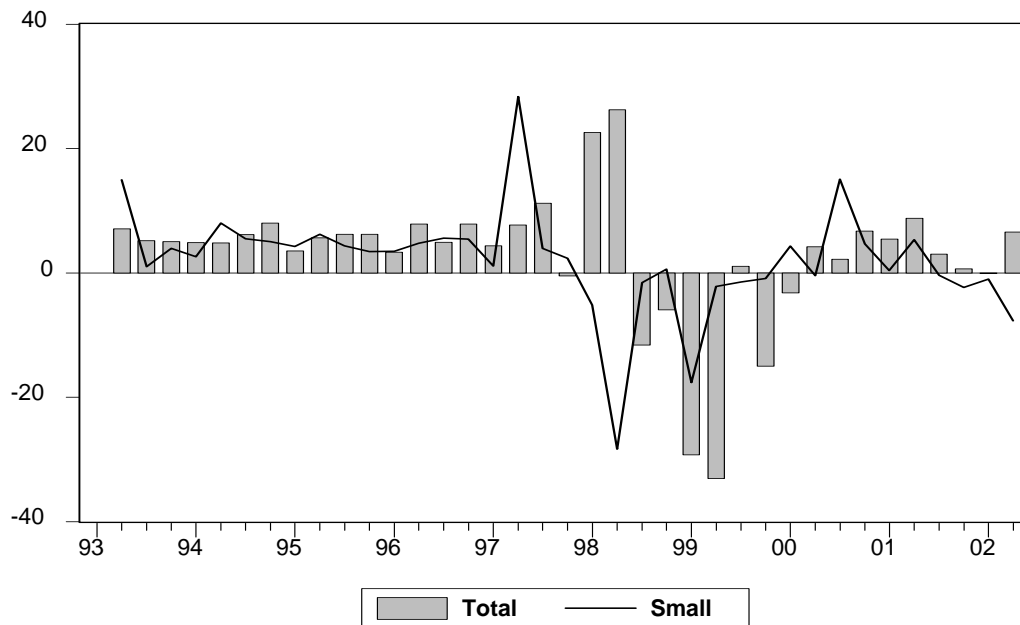
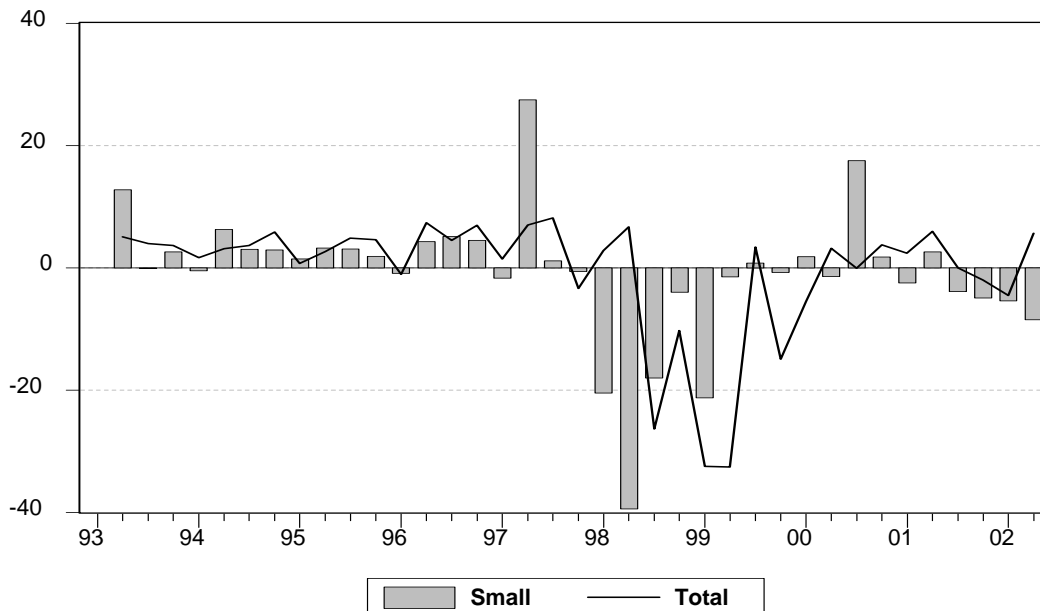
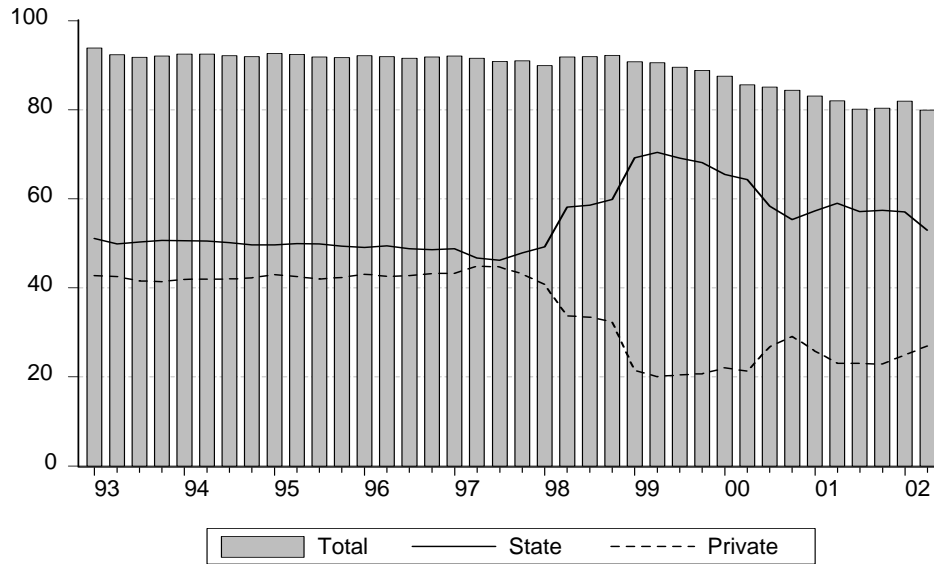


Figure 1b:
Growth Rate of Real Loans (Small and Total)
by the Private and State Banks Combined.



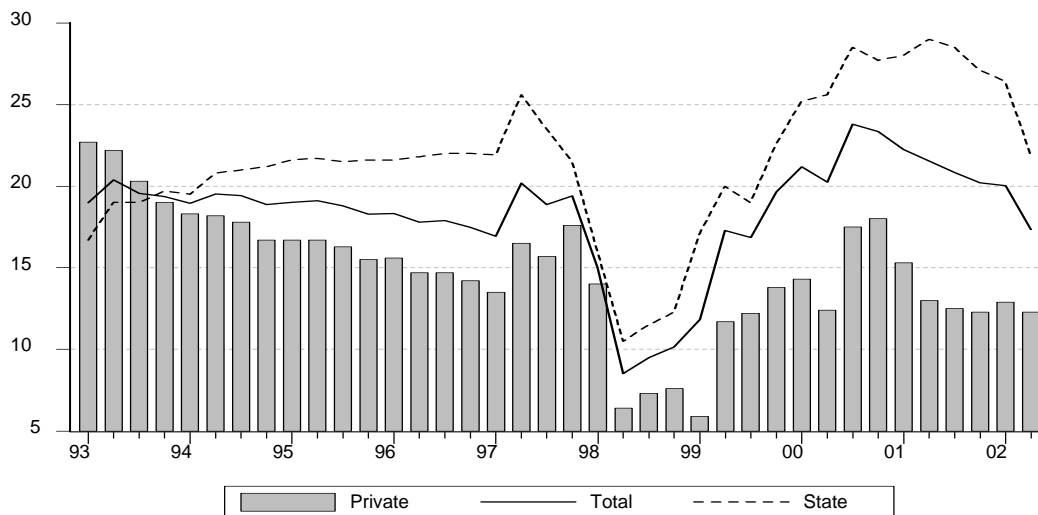
Source: Bank Indonesia database and author's own calculation. The real loans are nominal loans adjusted by the price levels (consumer price index).

Figure 2:
Shares (%) of Total Credit Outstanding to Small Enterprises in The Banking Sector



Source: Database of Bank Indonesia

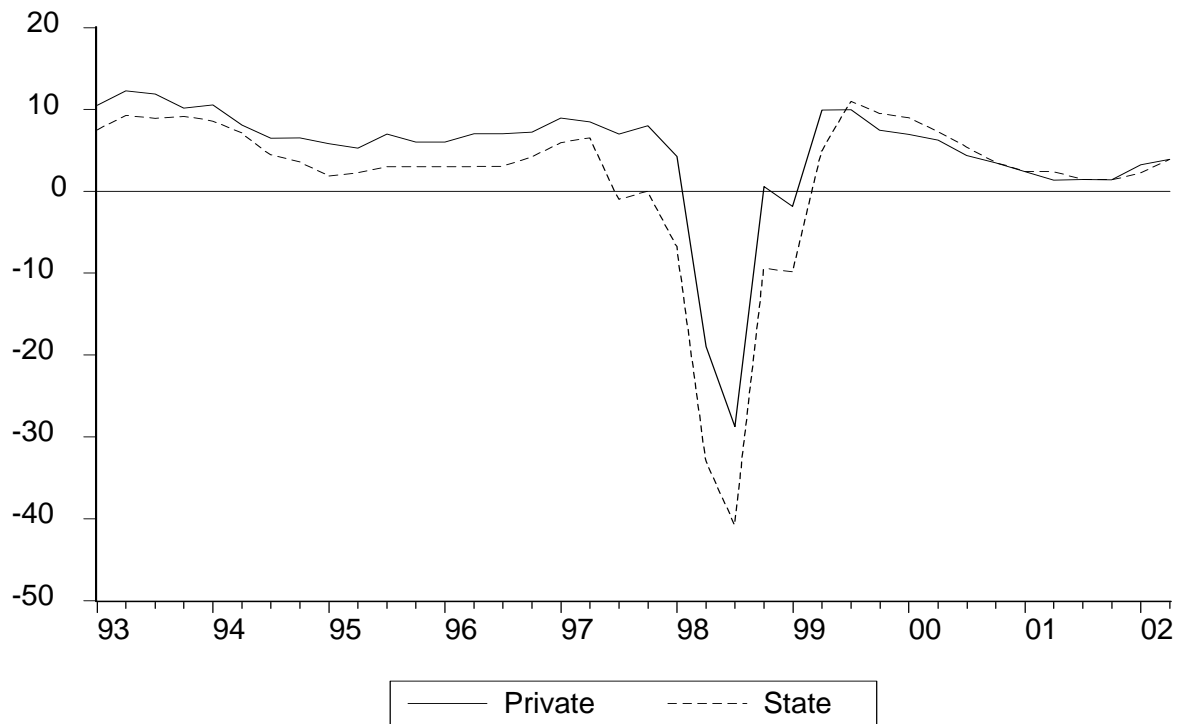
Figure 3:
Share (%) of Credit Outstanding to Small Enterprises for Each Group of Banks



“Total “ captures the share of the small business loans out of total private and state outstanding loans.

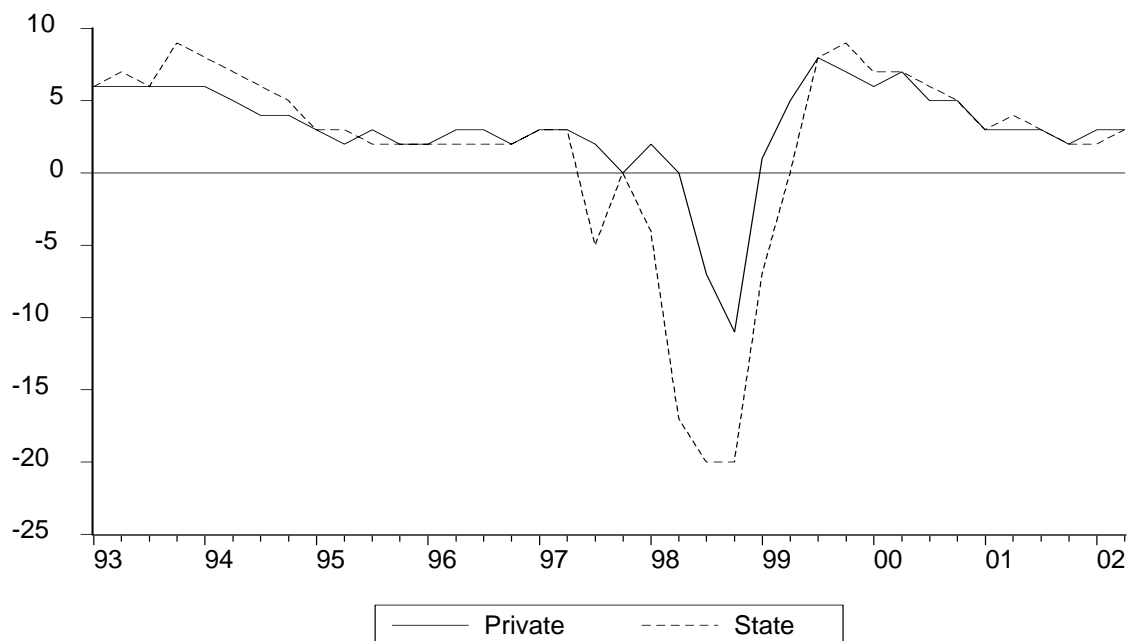
Source: Database of Bank Indonesia

Figure 4:
Loan-SBI Spread Rate



Source: Database of Bank Indonesia

Figure 5:
Loan-Deposit Spread Rate



Source: Database of Bank Indonesia.

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