The Impacts of Bank Loans on
Economic Development:
An Implication for East Asia from
an Equilibrium Contract Theory

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Abstract

In this paper, we first show that middle-term and long-term commercial bank loans were less mobile forms of external liabilities but that a large fraction of external bank debt had been financed by short-term loans in a large number of developing countries.   We then present a simple theoretical model where the vulnerable financial structure in developing countries might emerge as a result of efficient monitoring activities by competitive private banks.   In the model, we assume both asymmetric information and liquidation risk in the international financial market.   The existence of asymmetric information calls for the role of a short-term lender in monitoring borrowers' performance. However, since short-term debt can be a source of liquidity problems, total effects of efficient monitoring on economic welfare might be largely reduced when it increases the possibility of a liquidity shortfall.

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1. Introduction

In the 1990s, globalization of financial markets expanded the volume of private capital flows to developing countries. In particular, the miraculous economic success of East Asia in the first half of the 1990s attracted much of world private capital to the region. The most mobile forms of capital flows, commercial bank debt and portfolio investments, set the pace of these inflows. As a result, the East Asian economies (say, Thailand, Indonesia, and Korea) accumulated significant amount of unhedged short-term external liabilities before 1997.

It is now widely recognized that a large fraction of short-term external liabilities was one of the main reasons why the East Asian countries had the serious crisis. A large number of studies suggested that otherwise solvent East Asian countries might have suffered from a short-run liquidity problem because the available stock of reserves was low relative to the overall burden of external debt service (interest payments plus the renewal of loans coming to maturity).[1] This implies that if a large fraction of external liabilities had taken less mobile forms, the East Asian crisis might not have taken place as the form of a liquidity shortfall.

In fact, a piece of time-series evidence clearly suggests that the degree of post-crisis capital mobility in East Asia was quite different depending on whether capital flows were direct investment, portfolio investment, and commercial bank debt. For example, Table 1 reports the quarterly and annual data series of IFS to show how capital inflows to the East Asian economies changed before and after the crisis in four forms of capital inflows: direct investment, portfolio investment, bank loans, and other investments. Both quarterly and annual data (i.e., Tables 1a and 1b) suggest that before 1997, almost all forms of net private capital inflows steadily expanded throughout the East Asian countries such as Thailand, Indonesia, and Korea.

However, the quarterly data in Table 1a also indicates that inflows of both bank loans and portfolio investment turned to be negative after the crisis in all of these East Asian countries.[2] In particular, except for the Philippines, inflows of bank loans took large negative values for a long period after the crisis. This implies that the crisis was accompanied by significant amount of bank loan withdrawal from the East Asian countries.

On the other hand, except for Indonesia, inflows of direct investment never declined in the East Asian countries after the crisis in Table 1a. Instead, in Thailand, inflows of direct investment steadily increased after the crisis. Even

in Korea, inflows of direct investment were quite stable after the crisis. This implies that if a large fraction of external liabilities had been financed by less mobile capital such as direct investment, the East Asian crisis might not have taken place as the form of a liquidity shortfall. In other words, the East Asian crisis took place because a large fraction of external liabilities was financed by mobile forms of capital flows, particularly by commercial bank debt.

It is probably true that liquidity problems emerged in several Asian countries when panicking external creditors became unwilling to roll over existing short-term credits in 1997. However, a pure liquidity shortfall can take place for any short-term forms of external liabilities. Thus, it is not necessarily clear why commercial bank loans played a leading role in causing a liquidity shortfall in the East Asian economies.

In domestic financial markets, banks are known as one of the most prominent means of channeling investment capital to its highest return uses.[3] Through providing liquidity and permitting the efficient pooling of risk, their activities alter social composition of savings in a way that is potentially favorable to enhanced capital accumulation. As delegated monitors, they also specialize in gathering information about firms and reduce corporate myopia through overcoming the problems associated with informational asymmetry (for example, Leland and Pyle (1977) and Diamond (1984)). In particular, several previous studies emphasized a special role of banks not only in selecting borrowers but also in monitoring their ex-post performance (see, among others, Aoki (1994) and Hoshi, Kashyap, and Scharfstein (1991)).

Without unnecessary liquidation, these monitoring activities would have a positive impact on economic growth. However, if efficient ex-post monitoring activities make the debt maturity composition shorter, they can increase the possibility of a liquidity shortfall in the sense of Diamond and Dybvig (1983) when panicking external creditors become unwilling to roll over existing short-term credits.[4] In particular, without prudential regulation nor safety net, the possibility of liquidity problems can be high for international private bank loans.

The purpose of this paper is to present a simple theoretical explanation on why efficient monitoring activities by private banks can increase the possibility of a liquidity shortfall in the competitive international market. The theoretical model extends Diamond (1991, 1993) who formulated the choice of loan's term structure by private firms under asymmetric information.[5] In the model, there exists a liquidity risk of loss of control because internal funds are not sufficient. This liquidity risk is costly for the manager if he has a non-assignable control

rent through production.[6]   Thus, when the manager's control rent is large, long-term debt can be preferred by the firm to avoid the liquidity risk.[7] However, when there exists asymmetric information between lenders and borrowers, short-term debt lowers a good borrower's expected financing cost because of a possible arrival of good information.   Thus, when additional credit information arrival is highly probable, short-term debt can be preferred by borrowers (see Flannery (1986)).

Noting that efficient monitoring activities increase the advantage of using new information arrival, the latter result has an important implication for the choice of bank loan maturity.   That is, to the extent that liquidity risk is small, the result predicts that efficient monitoring activities by banks tend to make the debt maturity composition shorter.   Without unnecessary liquidation, short-term loans with efficient monitoring would have a positive effect on economic growth.   However, when neither prudential regulation nor safety net are established well, efficient monitoring activities by private banks can increase the possibility of having catastrophic liquidity problems.

The paper proceeds as follows.   Before presenting a theoretical model, section 2 first shows that middle-term and long-term commercial bank loans were less mobile forms of external liabilities.   It also shows that a large fraction of external bank debt had been financed by short-term loans not only in the East Asian countries but also in a large number of countries.   Section 3 then focuses on the role of monitoring in explaining these findings.   Section 4 explains a basic structure of our theoretical model and section 5 specifies long-term and short-term debt contracts.   Section 6 investigates the maturity choices by all borrowers and shows that the vulnerable financial structure in developing countries might emerge as a result of efficient monitoring activities by private banks.   Sections 7 and 8 discuss how our main results will change when we change one of key assumptions in the model.   Section 9 summarizes our results and refers to their policy implications.

2. Maturity Distrubution of Bank Loans Before and After the Crisis
(i) Growth Rates of Bank Loans to East Asia

As we discussed in introduction, it is now widely recognized that a large fraction of mobile external liabilities was one of the main reasons why the East Asian countries had the crisis in 1997.   In particular, the East Asian countries accumulated significant amount of international commercial bank debt before

1997, for which foreign lenders suddenly refused to roll over in 1997.

However, if we look at the time-series data of international bank loans in details, the degree of capital mobility before and after the crisis showed remarkably different features depending on how many terms to maturity the bank loans had. For example, based on the BIS data, Table 2 reports the semi-annual growth rates of international bank loans to the East Asian economies before and after the crisis for three different types of maturities: maturities up to and equal to one year, maturities over one year and up to two years, and maturities over two years.[8]

It suggests that before 1997, bank loans to the East Asian economies steadily expanded in almost all terms to maturity. For example, define 'short-term loans' by loans whose terms to maturity was up to and equal to one year, 'middle-term loans' by loans whose terms to maturity was over one year and up to two years, and 'long-term loans' by loans whose terms to maturity was over two years. Then, in Thailand from 1994 to 1995, we can see that the average semi-annual growth rate of short-term loans was close to 20% and that those of middle-term and long-term loans were slightly higher than 20%. Similarly, looking at the semi-annual growth rates from 1994 to 1996, we can find that both short-term and long-term loans on average grew about 10% in Indonesia and about 15% in Korea.

However, after the crisis, significant decline of bank loans occurred only for short-term loans, that is, loans whose terms to maturity was up to and equal to one year. For example, in Korea, the semi-annual growth rate of short-term loans was −16.12% in December 1997 and −44.23% in June 1998. But, during the same period, the semi-annual growth rates of middle-term and long-term loans were still significantly positive in Korea. Similarly, almost all of the other East Asian economies experienced significant decline of short-term loans in December 1997 and in June 1998 (see Fig. 1a). However, except for Thailand in December 1997, they experienced no serious decline of middle-term and long-term loans during the same period. Instead, several East Asian economies experienced significant increase of middle-term and long-term loans during this period (see Fig. 1b and Fig. 1c).

(ii) Shares of Short-term Loans in East Asia

In general, liquidity problems emerge when panicking external creditors become unwilling to roll over existing credits. Thus, if panicking external creditors could cancel their long-term contracts, say, by paying cancel fees,

liquidity problems might have happened even when external liabilities were financed by long-term loans. However, the above evidence in the East Asian economies suggests that like direct investment, long-term commercial loans were less mobile capital flows in the international capital market. This may imply that if a large fraction of international commercial bank debt had been financed by long-term bank loans, the East Asian crisis might not have taken place as the form of a liquidity shortfall.

Of course, this type of hypothetical situation never happened in the East Asian economies before the crisis. Instead, in these economies, a large fraction of international commercial bank debt was financed by short-term commercial bank loans. For example, based on the BIS data, Table 3 reports the maturity distribution of international bank loans to the East Asian economies before and after the crisis for three different types of maturities.

Among the East Asian economies, Taiwan, Hong Kong, and Singapore had remarkably high shares of short-term loans whose terms to maturity were up to and equal to one year. Needless to say, these data are not enough to capture general situations in East Asia before the crisis because Taiwan has been a net creditor, while Hong Kong and Singapore are large international financial and intermediation centers. However, even if we focus on the shares of short-term loans in the other East Asian economies, we can find relatively high shares of short-term loans in the early 1990s, say, 72.0% in Thailand, 70.6% in Korea in December 1993, and so on.

Because bank loans steadily expanded in almost all terms to maturity, the high shares of short-term loans in these East Asian economies slightly declined before the crisis. In addition, since only short-term loans showed significant decline after the crisis, the shares of short-term loans in these East Asian economies dropped to nearly 50% in 1998. However, at least before the crisis, these East Asian economies still had relatively high shares of short-term loans, which made their financial structure vulnerable to a liquidity short-fall.

(iii) Shares of Short-term Loans in the International Market

BIS provides the detailed data set on the maturity distribution of loans from BIS reporting banks to a large number of countries. By using this data set, Table 4 reports average shares of short-term loans in the world and those in several regions. It shows that even the world average shares of short-term loans were above 50% throughout the 1990s. Among several regions, Eastern Europe had lower shares of short-term loans, while offshore banking centers had

very large shares of short-term loans in general. Compared with developed countries, developing countries had relatively larger shares of short-term loans. In particular, average shares of short-term loans in Asia were always above 60% even if we include other Asian countries in the sample.[9]

Putting aside the East Asian problems, international lending from BIS reporting banks generally had high shares of short-term loans. Since liquidity problems emerge when external creditors become unwilling to roll over existing short-term credits, the evidence implies that not a few countries could have had liquidity problems if they had large amount of commercial bank debt. Of course, the East Asian economies before the crisis had slightly higher shares of short-term loans even in this world standard. And, in this sense, we can say that the East Asian economies before the crisis had more vulnerable form of external liabilities than the other developing countries. However, when we draw a histogram of short-term loan shares for the BIS world-wide data, we can also see that high shares of short-term loans in the East Asian economies before the crisis were not remarkable outliers in the world standard.

For example, Figure 2 reports a histogram of short-term loan shares of the BIS reporting banks' loans to 180 countries in December 1996. It shows that the mode is the range from 45% to 50% in which 20 countries are included in the world but only China is included among the East Asian economies. However, except for Taiwan, Hong Kong, and Singapore, Korea is the only East Asian economy which is included in the range over 70%. This implies that high shares of short-term loans in the East Asian economies before the crisis were not remarkable outliers even in the world standard.

3. The Role of Monitoring

In the last section, we showed that middle-term and long-term commercial bank loans were less mobile forms of external liabilities in the sense that they never declined even when panicking external creditors became unwilling to roll over existing short-term credits. However, we also showed that a large fraction of external bank debt had been financed by short-term loans not only in the East Asian countries but also in a large number of countries, which might have made several developing countries vulnerable to liquidity problems. The result may partly be influenced by regulatory factors, say, the domestic government regulations, the BIS risk-weights, and so on. But, the world-wide evidence cannot be totally explained by the regulatory factors.

The purpose of the following sections is to present a simple theoretical model where the vulnerable financial structure in developing countries might emerge as a result of efficient monitoring activities by competitive foreign private banks.   In general, it is important for the suppliers of funds (or their agents) to monitor borrowers in order to overcome the problems associated information asymmetry and imperfection in the financial market.   In particular, in order to reduce information costs and the costs of duplicating monitoring, the monitoring is usually delegated to financial intermediaries rather than performed by individual investors.   In literature, banks are typical financial intermediaries of such delegated monitors (see Diamond (1984)).

Given other factors, the monitoring is considered economically valuable as it can reduce the problem of adverse selection in a situation where outside investors are not as well informed beforehand regarding the profitability and risk potential of proposed projects, the managerial and organizational competence of the firm, and the like.   It may also be a necessary response to the problem of moral hazard arising from situations in which the interests of investors and borrowers do not necessarily coincide.

Of course, some ex ante monitoring can be performed by investment banks acting as underwriters for large established firms, by venture capital firms for entrepreneurial start-up firms, by commercial banks for conventional smaller firms, and so on.   Interim monitoring may also be engaged by rating companies in that they keep track of the changing financial state of the firm, but their evaluation affects the capacity of firms to raise new funds from capital markets.   However, directly placed debt (commercial paper) is usually a contract with terms (covenants) and loan-granting decisions that depends only on public information including the borrower's track record.   On the other hand, the contract of a bank loan uses this information plus information from costly monitoring of a borrower's actions to condition the decision to grant a loan or to condition the loan's covenants.   Thus, even in the international financial market, monitoring of private information can be most efficiently delegated to banks rather than collected by other financial institutions and many individual investors.

In the following model, we consider the choice of bank loan maturity in such an international financial market.   In particular, we investigate how the efficiency of banks' monitoring can affect the choice of bank loan maturity. Without a liquidity shortfall, the choice of bank loan maturity in the international market is similar to that in the domestic market.   However, since neither

prudential regulation nor safety net (say, deposit insurance) are established well in the international market, a liquidity shortfall is more likely to happen in the competitive international financial market when bank loan maturity becomes shorter.

4. The Model

The following analysis, we consider a small open economy model which modified the Diamond's (1991, 1993) domestic model. In the small open economy, we consider the situation where domestic borrowers (say, domestic firms or domestic financial institutions) need to fund their indivisible investment projects from foreign banks. As in McKinnon and Pill (1996) and Krugman (1998), we assume that domestic borrowers directly own capital and engage in investment projects. Strictly speaking, the assumption may be restrictive for domestic financial institutions because they generally lend money rather than buying capital assets outright. However, lending to a very highly leveraged firm that engaged in risky project is de facto very much like buying the capital directly. Thus, the assumption approximately holds true for a large number of domestic financial institutions in developing countries.[10]

In the following model, there are three dates, 0, 1, and 2. All projects require the fixed amount of K in capital at date 0 and produce cash flows only at date 2 (none at date 1). At date 0, each borrower has no internal (domestic) fund nor outside equity. Thus, at date 0, he needs to fund external debt of K from foreign banks for the project.

Both domestic borrowers and foreign lenders (that is, foreign banks) are risk neutral. Foreign banks consume only at date 2 and have a constant returns-to-scale investment technology that returns R per unit invested per period. One unit invested at date 0 returns R units at date 1; and if this is invested until date 2, the terminal value is R^2. There are many potential foreign banks who all observe the same information. Thus, borrowers face a competitive international loan market at each date, and can borrow as long as lenders receive an expected return of R per period, per unit loaned.

Borrower's technological environments are summarized in Figure 3. When successful, each borrower's project yields a cash flow of X. It also produces a non-assignable control rent of C if the management has control right at date 2. Examples of the non-assignable control rent might be the manager's desire to keep his business going, the manager's consumption of

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perquisites, or the manager's disutility from dismissing long-standing employees. We assume that $X > R^2K$ and $C > 0$.

The project can be liquidated at date 1 for a liquidation value of L. Because $C > 0$, no borrowers have an incentive to liquidate their project by themselves. However, foreign banks liquidate their borrower's project at date 1 either when its expected present value is less than L or when a financial panic occurs agaist the borrower. If a project is liquidated, it produces no cash flows nor control rents at date 2. In addition, the liquidation value of L is assumed to be less than RK. Thus, a successful project always yields a higher cash flow when not liquidated.

There are two types of borrowers. The two types of borrowers differ only in the probability that their projects are successful at date 2. The types of borrowers are characterized as follows.

Type G borrower: The project succeeds for sure at date 2.
Type B borrower: The project returns succeeds with probability q but fails with probability $1-q$, where $qX < R^2K$.

Because the control rent of C is positive, no borrowers never liquidate their project when they have the control right to force the liquidation. However, since $X > R^2K > qX$, the type B borrower's project has a negative net present value in terms of cash flows. Thus, when foreign banks find who is type B borrower, no type B borrowers can raise their funds.

The key assumption in our model is that project's ex ante prospects are private information observed only by the domestic borrower. No one but the borrower knows his own type. Each foreign bank's information set on borrowers' type, which is summarized in Figure 4, is as follows.

At date 0 (the initial period), a foreign bank only knows that its domestic borrower is type G with probability f and type B with probability $1-f$. We assume that

(1) $R^2K \leq [f+(1-f)q]X.$

This assumption implies that on average, the project has a positive net present value in terms of cash flows. The assumption is realistic for developing countries with high growth rates such as the East Asian economies before the crisis. It is, however, restrictive for stagnated developing countries or

countries in crisis because the average project has low net present value in these countries. In section 8, we will discuss how our main results change when the assumption does not hold.

At date 1, each foreign bank's monitoring partially reveals types of domestic borrowers. That is, the monitoring identifies some of type G and type B borrowers, but it cannot identify all of type G and type B borrowers. Define e as the probability that the monitoring identifies the type of type G borrower at date 1 and m as the probability that the monitoring identifies the type of type B borrower at date 1. Then, given the above assumptions, the Bayes law implies that a borrower whose type was not identified at date 1 is type G with probability $(1-e)f / [(1-e)f + (1-m)(1-f)]$ and type B with probability $(1-m)(1-f) / [(1-e)f + (1-m)(1-f)]$.

It is easy to see that the larger e and m are, the more efficient the foreign banks' monitoring is. However, the revealed information at date 1 is not verifiable so that we cannot write contracts contingent on it in the international capital market. Thus, only when short-term loan is chosen, the terms of refinancing at date 1 will depend on whether foreign banks can find out types of borrowers or not at that date.

5. Loan Contracts
(i) Long-term loan

Long-term loan is bank debt floated at date 0 that matures at date 2, with no refinancing at date 1. The face value r^L of this debt is set, so that foreign banks can get expected return of R^2 per unit invested. Under the assumption that $qX < R^2 K \leq [f + (1-f)q] X$, we can verify that the equilibrium with long-term loan is a pooling equilibrium, realizing that debt is repaid with probability $f + (1-f)q$. Thus, as long as $r^L \leq X$, the face value of a long-term loan is given by [11]

$$(2) \quad r^L = R^2 K / [f + (1-f)q].$$

The lower is f, the higher is the promised interest r^L, owing to the higher default rate of type B's. In other words, reflecting a risk premium, the long-term interest rate becomes higher as the proportion of type B borrowers becomes larger.

Recall that at date 1, each foreign bank's monitoring might reveal

information about some of type G and type B borrowers. However, the information does not influence the face value of long-term loan and does not lead to liquidation because long-term lenders have no such rights.[12] Therefore, the payoff of a type G borrower with long-term loan is equal to

$$(3) \quad \Pi^L{}_g = X + C - r^L$$
$$= X + C - R^2 K / [f + (1-f)q].$$

which is independent of e and m, that is, the degree of foreign banks' monitoring efficiency.

On the other hand, the expected payoff of a type B borrower with long-term loan is equal to

$$(4) \quad \Pi^L{}_b = q(X + C - r^L)$$
$$= q(X + C) - q R^2 K / [f + (1-f)q].$$

Because $[f + (1-f)q] X > qR^2K$ and $C > 0$, it always holds that $\Pi^L{}_g > \Pi^L{}_b > 0$.

(ii) Short-term loan

Short-term loan is bank debt financed at date 0, maturing at date 1 with face value r^1. The date 1 repayment comes either from refinancing at date 1 or from the proceeds of liquidation at that date. If the short-term loan is rolled over at date 1, the refinanced short-term loan matures at date 2. The refinanced short-term loan at date 1 has different face values depending on the realization of date 1 information. Each face value of short-term loan issued at date 1 is set so that foreign banks at date 1 get an expected return of R per unit invested given the information about a borrower at that date.

The face value of short-term loan issued at date 1 is easily determined for borrowers whose type was identified as type G. That is, short-term borrowers whose type was identified as type G at date 1 are type G with probability one. Thus, unless a financial panic occurs, each of them can always refinance to pay the full face value of their date 0 debt r^1. Noting that a new short-term loan maturing at date 2 is repaid with probability 1, the face value of this short-term loan issued at date 1, which is denoted by r^B, satisfies

$$(5) \quad r^B = r^1 R.$$

However, the determination of the face value of short-term loan issued at date 1 is more complicated for borrowers whose type was not identified. This is because even if no financial panic occurs, the borrowers might not be able to refinance to pay the full face value of their date 0 debt. Until section 8, we consider the case where foreign banks always choose liquidation when their monitoring cannot identify the type of borrowers at date 1.[13] In this case, foreign banks liquidate their borrower's project at date 1 either when their monitoring cannot identify the borrower's type, when their monitoring identifies the borrower as type B, or when a financial panic occurs in this lending market. We assume that even if the borrower was identified as type G, a financial panic occurs for him with probability $1-\theta$.

Since lenders can identify a type G borrower with the probability fe at date 1, the expected rate return for a date 0 short-term lender is $\theta fe\ r^1 + (1-\theta fe)L$, where L is a liquidation value of the project. Equating this to the one-period riskless return RK leads to

(6) $r^1 = [RK- (1-\theta fe)L] / (\theta fe)$,

so that (5) and (6) lead to

(7) $r^B = [RK- (1-\theta fe)L]\ R / (\theta fe)$.

Because $RK \geq L$, both r^1 and r^B are decreasing in f. Thus, the short-term interest rates also become higher as the proportion of type B borrowers becomes larger, due to a risk premium.[14]

The payoff of a type G borrower with short-term loan is

(8a) $X + C - r^B$ when the project is not liquidated at date 1,
(8b) 0 when the project is liquidated at date 1.

Because ex ante probability that the project is liquidated at date 1 is θe at date 0, the expected payoff of a type G borrower with short-term loan at date 0 is

(9) $\Pi^s{}_g = \theta e(X + C - r^B)$
      $= \theta e(X + C - RL) - (1/f)R(RK - L)$.

Since all type G borrowers are identical at date 0, $\Pi^s{}_g$ is common for all type G

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borrowers.　　It is easy to see that $\Pi^s{}_g$ is increasing in e, that is, the degree of foreign banks' efficiency to sort out type G borrowers.　　However, it is independent of m, that is, the degree of foreign banks' efficiency to sort out type B borrowers.

6. The Maturity Choice by Borrowers

In our model, domestic borrowers choose the maturity of their external loans at date 0 in order to maximize their expected payoff.　　However, because $qX < R^2K$, choosing a maturity that only type B borrowers would prefer would reveal that the borrower was type B, and no loan would be made to him.　　Therefore, to the extent that the expected payoff rate of a type B borrower is positive, the maturity of bank loan that is chosen by type G borrowers is also chosen by type B borrowers.　　Assuming the existence of such a pooling equilibrium, this indicates that all borrowers choose short-term loan if $\Pi^L{}_g < \Pi^s{}_g$ but choose long-term loan otherwise.

Subtracting (9) from (3) leads to:

$$(10) \qquad \Pi^L{}_g - \Pi^s{}_g = (1-\theta e)(X + C) - (1/f)R(1-\theta fe)L$$
$$+ \frac{(1-f)q}{[f + (1-f)q]f}R^2K.$$

Thus, in our international financial market, all domestic borrowers choose short-term loan if and only if

$$(11) \qquad (1-\theta e)(X + C - R L) + \frac{(1-f)q}{[f + (1-f)q]f} R^2K < [(1-f)/f] R L.$$

The inequality (11) has two noteworthy implications for the terms to maturity in the international bank loans.　　The first is that given other parameters, an increase in θ makes (11) more probable.　　Since θ denotes the probability that a financial panic will not occur, this implies that foreign banks tend to choose short-term loan when they have optimistic confidence on the borrowers' financial conditions.　　The intuition behind this result is that the optimistic confidence reduces liquidity risk in terms of lenders' perception and makes long-term contract less attractive for lenders.

Because foreign lenders had some optimistic confidence on the pre-crisis

East Asian economies, the result can explain why the East Asian economies had higher shares of short-term loans in the world standard before the crisis.[15]   It may also imply that some optimistic confidence on their future made the pre-crisis East Asian economies vulnerable to the crisis not only through increasing the total amount of external liabilities but also through making their terms to maturity shorter.

The second noteworthy implication is that given other parameters, an increase in e makes the inequality (11) more probable.   Since the value of e is a proxy for the degree of monitoring efficiency, this implies that foreign banks with better monitoring ability tend to choose short-term loans.   The intuition behind this result is that efficient monitoring activities can make use of new information arrival more efficiently.   That is, when there exists asymmetric information between lenders and borrowers, short-term debt can lower a good borrower's expected financing cost because of a possible arrival of good information.   Thus, when lenders can make use of additional credit information arrival more efficiently by ex-post monitoring, short-term debt will be preferred in debt contract.

The latter implication is important in considering the choice of bank loan maturity because banks usually have the better monitoring ability than other financial intermediaries.   That is, under the circumstances where borrowers believe that liquidity risk is small, the result predicts that the efficient monitoring activities tend to make the debt maturity composition shorter. Without unnecessary liquidation, the efficient monitoring might have a positive effect on economic welfare.   However, without prudential regulation nor safety net in the international financial market, the efficient banks' monitoring can increase the possibility that an otherwise solvent country may suffer a short-run liquidity problem when the available stock of reserves is low relative to the overall burden of external debt service.

This theoretical result is consistent with the empirical fact that a large fraction of external bank debt had been financed by short-term loans in a large number of countries, which might make several developing countries vulnerable to liquidity problems.   In particular, since the East Asian crisis took the form of a pure liquidity shortfall in private bank loans, the experience of several Asian countries in 1997 may provide striking examples of such negative consequences of efficient bank monitoring.

7. Discussions

Until the last section, we have discussed how the maturity of bank loans is determined in the competitive international financial market. The results are, however, based on several assumptions that may not be relevant for some developing countries. For example, our simple theoretical model did not take into account several regulatory factors in the international loan market. In the real world, the maturity structure of international bank loans may have been influenced not only by the government policy to regulate long-term capital inflows but also by the regulations on foreign banks, say, the BIS risk-weight regulation. In terms of our theoretical analysis, these regulatory factors can be modeled as taxes on long-term loans. Thus, if these factors exist, short-term loans would be chosen by relatively milder conditions in our model.

In addition, our model assumed that borrowers face a competitive international loan market. The assumption may be justified when there are a large number of potential foreign lenders in the international loan market. In particular, the assumption may be realistic for the East Asian economies before the crisis where many foreign banks competed with others in the loan market under the lending boom. However, in several developing countries, private loans from foreign banks took the form of syndicated loans. Under such circumstances, borrowers in developing countries did not necessarily face a competitive international loan market.

Without rigorous analyses, it is not clear how our main results will change when foreign banks have some monopolistic power in the international loan market. However, even when the international loan market is not competitive, it is always true that efficient monitoring activities can make use of new information arrival more efficiently under asymmetric information between lenders and borrowers. Thus, I conjecture that for some mild conditions, monopolistic foreign banks can still have an incentive to choose short-term loans when they have better monitoring abilities.

Finally, our model assumed the condition (1) under which the average project in the economy has a positive net present value. But, in general, we cannot rule out the case where the condition (1) does not hold. In fact, the case happens when the average project in the economy has a negative net present value in terms of cash flows, that is, when $R^2 K > [f+(1-f)q]X$. I think that the case is not realistic for the East Asian economies before the crisis because their expected growth rates were very high. However, it may hold true for several stagnated developing countries where the percentage of bad quality borrowers is

large in the economy.

When $R^2K > [f+(1-f)q]X$ in the model, long-term loan is never supplied by foreign banks at date 0 because foreign banks cannot get expected rate return of R^2. However, as long as $R^2K \leq (1-\theta f e) RL + \theta f e X$, short-term loan can be supplied by foreign banks at date 0. This implies that when the average project in the economy has a negative net present value, foreign banks provide only short-term loan to the economy.

The result may explain several noteworthy events in the international bond market for some stagnated developing countries.[16] For example, in 1994, foreign investors refused to purchase long-term Mexican government bonds because the devaluation of Mexican peso became highly possible. As a result, in Mexico, the term structure of government bonds shifted to short-term before the eventual crisis in December 1994. Similarly, in 1998, foreign investors became skeptical about the sustainability of fiscal deficits in Russia. As a result, they shifted their investment to short-term Russian bonds before the eventual devaluation of the Ruble. Although these events happened in the bond market rather than in the loan market, they are consistent with the above discussions which allowed for the case that $R^2K > [f+(1-f)q]X$ in our model.

8. Some Extension

In previous sections, we have considered the case where foreign banks always choose liquidation when their monitoring cannot identify the type of borrowers at date 1. However, when the bank's monitoring reveals type B borrowers more than type G borrowers, this case becomes less likely because the percentage of type G borrowers becomes larger among unidentified borrowers. In this section, we will discuss how our main results would change if foreign banks never liquidate the projects of unidentified borrowers at date 1.[17]

For analytical simplicity, we assume that the probability of a financial panic is zero, that is, $\theta = 1$. Then, when the projects of unidentified borrowers are never liquidated, foreign banks liquidate the borrower's project at date 1 if and only if the monitoring identifies the borrower as type B. Since the percentage of identified type B borrowers among all borrowers is $m(1-f)$ at date 1, this implies that the expected rate return for a date 0 short-term lender is $[1- m(1-f)]$ $r^1 + m(1-f)L$, where r^1 is the face value of short-term loan issued at date at date 0, maturing at date 1. Equating this to the one-period riskless return RK leads to

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(12) $r^1 = [RK- m(1-f)L] / [1- m(1-f)]$.

Recall that at date 1, unidentified borrowers are type G with probability $(1-e)f / [(1-e)f +(1-m)(1-f)]$ and type B with probability $(1-m)(1-f) / [(1-e)f +(1-m)(1-f)]$. Recall also that type G borrowers succeed for sure and that type B borrowers succeed with probability q at date 2. Thus, when a new short-term loan is supplied to them a date 1, the new short-term loan maturing at date 2 is repaid with probability $[(1-e)f + (1-m)(1-f)q] / [(1-e)f +(1-m)(1-f)]$. This implies that the face value of short-term loan issued for unidentified borrowers at date 1, which is denoted by r^C, needs to satisfy

(13) $[(1-e)f + (1-m)(1-f)q] / [(1-e)f +(1-m)(1-f)] r^C = r^1 R$.

For borrowers whose type was identified as type G, the face value of short-term loan issued at date 1, r^B, is determined by (5), that is, $r^B = r^1 R$. Therefore, (5), (12), and (13) lead to

(14) $r^B = [RK- m(1-f)L] R / [1- m(1-f)]$,

(15) $r^C = r^B [(1-e)f +(1-m)(1-f)] /[(1-e)f + (1-m)(1-f)q] > r^B$.

When the project of unidentified borrowers is never liquidated, the payoff of a type G borrower with short-term loan is thus written as

(16a) $X + C - r^B$ when the type is identified at date 1,

(16b) $X + C - r^C$ when the type is not identified at date 1.

Because a type G borrower is identified at date 1 with probability e, the expected payoff of a type G borrower with short-term loan at date 0 can be calculated as

(17) $\Pi^s{}_g = e(X + C - r^B) + (1- e)(X + C - r^C)$
         $= X + C - r^B[(1-e)f +(1-m)(1-f)\{1-(1-q)e\}] /[(1-e)f + (1-m)(1-f)q]$.

As was $\Pi^s{}_g$ in (9), $\Pi^s{}_g$ in (17) depends on the parameter e. However, contrary to $\Pi^s{}_g$ in (9), $\Pi^s{}_g$ in (17) depends on the parameter m, that is, the degree of foreign banks' efficiency to sort out type B borrowers, too.

Subtracting (17) from (3) leads to:

(18) $\Pi^{\mathrm{L}}g - \Pi^{\mathrm{s}}g = - r^{\mathrm{L}} + e \, r^{\mathrm{B}} + (1-e) \, r^{\mathrm{C}}$

$= r^{\mathrm{B}}[(1-e)f + (1-m)(1-f)\{1-(1-q)e\}] \, / \, [(1-e)f + (1-m)(1-f)q]$

$- R^2 K \, / \, [f + (1-f)].$

Since all borrowers choose short-term loan if and only if $\Pi^{\mathrm{L}}g < \Pi^{\mathrm{s}}g$, this implies that all domestic borrowers choose short-term loan if and only if $r^{\mathrm{L}} > e \, r^{\mathrm{B}} + (1-e) \, r^{\mathrm{C}}$, or equivalently,

(19) $r^{\mathrm{B}}[(1-e)f + (1-m)(1-f)\{1-(1-q)e\}] \, / \, [(1-e)f + (1-m)(1-f)q]$

$< R^2 K \, / \, [f + (1-f)].$

After some tedious calculation, we can verify that given other parameters, an increase in e makes the inequality (19) more probable. Thus, even in the case where unidentified borrowers are never liquidated, foreign banks which have the better monitoring ability to sort out type G borrowers will tend to choose short-term loans.

On the other hand, the effect of the parameter m on (19) is not clear in general. In particular, when L is small enough, an increase in m makes the inequality (19) less probable. Thus, under some circumstances, foreign banks with better monitoring ability to sort out type B borrowers may choose long-term loans. However, when L is close to RK, an increase in m makes the inequality (19) more probable. Thus, at least when a liquidation value is large, foreign banks with better monitoring ability to sort out type B borrowers can tend to choose short-term loans even in the case where unidentified borrowers are never liquidated.

9. Concluding Remarks

In this paper, we first demonstrated that middle-term and long-term commercial bank loans were less mobile forms of external liabilities. We also showed that a large fraction of external bank debt had been financed by short-term loans not only in the East Asian countries but also in a large number of countries. We then presented a simple theoretical model where the vulnerable financial structure in developing countries might emerge as a result of efficient monitoring activities by private banks. In the model, we assumed both asymmetric information and liquidation risk in the competitive financial market. The existence of asymmetric information called for the role of a short-term

lender in monitoring borrowers' performance. However, since the monitoring changes the maturity composition, total effects of efficient monitoring on economic welfare are largely reduced when it increases the possibility of a liquidity shortfall.

In previous literature of corporate finance, a large number of studies stressed the positive role of banks as delegated monitors that specialize in gathering information about borrowers. It is probably true that when prudential regulations are established well in the financial market, the efficient role of banks as delegated monitors unanimously improves economic welfare. For example, in Japan during the 1950s and 60s, nearly 90% of loans supplied by the city and local banks were short-term funds whose terms to maturity was less than one year (see Table 5). This indicates that the financial structure in Japan would have been vulnerable to a liquidity short-fall if a financial panic occurred. However, a financial panic never occurred in Japan during the 1950s and 60s. Instead, these city and local banks played an important role as main banks and these short-term loans made a significant contribution for remarkable economic growth in postwar Japan under the regulated financial market.

However, we cannot expect satisfactory prudential regulation nor safety net (say, deposit insurance) in the current international financial market. Given the circumstances, efficient monitoring activities by competitive private banks are not necessarily desirable. That is, unless we can establish appropriate regulations in the near future, an improvement of bank's monitoring ability can increase the possibility of an unnecessary liquidity shortfall and may have a negative effect on economic growth in the international financial market.

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Endnotes

[1] For example, Corsetti, Pesenti, and Roubini (1998), Radelet and Sachs (1998), and Ito (1999).

[2] The only exception is portfolio investment in Thailand which kept positive after the crisis. However, other investment in Thailand took large negative values after the crisis.

[3] Noting these roles of banks, classical studies by Patrick (1966), Cameron (1967), Goldsmith (1969), McKinnon (1973) and Shaw (1973) asserted that the extent of financial intermediation in an economy affects rates of economic growth. See also World Bank (1989) and Fry (1995) for their survey.

[4] See also Sachs, Tornell and Velasco (1996).

[5] See also Fukuda, Ji, and Nakamura (1998).

[6] Financial contracts in the case where the manager has a non-assignable control rent have been extensively discussed by Aghion and Bolton (1992), Hart and Moore (1994), Von Thadden (1995), and others.

[7] Another case where long-term debt may be preferred by borrowers is that borrowers have moral hazard problem. See Rajan (1992).

[8] The data sources are BIS, The Maturity, Sectoral and Nationality Distribution of International Bank Lending, various issues, from 96.6 to 97.12 and BIS, International Banking and Financial Market Development, August 1998, for 98.6.

[9] For example, in December 1996, the share of short-term loans in Bangladesh was 70.4%, while those of Cambodia, Fiji, and Lao P.D.Republic were 86.7%.

[10] In fact, the data seems to show that the maturity distributions of international loans indicate no significant difference depending on the fact that most domestic borrowers are domestic firms or domestic financial institutions. For example, in Indonesia, a large number of domestic firms directly borrowed from foreign banks before the crisis. However, we could not find the evidence that the maturity distributions in Indonesia were significantly different from those of other East Asian countries in Table 3.

[11] If $r^L > X$, borrowers cannot issue long-term debt, because they cannot provide lenders with an expected return of R^2K. Because $R^2K \leq [f+(1-f)q]X$, we can rule out this possibility in the following analysis.

[12] When C is small, renegotiation between lenders and borrowers may be possible. However, assuming that C is large enough, we can rule out this possibility.

[13] This case is more likely to happen when the bank's monitoring reveals type G borrowers than type B borrowers. I think that the case is realistic because type G borrowers have an incentive to reveal their type but type B borrowers do not.

[14] Because X is the maximum amount that type G borrowers can repay for the banks, r^B needs to be less than X for the short-term loans to be supplied. In the following analysis, we implicitly guarantee this condition be assuming that

$R^2K \leq (1-\theta f e)\,RL + \theta f e\,X.$

[15] In Table 3, we found remarkably high shares of short-term loans in Taiwan. The finding may be consistent with our result because large amount of foreign reserves made a financial panic least likely in Taiwan.

[16] The following arguments were suggested by professor T. Ito.

[17] However, I do not think that the case where the bank's monitoring reveals type B borrowers more than type G borrowers is realistic in many countries because type G borrowers have an incentive to reveal their type but type B borrowers do not.

Table 1a Capital Inflows to the East Asian Economies before and after the Crisis – Quarterly Data

(i) Direct Investment   (IMF Code=78bed)

	95.1	95.2	95.3	95.4	96.1	96.2	96.3	96.4	97.1	97.2	97.3	97.4	98.1	98.2	98.3
Thailand	539	588	304	637	810	453	456	617	645	842	1222	1037	2137	2664	1249
Indonesia	978	765	1344	1259	1990	1024	1640	1540	2342	1267	1392	-328	-502	367	
Korea	260	503	414	599	405	680	256	985	624	791	611	819	499	1156	2143
Philippines	316	293	260	609	531	295	551	140	565	214	295	148	250	196	214

(ii) Portfolio Investment   (IMF Code=78bgd)

	95.1	95.2	95.3	95.4	96.1	96.2	96.3	96.4	97.1	97.2	97.3	97.4	98.1	98.2	98.3
Thailand	773	1283	1412	615	1407	786	856	537	169	1630	2533	466	251	4	-309
Indonesia	375	819	1586	1320	1327	919	630	2129	1009	1103	646	-5390	-3548	1840	
Korea	1740	3235	5521	3379	3048	6574	5163	6398	2903	6107	5364	-2086	2657	1746	-3766
Philippines	292	649	1046	632	424	1612	1205	1885	1205	514	-442	-677	-182	319	-483

(iii) Bank Loans   (IMF Code=78bud)

	95.1	95.2	95.3	95.4	96.1	96.2	96.3	96.4	97.1	97.2	97.3	97.4	98.1	98.2	98.3
Thailand	3378	5149	2235	2455	456	3016	-1722	1159	2543	245	-3022	-3288	-2176	-2393	-2831
Indonesia	854	71	-225	1253	-1133	155	126	94	-244	-99	709	-642	-840	-1064	
Korea	4120	2714	3526	1030	2104	2158	2764	2925	1220	1664	-1179	-11490	-3343	-662	-2020
Philippines	-649	1293	89	915	965	2097	1236	738	1323	2243	-359	-1539	-24	683	-687

(iv) Other Investment excluding Bank Loans   (IMF Code=78bid-78bud)

	95.1	95.2	95.3	95.4	96.1	96.2	96.3	96.4	97.1	97.2	97.3	97.4	98.1	98.2	98.3
Thailand	-2089	2886	2250	3119	4923	2170	512	1362	-820	-6216	-5867	-5757	-5617	-1873	-475
Indonesia	-783	882	-34	398	233	21	593	159	880	-20	-940	-2114	-1307	-926	
Korea South	3125	2525	1777	2633	5461	4544	76	4539	2279	2321	-908	-2224	-3829	-1960	-1303
Philippines	670	7	597	118	570	41	709	14	224	285	1317	902	-7	666	81

Notes 1) Unit = millions of US dollars.
2) Data sources = IFS.

Table 1b Capital Inflows to the East Asian Economies before and after the Crisis
           - Annual Data

(I) Direct Investment   (IMF Code=78bgd)

	92	93	94	95	96	97
Thailand	2113	1804	1366	2068	2336	3745
Indonesia	1777	2004	2109	4346	6194	4673
Korea	728	589	810	1776	2326	2844
Malaysia	5183	5006	4342	4178	5078	5106
Philippines	228	1238	1591	1478	1517	1222
China	11156	27515	33787	35849	40180	44236
Singapore	2204	4686	8368	7386	7444	8631

(ii) Portfolio Investment   (IMF Code=78bgd)

	92	93	94	95	96	97
Thailand	924	5455	2486	4083	3585	4807
Indonesia	-88	1805	3877	4100	5005	-2632
Korea	4953	10553	8149	13875	21183	12287
Malaysia	-1122	-709	-1649	-436	-268	-248
Philippines	155	897	901	2619	5126	600
China	393	3646	3923	710	2372	7703
Singapore	1398	2867	114	410	1672	938

(iii) Bank Loans   (IMF Code=78bud)

	92	93	94	95	96	97
Thailand	1758	6589	14295	13218	2909	-3608
Indonesia	3582	270	-2202	457	1669	-1929
Korea	1820	720	7368	11389	9952	-9785
Malaysia	3150	6282	-3789	468	2974	807
Philippines	1921	-229	1694	1948	5036	1668
China	-786	-415	-5222	-4045	-5959	
Singapore	5146	1949	5409	4423	8038	19088

(iv) Other Investment excluding Bank Loans   (IMF Code=78bid-78bud)

	92	93	94	95	96	97
Thailand	4721	150	-4456	6165	8967	-18680
Indonesia	858	1909	664	1959	-1421	-541
Korea	3104	-2175	6264	10061	14619	1468
Malaysia	33	1159	1880	4211	1633	-1933
Philippines	1019	2684	1868	1092	1334	2728
China	-3296	-161	3726	9161	7241	8430
Singapore	-45	6375	502	8061	6078	17404

Notes   1) Unit = millions of US dollars.
        2) Data sources = IFS.

Table 2. Semi-Annual Growth Rates of International Bank Loans to the East Asian Economies for Different Terms to Maturity (%)

(I) Maturities up to and; including one year

	Thailand	Indonesia	Korea	Malaysia	Philippines	Taiwan	China	Hong Kong	Singapore
94.6	27.03	0.14	18.95	10.94	12.17	7.34	-5.84	10.83	6.51
94.12	14.06	13.12	15.00	-19.80	19.84	11.90	25.13	8.58	1.46
95.6	23.21	18.69	28.14	10.58	7.44	23.87	-4.87	7.16	23.65
95.12	14.29	9.13	5.51	8.52	19.37	-16.72	33.18	-8.13	-12.34
96.6	9.70	7.28	14.84	26.55	46.25	-1.25	6.25	-13.76	-1.96
96.12	-4.46	15.75	8.30	11.88	30.08	-2.76	9.85	-5.05	-0.48
97.6	-0.31	1.22	5.02	45.37	11.41	16.41	12.12	7.19	11.88
97.12	-14.86	2.07	-16.12	-10.06	38.34	-2.57	12.15	-8.32	-8.65
98.6	-28.42	-21.83	-44.23	-23.37	-14.72	-13.14	-8.77	-20.90	-31.64

(ii) Maturities over one year up to two years

	Thailand	Indonesia	Korea	Malaysia	Philippines	Taiwan	China	Hong Kong	Singapore
94.6	-3.21	8.05	13.96	-20.03	21.46	53.74	4.98	13.39	-39.26
94.12	18.39	16.41	9.43	77.05	-15.55	3.15	5.26	1.11	122.22
95.6	38.91	-9.88	-6.63	61.71	0.00	13.06	8.63	-7.97	40.13
95.12	20.93	2.43	-6.11	-15.66	44.35	59.71	14.94	6.33	-0.93
96.6	15.47	10.01	34.67	-27.29	53.91	-10.00	15.19	4.77	26.61
96.12	18.27	3.34	19.46	-13.55	6.40	-17.44	1.23	2.52	-33.54
97.6	-4.91	-1.31	0.78	-14.70	-42.30	-51.14	-10.74	-15.83	-4.45
97.12	-9.30	4.46	26.17	48.94	31.29	23.31	2.88	32.15	8.90
98.6	2.64	0.68	77.40	7.31	92.29	33.33	0.60	17.23	73.34

(iii) Maturities over two years

	Thailand	Indonesia	Korea	Malaysia	Philippines	Taiwan	China	Hong Kong	Singapore
94.6	17.51	2.39	-6.13	6.90	-2.21	-1.70	8.40	10.10	21.23
94.12	42.20	12.35	21.95	13.30	12.66	73.73	7.79	11.90	25.52
95.6	13.13	18.53	32.35	-2.81	5.55	-7.49	10.95	5.17	10.17
95.12	25.84	11.97	11.35	21.59	5.26	44.16	-2.47	0.04	11.73
96.6	9.79	14.97	11.70	29.65	7.82	13.33	2.53	-0.58	-11.04
96.12	9.46	8.14	18.24	-1.33	10.81	14.09	9.95	9.72	21.76
97.6	0.89	10.94	3.03	12.57	-2.68	-0.08	-0.62	9.71	4.27
97.12	-16.16	1.77	0.45	14.14	57.34	42.65	7.24	12.00	10.32
98.6	-7.49	-0.41	15.08	-8.75	-7.83	-6.48	-3.96	-6.91	2.33

Data Sources of BIS data)
96.6-97.12: The Maturity, Sectoral and Nationality Distribution of International Bank Lending, various issues.
98.6: International Banking and Financial Market Development, August 1998.

Table 3. The Percentage Distribution of International Bank Loans to the East Asian Economies

(I) Maturities up to and; including one year

	Thailand	Indonesia	Korea	Malaysia	Philippines	Taiwan	China	Hong Kong	Singapore
93.12	72.0%	61.7%	70.6%	56.8%	40.4%	92.9%	45.5%	88.0%	96.0%
94.6	74.3%	60.9%	72.5%	59.1%	44.2%	92.7%	41.1%	88.1%	95.9%
94.12	70.6%	60.9%	70.9%	48.8%	46.4%	90.4%	44.0%	87.6%	94.5%
95.6	71.2%	62.5%	72.0%	49.4%	46.3%	92.3%	40.2%	88.1%	94.9%
95.12	69.4%	61.9%	70.0%	47.0%	48.8%	87.2%	47.6%	86.6%	93.3%
96.6	68.9%	60.0%	70.8%	49.7%	55.1%	86.4%	48.4%	85.1%	93.1%
96.12	65.2%	61.7%	67.5%	50.3%	58.2%	84.4%	48.9%	82.5%	92.6%
97.6	65.7%	59.0%	68.1%	56.4%	59.7%	87.3%	52.0%	82.4%	93.1%
97.12	65.9%	60.6%	63.1%	53.1%	60.4%	81.7%	53.5%	79.2%	91.9%
98.6	59.3%	55.0%	45.8%	48.6%	57.1%	80.1%	52.0%	76.0%	87.6%

(ii) Maturities over one year up to two years

	Thailand	Indonesia	Korea	Malaysia	Philippines	Taiwan	China	Hong Kong	Singapore
93.12	6.2%	8.9%	5.6%	4.6%	4.0%	1.3%	7.7%	2.2%	0.7%
94.6	4.9%	9.5%	5.5%	3.4%	4.7%	1.9%	7.7%	2.2%	0.4%
94.12	4.8%	9.8%	5.1%	6.2%	3.5%	1.7%	7.0%	2.1%	0.9%
95.6	5.5%	7.6%	3.8%	9.2%	3.2%	1.6%	7.3%	1.8%	1.0%
95.12	5.6%	7.1%	3.3%	6.8%	4.1%	2.9%	7.4%	2.0%	1.1%
96.6	5.9%	7.0%	3.9%	4.1%	4.9%	2.6%	8.2%	2.4%	1.4%
96.12	6.9%	6.5%	4.1%	3.2%	4.3%	2.2%	7.6%	2.5%	1.0%
97.6	6.6%	6.0%	4.0%	2.1%	2.3%	0.9%	6.5%	2.0%	0.8%
97.12	7.1%	6.3%	5.5%	3.3%	2.2%	1.1%	6.1%	2.8%	1.0%
98.6	9.1%	7.4%	12.8%	4.3%	4.6%	1.7%	6.5%	3.9%	2.3%

(iii) Maturities over two years

	Thailand	Indonesia	Korea	Malaysia	Philippines	Taiwan	China	Hong Kong	Singapore
93.12	19.3%	26.5%	17.2%	30.7%	48.1%	5.2%	40.5%	8.1%	2.9%
94.6	18.4%	26.8%	13.9%	30.8%	45.9%	4.7%	42.1%	8.0%	3.3%
94.12	21.8%	26.6%	14.4%	35.9%	45.3%	7.2%	38.8%	8.2%	4.0%
95.6	20.2%	27.3%	15.1%	32.0%	44.4%	5.5%	41.3%	8.1%	3.6%
95.12	21.6%	27.7%	15.5%	34.1%	41.3%	8.9%	35.8%	8.7%	4.5%
96.6	21.5%	28.8%	15.3%	36.9%	34.4%	10.1%	35.1%	9.8%	4.1%
96.12	23.3%	27.6%	15.9%	32.9%	30.9%	11.6%	35.5%	11.0%	5.0%
97.6	23.8%	29.0%	15.7%	28.6%	27.7%	10.3%	33.5%	11.2%	4.7%
97.12	23.5%	29.6%	17.5%	34.2%	31.9%	14.1%	32.9%	13.2%	5.6%
98.6	27.3%	34.3%	26.1%	37.3%	32.6%	14.9%	33.7%	14.9%	7.9%

Data Sources of BIS data)
96.6-97.12: The Maturity, Sectoral and Nationality Distribution of International Bank Lending, various issues.
98.6: International Banking and Financial Market Development, August 1998.

Table 4. Percentages of Short–term Loans whose maturities are less than or equal to one year.

(%)

	93.12	94.6	94.12	95.6	95.12	96.6	96.12	97.6	97.12
ALL COUNTRIES	53.04	53.67	53.59	55.53	55.29	55.53	55.1	56.28	54.88
Developed Countries	53.21	53.62	52.79	55.98	53.6	52.21	53.22	53.98	53.51
Eastern Europe	37.15	36.45	35.19	39.65	39.08	41.85	44.19	50.68	43.4
Developing Countries	55.93	56.69	57.05	58.69	58.41	58.8	57.66	58.18	58.1
A) LATIN AMERICA	48.83	50.07	51.27	52.86	52.25	53.08	53.67	52.51	54.76
B) MIDDLE EAST	66.6	62.16	59.61	58.7	59.13	60.15	56.71	62.14	59.94
C) AFRICA	45.82	47.57	50.24	52.52	53.11	52.12	49.75	50.93	56.26
D) ASIA	63.02	63.82	62.86	64.07	63.45	63.32	61.5	62.31	60.6
East Asia excluding Hong Kong and Singapore									
Thailand	72.03	74.29	70.58	71.18	69.42	68.92	65.15	65.67	65.91
Indonesia	61.65	60.91	60.88	62.53	61.93	60.01	61.68	59.02	60.6
Korea	70.63	72.53	70.93	72.01	70.01	70.81	67.54	68.07	63.12
Malaysia	56.76	59.12	48.76	49.42	47.05	49.71	50.27	56.42	53.08
Philippines	40.38	44.17	46.43	46.31	48.84	55.1	58.22	59.69	60.43
Taiwan	92.91	92.71	90.41	92.33	87.2	86.36	84.38	87.29	81.71
China	45.53	41.09	43.97	40.2	47.59	48.37	48.87	52.03	53.45
Offshore;Banking Centers	82.29	82.41	81.9	81.68	80.41	75.54	74.26	73.84	72.05
Hong Kong	88.01	88.15	87.59	88.08	86.59	85.11	82.45	82.37	79.2
Singapore	96.01	95.87	94.51	94.91	93.3	93.07	92.6	93.07	91.86
Bahamas	85.80	82.76	84.11	83.79	84.11	87.08	87.08	86.64	85.97
Bahrain	83.04	82.49	77.81	79.57	77.81	71.19	71.19	73.91	73.77

Notes   1) Asia does not include banking centers such as Hong Kong and Singapore.
2) Unallocated loans are included in total loans.

**Table 5. Percentage Distribution of Outstanding Loans and Discounts By Maturity:
the Case of Japan during High Growth Period**

(I) City Banks

End of Year	3 Month and Less	3 Month - 1 Year	More than 1 Year	Overdrafts
1955	76.2%	17.7%	5.1%	0.9%
1960	70.0%	22.4%	6.4%	1.2%
1965	53.7%	35.2%	10.0%	1.1%
1970	53.0%	32.2%	13.7%	1.1%
1975	40.4%	28.8%	29.3%	1.5%

(ii) Local Banks

End of Year	3 Month and Less	3 Month - 1 Year	More than 1 Year	Overdrafts
1955	78.5%	12.7%	7.6%	1.2%
1960	68.6%	22.2%	8.4%	0.8%
1965	53.5%	34.8%	11.1%	0.6%
1970	45.6%	35.3%	18.5%	0.5%
1975	36.3%	31.2%	31.7%	0.8%

Sources)   Bank of Japan, Economic Statistics Annual, various issues

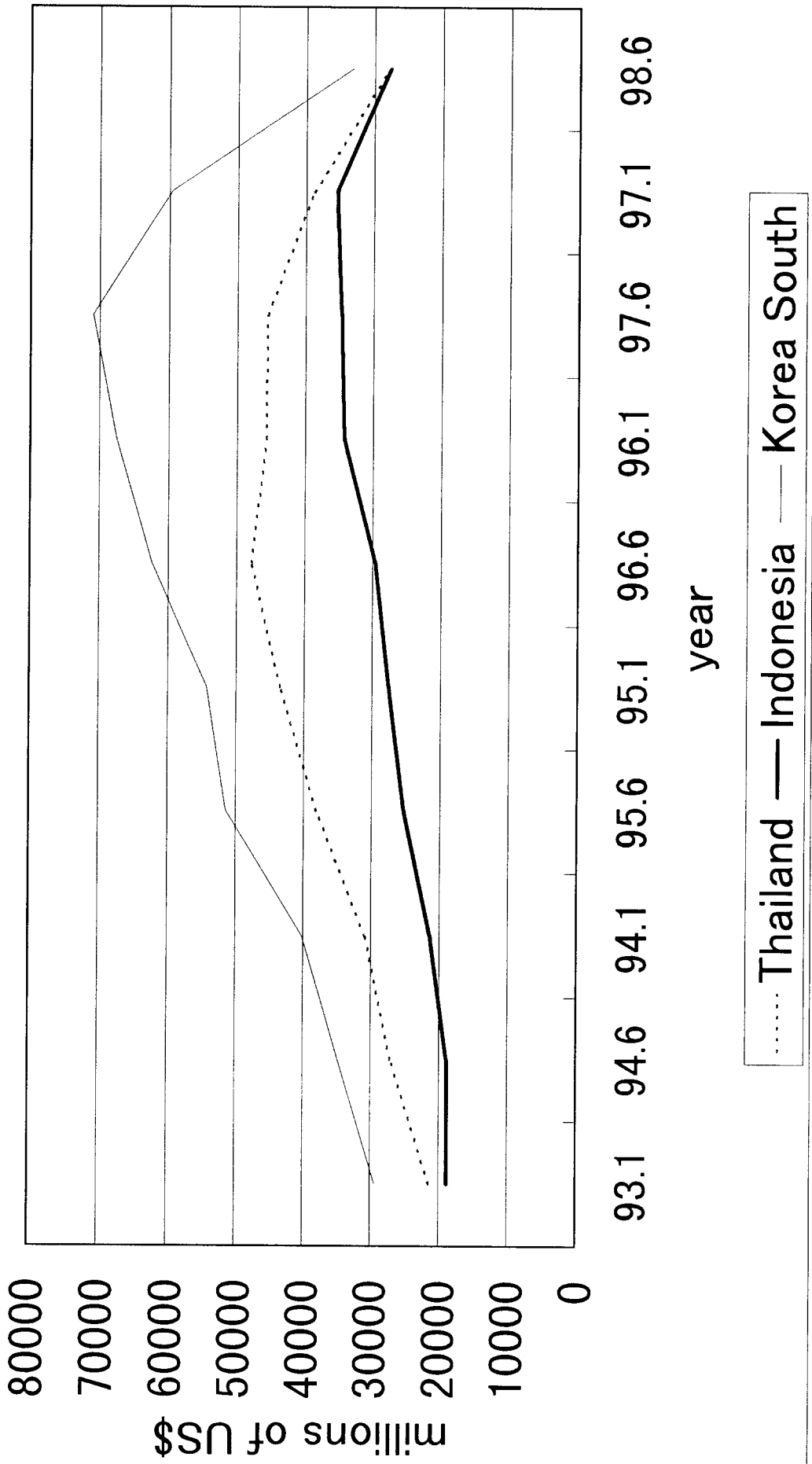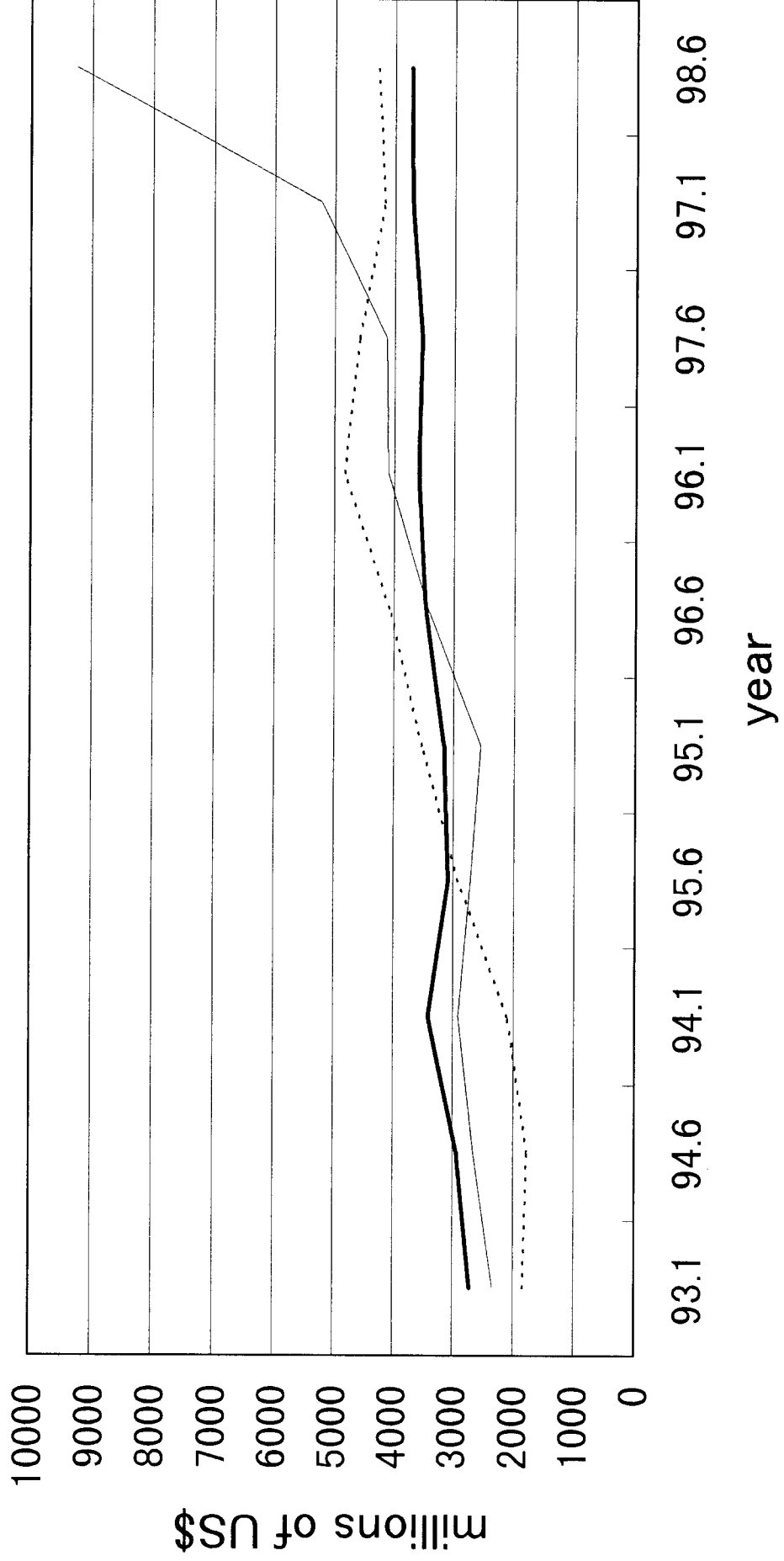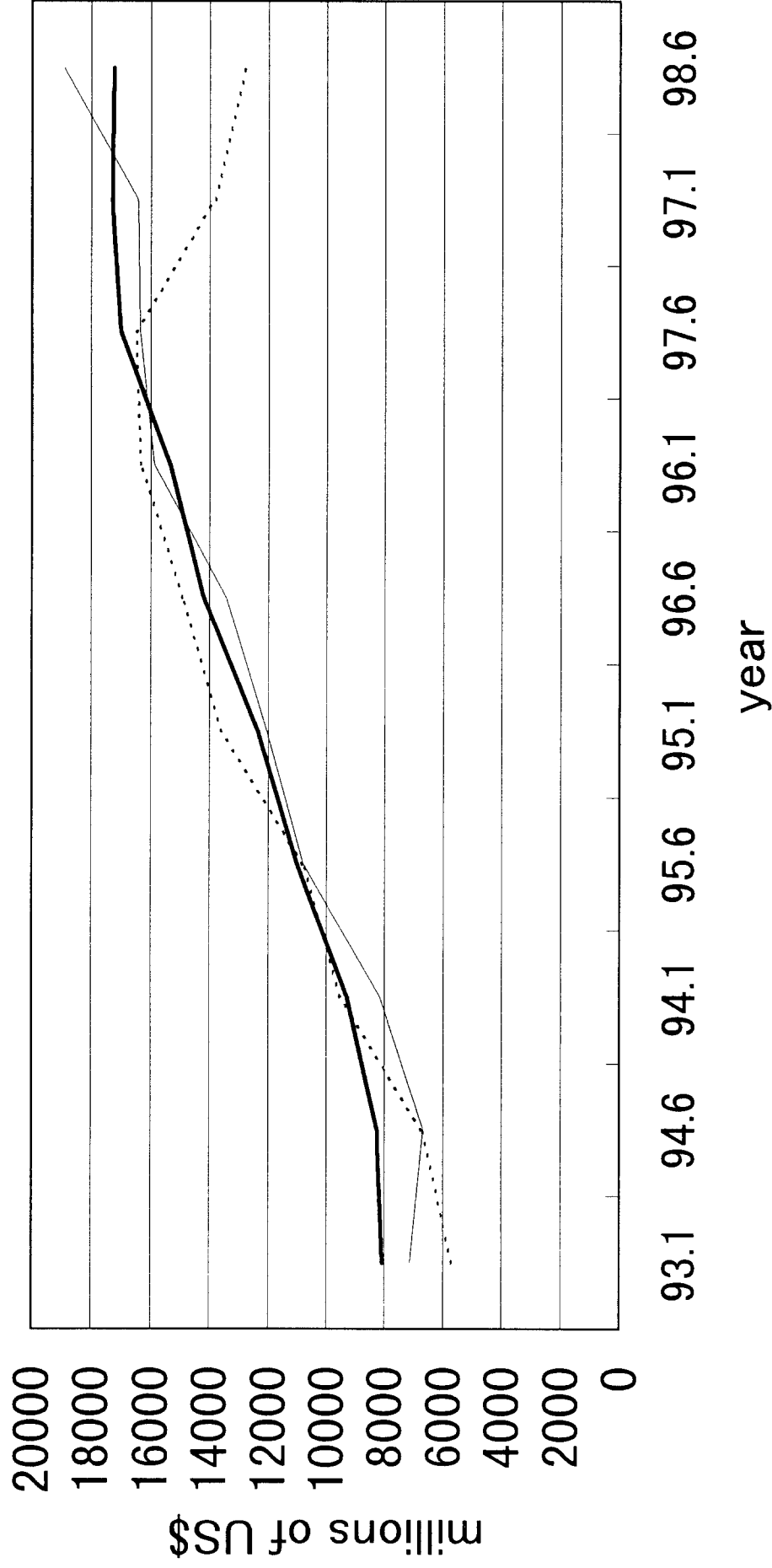Figure 1a. Short-term Loans before and after the Crisis

Figure 1b. Medium-term Loans before and after the Crisis

······ Thailand —— Indonesia —— Korea South

Figure 1c. Long-term Loans before and after the Crisis

.... Thailand —Indonesia — Korea South

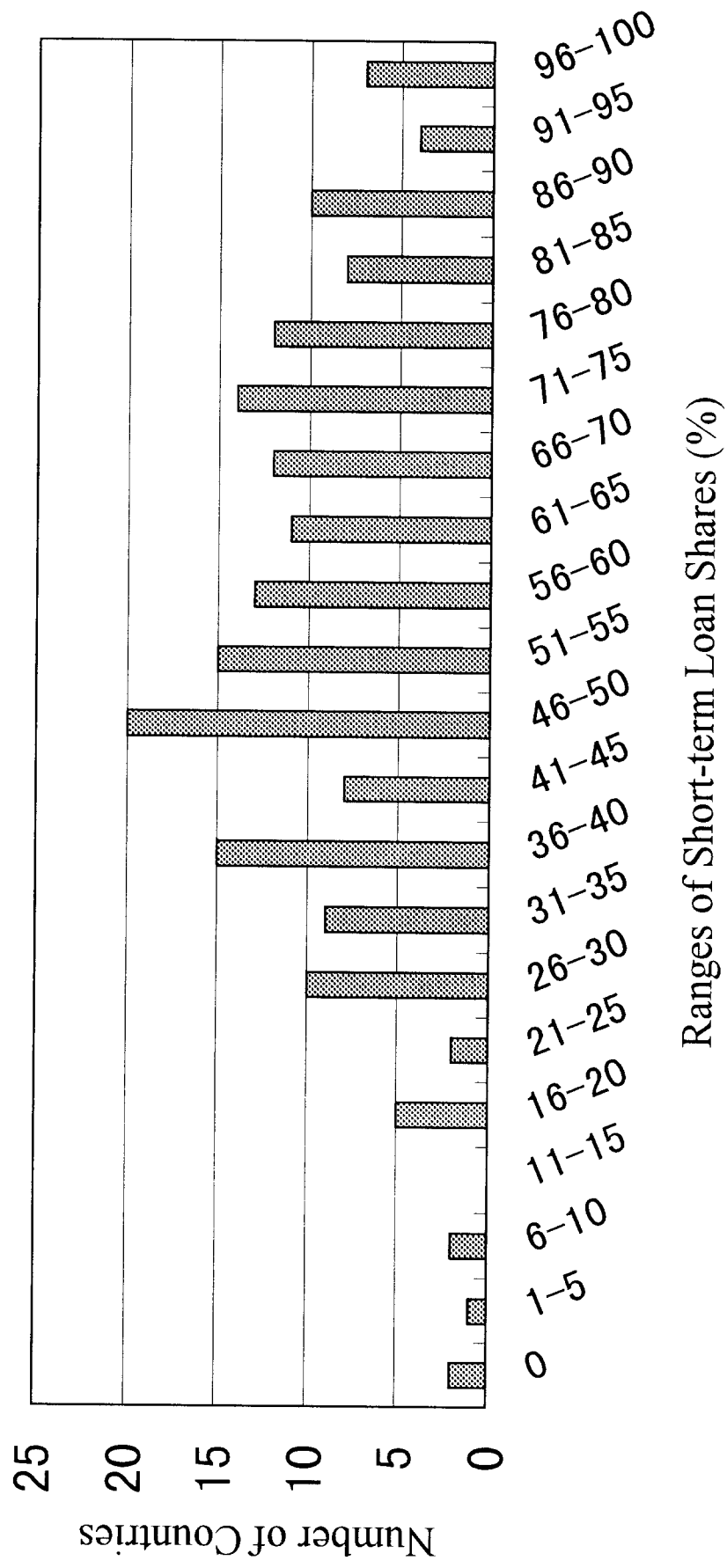# Figure 2. A Histgram of Short-term Loan Shares for 180 Countries from the BIS Data

Number of Countries

Ranges of Short-term Loan Shares (%)

Figure 3.   Technological Environments of Borrowers

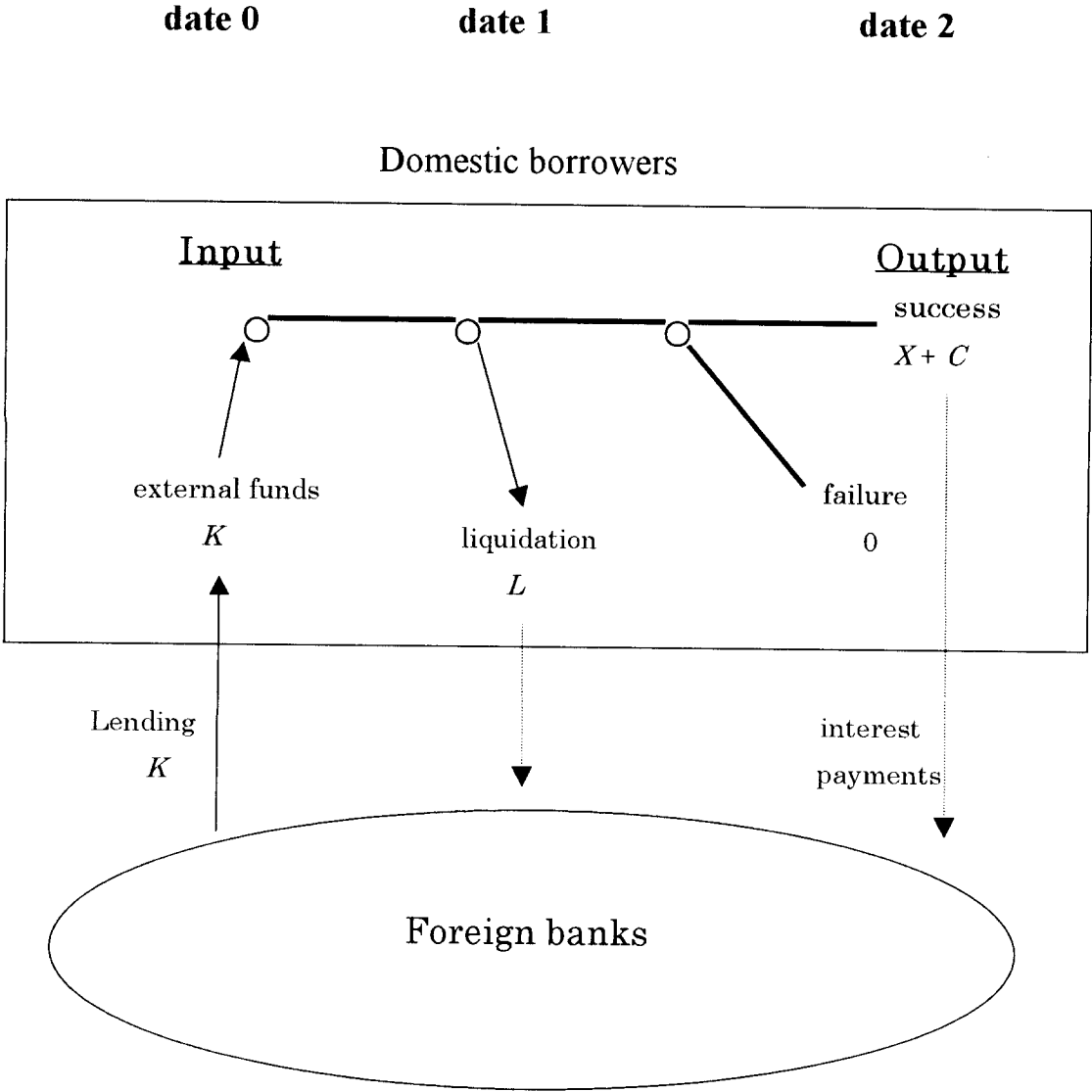**date 0**   **date 1**   **date 2**

Domestic borrowers

Figure 4.   Information Structure of Foreign Banks