FINANCIAL CRISIS AND THE RESOLUTION OF FINANCIAL DISTRESS: EVIDENCE FROM MALAYSIA AND THAILAND

TAN WEI LIN

(B. Economics (Hons.), Universiti Kebangsaan Malaysia;

Master of Economics, University of Malaya)

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ABSTRACT

The Asian Financial Crisis brought about widespread financial distress in both the corporate and banking sectors. Therefore, the efficiency of asset resolution policy would determine, in large part, the impact of the crisis on the economy as well as speed of economic recovery. Most of the literature on financial crisis focuses on the transmission and not the resolution of the crisis. Therefore, the main contribution of the thesis is to offer new theoretical and empirical insight on the role of a centralised national asset management company (NAMC) in resolving financial distress, by assisting banks in resuming intermediation role and the corollary speedier economic recovery. We focus our studies on Malaysia and Thailand's experience as they are comparable in structure and level of development, with similar broad orientation of economic policies. We could therefore conduct a more meaningful comparison of policy responses and derive insightful policy implications as compared to broad sample comparative analysis.

The nature of transmission, however, has bearing on the resolution of the financial crisis. We thus dedicate chapter 1 to study the Malaysian and Thai experience from crisis to recovery in order to better understand the crisis. In accordance with the literature on credit channel in the transmission of shock, we find that the key to economic recovery is to ensure the resumption of banks' credit intermediation role. The discussions in chapter 1 thus set the stage and provide motivation for our work in chapter 2 and 3 where we show that an effective way to help banks to resume their intermediation role is to set up a NAMC.

Chapter 2 offers a theoretical model to study the optimal asset resolution policy. Using a two- tier hierarchical framework that comprises of a regulator, banks, and firms, we examine how hidden information and moral hazard affect agents' behaviour and thus, the regulator's policy choice. We show that banks' tendency to rollover defaulted loans encourage firms' manager to dissipate assets. Therefore, if the regulator anticipates that banks are likely to rollover than invoking bankruptcy on defaulted loans, the regulator should opt for a centralised approach as a NAMC could halt asset dissipation and provide the right incentive for both banks and firms to engage in restructuring, provided that political interference could be contained by a well-designed NAMC. We also find that a liquidity shock may be good for an economy as it filters out insolvent firms and thus halts subsequent asset dissipation. The benefit of filtering effect is especially apparent in the case of a centralised approach in asset resolution.

We complement our theoretical model with an empirical study in chapter 3 and show that Malaysia, which opted for a centralised approach had greater improvement in real bank credit growth and NPL ratio as compared to Thailand, which had opted for a decentralised approach till 2001. In addition, by using a difference- in- differences (DID) method, we show that the performance of the corporate sector in Malaysia improved after the establishment of a NAMC in the middle of 1998. We also outline the operational design and structure of Danaharta; which left the Malaysian NAMC with little room for political interference and thus its ensuing success in resolving financial distress.

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List of Abbreviations

AMCs	Asset Management Companies
BNM	Bank Negara Malaysia
CCI	Cost of Credit Intermediation
CDRC	Corporate Debt Restructuring Committee
CSV	Costly State Verification
DID	Difference-in-difference
IMF	International Monetary Fund
JEXIM	Japan Export-Import Bank
KTB	Krung Thai Bank
NAMC	National Asset Management Company
NPLs	Non-performing Loans
SAs	Special Administrators
SMEs	Small and Medium Enterprises
TAMC	Thai Asset Management Corporation

Chapter 1

Understanding the East Asian Financial Crisis: the Role of Banks in Propagating and Amplifying Shocks

1 Introduction

The financial crisis that broke out in Thailand in July 1997 was rapidly transmitted to Indonesia, Malaysia, Korea and the Philippines. Nevertheless, these countries have recorded a V- shape recovery, beyond anyone's expectation. The economies started to bottom up in the second half of 1998 and demonstrated a turnaround in 1999. However, the recovery had been uneven; some sectors, especially the manufacturing exporters had performed particularly well while many others experienced stagnation for quite a long time.[1] While the recession was short-lived, the general growth momentum has slowed down for quite a number of years, as depicted in Table 1. In addition, some countries seemed to have recovered faster and performed better than the others after the crisis.

This paper aims to explain the Asian financial crisis by highlighting the predominant role of banks in the intermediation process in these economies. We review the existing literature on the mechanism in which financial crises have affected economic activities. We find that financial crisis affects the economy through the credit channel, besides the monetary channel. It is also evident that the credit channel operates through both the bank lending as well as the broad credit channel. Thus, it is imperative to address the difficulties in the banking and corporate sector concurrently as it affects

[1] See Chaplongphob (2001) for a detail discussion for the uneven recovery of Thailand.

the economic recovery. In other words, banking sector's restructuring efforts must be complemented by corporate sector's restructuring in order for banks to fully resume their intermediation role. The literature also suggests that there is a role for government interventions to overcome financial fragility brought by the disintermediation.

This paper complements the literature review with new empirical evidence by looking at the country experiences of Malaysia and Thailand. We argue that Malaysia, with an apparent improvement in its post- crisis corporate and banking sectors' balance sheet has recovered faster than Thailand post crisis, with higher GDP growth from 1999-2000. The improvement in the balance sheet might be due to different policy responses in these countries, which resulted in differing degree of the resumption of bank intermediation role and thus, the differing degree of economic recovery. The Malaysian government played a leading and coordinating role in bank and corporate restructuring by adopting a centralised policy in resolving financial distress while the Thai government took a backseat and adopted a decentralised policy in restructuring before 2001.

It should be stated in the outset that our theory does not offer a complete explanation for the differing degree of recovery in these two economies and it is not necessarily inconsistent with the existing explanation which attribute the speedier economic performance to the imposition of capital controls in Malaysia.[2] However, it does elucidate the recovery process in a context that is consistent with the explanation of financial crisis elsewhere in the history. Specifically, in line with the literature on

[2] See a more detailed discussion on capital controls in Chapter 3. We also explain in chapter 3 why the imposition of capital controls was unlikely to be the main factor for the better economic performance in Malaysia.

credit channel in the transmission of shock and to a lesser extent, literature on banking crisis; we argue that the key to economic recovery is to ensure the resumption of banks' credit intermediation role.

This rest of the paper is organised as follows: Section 2 reviews the credit view literature and discusses the role of bank lending channel as well as the broad credit channel in the propagation of shocks. We also discuss how asymmetric information magnifies the boom and bust cycle. In addition, we review the existing empirical studies on Malaysia and Thailand to find evidence of the existence of credit crunch in the early years of the crisis. Section 3 reviews the road to recovery in Malaysia and Thailand and explains the recovery in the context of minimising cost of credit intermediation. In other words, we outline how the credit view could explain the recovery process. Section 4 outlines the policy response of Malaysia and Thailand, with emphasis on bank restructuring policies in general and asset resolution policies in particular. We draw conclusions in Section 5.

Table 1: Selected Economic Indicators

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Malaysia											
Real GDP growth rate	9.4	8.6	7.3	-7.4	6.1	8.3	0.3	4.1	5.3	7.2	5.2
Inflation	3.4	3.5	2.7	5.3	2.8	1.6	1.4	1.8	1.2	1.4	3.0
Current account balance/GDP	-10.0	-4.9	-5.9	13.2	15.9	9.4	8.3	8.4	12.8	12.6	15.3
Thailand											
Real GDP growth rate	8.2	8.0	-1.7	-10.2	4.2	4.4	2.2	5.3	6.9	6.3	4.5
Inflation	9.4	7.9	5.6	8.1	0.3	1.6	1.6	0.7	1.8	2.7	4.5
Current account balance/GDP	-3.3	-3.2	-2.1	12.8	10.1	7.7	5.4	5.5	5.6	4.2	-2.1
Korea											
Real GDP growth rate	8.9	7.1	5	-6.7	10.9	8.8	3.8	7.0	3.1	4.7	4.0
Inflation	4.5	4.9	4.5	7.5	0.8	2.3	4.1	2.7	3.6	3.6	2.7
Current account balance/GDP	-1.9	-4.7	-1.7	12.7	6.0	2.5	1.7	1.0	2.0	4.1	2.1
Indonesia											
Real GDP growth rate	8.2	8.0	4.7	-13.1	0.2	4.8	3.8	4.3	4.9	5.1	5.6
Inflation	9.4	7.9	6.2	58.4	24	3.8	11.5	11.9	6.6	6.1	10.4
Current account balance/GDP	-3.3	-3.2	-2.3	4.3	4.0	5.3	4.8	4.5	3.5	0.6	0.3
Philippines											
Real GDP growth rate	4.7	5.8	5.2	-0.6	3.4	4.0	1.8	4.3	4.7	6.2	5.0
Inflation	8.1	8.4	5.9	9.7	6.7	4.4	6.1	3.1	3.1	6.0	7.6
Current account balance/GDP	-4.3	-4.4	-5.1	2.3	9.2	11.5	1.9	5.8	4.9	1.9	2.4

Sources: Bank Negara Malaysia Annual Reports, various issues

2 Review of Literature

This section aims to put the credit view literature in perspective. Attempts have been made to interpret the empirical results more carefully and in certain cases, challenge the conclusions the authors derived from their findings. Our purpose is to review the role of bank intermediation in propagating shocks and its impact on real activities, mostly through the lens of economics of imperfect information.

Given the vast literature on credit view, our survey is selective, aiming at key points and a few illustrative papers only. The basic premise is that external sources of credit are not perfect substitutes for internal sources and the disruption of these external sources has real impact on the economy. In principle, external sources of credit include bank loans and other debt instruments. However, given the prominence of banks as a source of financing firms in both Malaysia and Thailand, our discussions focus mainly on the supply of bank credit.[3] In general, changes in bank lending behaviour may be due to factors affecting the ability to make loans and the willingness to supply loans. The *ability to make loans* depends on banks' balance sheet as well as the regulations imposed on them. The *willingness to supply loans* is primarily influenced by project viability and the borrower's balance sheet which reveals the collateral value pledged for loan application as well as the perceived default risk of borrowers. The former is termed the bank lending channel while the later the broad credit channel in the credit view literature.

[3] According to BIS 68th Annual Report, bank credit to private sector stood at 95% and 105% of GDP for Malaysia and Thailand respectively, with an annual rate of expansion of 16% and 18% respectively during the period of 1990-1997.

A seminal paper by Bernanke (1983) attempts to explain the financial propagation mechanism observed during the Great Depression by making reference to the cost of credit intermediation (CCI). He defines CCI as the costs of channeling funds from the ultimate savers to the good borrowers and it includes costs of screening, monitoring and accounting, as well as the expected loss inflicted by bad borrowers. He argues that financial shocks have real effects by altering the CCI through two channels: the debt deflation channel and, the bank capital and stability channel. During a banking crisis, the fear of bank runs, together with actual failures of banks exert a deflationary force on bank credit as both depositors and banks scramble for liquidity. Collaterals have been conventionally used to lower the CCI. However, as the collateral values of the borrowers dwindle relative to the debt burden, CCI soars and bankers are faced with the dilemma of whether to charge higher interest rates or not; as doing so might increase the rate of default. Banks' response to this situation is either to ration credit or flight to quality loans. Bernanke's main contribution is to bring to light that apart from monetary shock, the disruption of bank credit during the Great Depression had an adverse impact on both the aggregate supply and demand.[4] The weakening of firms' and banks' balance sheet means it was increasingly difficult to channel funds to the best use. Hence, what began as a contraction in aggregate demand (debt deflation) might result in a contraction in aggregate supply. The propagation of shock deepens and lengthens the economic downturn.

Bernanke's paper provides a robust collection of facts and provocative interpretations on which subsequent research has built on. Bernanke and Gertler (1989)

[4] See Friedman and Schwartz (1963) for the correlation between money supply and output.

assume a costly state verification (CSV) problem and use neo-classical model of business cycle to show how borrowers' balance sheet affects output dynamics.[5] External financing is more expensive than internal financing as a result of the discrepancy in information between borrowers and lenders; manifested as deadweight loss associated with agency cost. As argued by most standard principal- agent model, the higher is the borrower's net worth, the lower is the agency cost of financing real capital investment and the higher it is the level of investment and output. They show that this inverse relationship between net worth and agency costs in addition to the pro-cyclical nature of net-worth, results in accelerator effects of investment and cyclical persistency. This occurs as agency costs drop during booms and rise during recessions. Furthermore, the shock to borrowers' net worth, independent of aggregate output, can initiate real fluctuation. Borrowers become un-creditworthy as their net worth dwindles and the agency costs of lending to them increases. The resulting decline in investment has negative impact on both aggregate demand and aggregate supply. In a later paper, Bernanke and Gertler (1990) attempt to illustrate this financial- real interaction in a model of investment finance which they believe has added advantage over CSV model.[6] In their model, individual entrepreneur performs costly evaluation of potential investment projects and only undertakes projects that appear to be sufficiently sensible. However, the fact that entrepreneur has more information about the quality of the projects than potential lender, implies an agency problem. This would increase the prospective costs of investment finance which might discourage entrepreneur from

[5] See Townsend (1979,1988) for the problem of costly state verification.
[6] Among others; more realistic as it allows asymmetry information about borrower types, actions and project quality rather than just project outcome, and it allows agency costs to encompass more than monitoring cost as in CSV.

evaluating the project in the first place. The central idea is that financial fragility increases the agency costs of investment.[7] Thus, in general equilibrium, quantity of investment spending and expected return is sensitive to the creditworthiness of borrowers. The policy implication of their model is that endowment redistribution can help to achieve first best allocation, hence justifying 'debtor bailout'. The form of transfers needs not be direct and can be channelled through financial intermediary. These transfers improve borrowers' creditworthiness and reduce the adverse effects of financial fragility. However, this policy recommendation has to be qualified as Bernanke and Gertler's model is not a dynamic model and does not incorporate the moral hazard issue. They, thus, suggest that bailout is only justified during systemic shock where borrowers have little control or responsibility over the bad state.

A number of subsequent papers support Bernanke and Gertler's analyses and findings. Bernanke, Gertler and Gilchrist (1996) discuss financial accelerator as the amplification of initial shock as a result of endogenous changes in the agency costs of lending. Their empirical study was motivated by the theory underlying financial accelerator, which suggests that borrowers facing relatively high agency cost in the credit market are most exposed to economic downturns as lenders flock to quality borrowers. The corollary decrease in spending, production and investment by these borrowers exacerbate the effects of recessionary shocks. They find strong empirical evidence supporting the premise that financial factors play a role in the propagation of aggregate fluctuation, principally through small borrowers. The idea is later extended in Bernanke, Gertler and Gilchrist (1998). Utilising Bernanke and Gertler's (1989)

[7] Bernanke and Gertler (1990) defined financial fragility as "one in which potential borrowers have low wealth relative to the size of their project."

overlapping generation assumption about entrepreneur and the CSV model, they quantified the importance of financial accelerator in a dynamic setting and added to the framework several features that enhance the empirical relevance. Their results reinforced their earlier findings.

The net worth of borrowers is affected by changes in cash flow, as well as their real and financial asset value. This element was added to the formal literature by Kiyotaki and Moore (1997). They show that small, temporary shock to the technology or income distribution can have a persistent effect, which is amplified and spilt over to other sectors via the dynamic interaction between credit limits and asset prices. In their model, lenders cannot force borrowers to repay their debts unless they are secured.[8] Hence, credit limits are endogenously determined; by the prices of collateralised assets. There are two types of firms; credit-constrained and credit-unconstrained firms. The transmission mechanism works as follows: in period t, temporary shock that reduces net worth restricts credit constrained firms from more borrowing, thus trimming down investment expenditure (including land). This reduction in investment will hurt them in the next period as revenue decreases and net worth drops further. The knock–on effects continue in period t+1, t+2, ... At the same time, the demand for land by unconstrained firms has to be increased for market to clear, which requires their user cost of holding land to drop.[9] This is then translated to a drop in the price of land. The reduction of land price in period t exerts further constraints on credit-constrained firms as capital loss reduces their net worth. This leads to yet another cut in land investment. The dynamic

[8] Hence, durable assets served as both factors of production and collateral for loans.
[9] User cost is the differential between current land price and the discounted value of the land price in the following period.

multiplier is greater than that of the static multiplier and the process of persistence and amplification reinforces each other. This model explains the decline of aggregate output by looking at the marginal productivity of these two different types of firms in equilibrium. Given that constrained firms are unable to borrow as much as they want; their marginal productivity has to be higher than that of the unconstrained firms. Therefore, a shift in land usage from constrained to unconstrained firms resulted in a decline in aggregate output. Krishnanmurthy (2003) extended Kiyotaki and Moore's model by introducing markets for firms to hedge against common shock. He finds that the collateral amplification effects are preserved in the presence of insurance market, where the collateral constraint shifts from borrowers to suppliers of insurance.

There is much diversity in the credit view, but it is a matter of emphasis rather than apparent difference. Many examine the role of credit in monetary policy transmission.[10] Although our study does not rest specifically on monetary policy transmission mechanism, we are able to gain some insight into the role of credit in the transmission of shocks from this strain of literature. According to the literature, the effects of monetary policy on interest rate are amplified through the endogenous changes in the external finance premium. This premium is the difference in the cost raised internally and externally and it captures the deadweight costs associated with principal agent problem.[11] Changes in the monetary policy could affect external finance premium through two channels (Bernanke and Gertler 1995). First, the balance sheet or

[10] See Gertler and Gilchrist (1993), Hubbard (1995) and Trautwein (2000) for excellent survey about the role of credit market in the transmission of monetary policy.

[11] Among factors reflected in the deadweight cost are lenders' expected cost of evaluation, monitoring and collection, 'lemon premium' as the borrower has better information about the viability of project, cost of distortion arisen from moral hazard problem from the part of borrowers.

broad credit channel which links the potential impact of monetary policy to borrowers' net worth. Second, the bank lending channel which associates monetary policy with the supply of bank loans. It is not difficult to draw parallels between monetary policy actions to financial or real shocks to the economy; the mechanism of transmission between these two is thus comparable.

Others examine the relationship between bank credit and macroecomony by invoking the role of credit rationing in curtailing economic activity. In a seminal paper, Stiglitz and Weiss (1981) present a model of credit rationing where some of the apparent identical borrowers fail to secure loans from banks while others manage to. Those who are denied of loans would not be able to borrow even if they are willing to pay more than the market interest rate or to pledge more collateral and this changes the composition of borrowers borrowing from banks.[12] Their model implies that in rationing equilibrium, monetary policy manages to shift the supply of funds and affects investment through the loan supply mechanism rather than the interest rate mechanism. Blinder and Stiglitz (1983) discuss credit rationing against the backdrop of imperfect information about the probability of defaults by borrowers. According to them, imperfect information underscores the importance of institutions like banks, where they act as information-gatherers. In the course of performing their tasks, banks devise non-price mechanism (credit rationing) to screen out potential defaulters and design contracts that discourage defaults. As a result, lenders see different borrowers as highly imperfect substitutes; borrowers have similar attitudes towards lenders too. This implies that there may be classes of borrowers who might not have access to credit. The authors

[12] This will increase the riskiness of bank's loan portfolio as it might discourage safer investors or induce borrowers to invest in riskier project in hope of getting high return.

demonstrate that a tightening of monetary policy could depress real economic activity by the following mechanism. A drain of reserve means banks might have to contract the supply of loan. As some of the borrowers whose loans have not been renewed might not be able to secure loans from other banks, investment might be stalled. If banks were financing working capital for firms, the curtailment of credit means current operations would have to be reduced as well. Thus, credit rationing cuts into both aggregate supply and demand; depressing real economic activity. They also note that because of the possibility of credit rationing, interest rates might not increase in this case and interest elasticity plays no significant role in the model. Even though this paper discusses the disruption of economic activity in the context of a tightening of monetary policy, the same framework can be applied to instances where the contraction of loan supply is due to the problems of balance sheets of banks. It has the same distressing effect on the economic activities. [13]

Turning from theoretical to empirical research, we attempt to find evidence that shocks were amplified through the bank credit channel and have persistent effect on the economy. History provides several examples of financial crisis for which we can draw inferences. Even though our focus of study is that of Malaysia and Thailand, we believe that an understanding of the empirical studies carried out in other parts of the world is beneficial for several reasons. First, these empirical studies test the validity of the theoretical framework reviewed earlier. Second, even though the institutional structures of Malaysia and Thailand are different from that of the United States in the 1930s and 1990s and that of Japan's in the1990s, the nature of the financial crisis faced by these

[13] See Blinder (1987) where he argues that it is vital to understand credit rationing in deep recession.

economies was not too different. In all cases, there was a general loss of confidence in the financial institutions and widespread debtors' insolvency and debt deflation. In addition, perhaps with the exception of Japanese banks, there was a noticeable change in the attitude among lenders in these economies during crisis where they became chastened, conservative and shied away from making loans, preferring instead to hold safe and liquid assets. In any case, Malaysia and Thailand's economy are more bank-dependent than the United States. Hence, if there was evidence of the operation of bank lending or broad credit channel in the United States, then the magnitude of amplification of shocks through the bank lending and broad credit channel should be larger in Malaysia and Thailand.

King (1986), in one of the first attempts to test for the bank lending channel, constructs a partial equilibrium model to test empirically whether bank credit aggregates have predictive content for aggregate economic activity. He is skeptical about the existence of credit channel as loan supply was responsive to loan rate, which contradicts with the credit rationing hypothesis. However, he finds evidence of liquidity constraint among banks and an excess of demand in the loan market. We thus argue that his findings might be interpreted as a confirmation of the presence of bank lending channel instead. As asserted by Bernanke and Gertler (1989), the mechanism through which financial factors affect real activity need not involve credit rationing. The agency cost of investment is reflected in the cost of capital. Therefore, whether credit rationing exists is not key to the debate of whether financial factors matter. Besides King, Romer and Romer (1990) also argue against the credit view. However, their analysis of bank loans focus solely on their role in the monetary policy transmission mechanism, not on

their impact on the macroeconomy. In fact, their results suggested that bank loans are special as they are imperfect substitute for other assets, thus strongly suggesting the presence of bank lending channel in the transmission of shock.[14]

In an effort to distinguish the money channel from credit channel, Kashyap, Stein and Wilcox (1993) examine the composition of credit between bank and non-bank sources.[15] They find that the supply of bank loan decline after monetary tightening and the contraction of loan supply reduce investment, even after controlling for interest rate and output. They thus conclude that this is evidence of the operation of bank lending channel. Using different modelling strategy, Kashyap, Lamont and Stein (1994) test for the bank lending channel by examining firm- level inventory movement during the 1981-1982 recession (where tight monetary policy was in place) and find that bank-dependent firms cut their inventories more than non- bank dependent counterparts.[16] Their result is consistent with both the bank lending and balance sheet channel in the transmission of monetary policy. Both channels involve the capital market imperfections and associate the decline in inventory to a 'cut-off' in the flow of bank credit. The authors go one step further in their effort to distinguish these two channels by comparing data for two other recessions. One is related to tight monetary policy and

[14] Bernanke and Blinder's (1988) model of bank lending channel in the transmission of monetary policy suggests that open market operations drain reserve and hence deposit from the banking system. They thus limit supply of bank loans by reducing banks' access to loanable funds. Two key assumption for the operation of the channel is 1) banks cannot easily replace lost deposits with other sources of funds; 2) loans and securities are imperfect substitutes. For discussion on transmission of shocks, we only need to satisfy assumption 2.

[15] The money view predicts that a contractionary policy raises interest rate and lowering total demand for credit. Thus, all measures of outstanding credit should decline. The bank lending view, in contrast, predicts that the contractionary policy has a distinct effect in reducing the supply of bank credit. Thus, with less bank credit available, borrowers would switch to alternate source of financing. This would be reflected in a greater decline in bank credit than other source of financing.

[16] Bank dependent firms can be viewed as firms that have no access to capital market or large internal funds.

the other is not. They find that there is evidence of liquidity constraints in the former but not the latter. Hence, they conclude that the lending channel has played a more important role in the transmission of monetary policy. Peek and Rosengren (1995), investigating the 1990s recession in the United States, also find that the reduction in capital has resulted in loan supply contraction and credit slow down in New England.

Oliner and Rudebusch (1995) on the contrary, find no evidence of bank lending channel in the transmission of monetary policy in their empirical study after taking into account heterogeneity of firms. The disaggregate data showed that there was no change in the composition of bank and non-bank debt for small and large firms after a tightening of monetary policy. Rather, they find a redirection of all types of credit from small firms to large firms as large firms were less bank dependent thus bringing about the decline in the aggregate bank loan share as observed by Kashyap, Stein and Wilcox (1993). However, their results should not be interpreted as ruling out credit crunch in the banking sector. Oliner and Rudebusch argue that there was no inconsistency between their results and the evidence that sector specific shocks have sometimes depressed bank lending. Their results only suggested that monetary contraction have not systematically shrunk the supply of bank loans relative to other sources and did not rule out the operation of broad credit channel.

Gertler and Gilchrist (1994) suggest that financial propagation mechanism is especially relevant for small borrowers as they face higher premium in attaining external funds. They are charged higher premium because 1) bankruptcy cost are proportionately larger for smaller borrowers due to the existence of fixed expenses in the evaluation and monitoring, 2) large borrowers usually own greater collateralisable

net worth and 3) small firms are less diversified and hence has greater unobservable idiosyncratic risk. A number of studies that attempted to identify the propagation mechanism have focused on disaggregated data of borrower types. Using data from US manufacturing sector, Oliner and Rudebusch (1996) tested for the existence of broad credit channel for monetary policy. They regress investment on cash flow, a proxy of internal liquidity and a set of control variables and, compare the different behaviour of small and large firms. The results were supportive of the broad credit channel which operated through small firms due to the presence of the relatively more severe problem of asymmetric information.[17]

Recent studies that tested Bernanke's view empirically have also produced positive results. Coe (2002) adopts regime switching approach to investigate the timing and effect of the Great Depression and his result is supportive of Bernanke's (1983) argument that nonmonetary channel played a role in the contraction of the economy. Calomiris and Mason (2003) tested Bernanke's view empirically by taking into account two major critiques against his view.[18] Still, their results are consistent with that of Bernanke where the supply of bank loans accounted largely for the variation of income growth. They conclude that bank distress further propagates shocks through loan supply channel. Hubbard, Kuttner and Palia (2002) lend support to bank lending channel by arguing that firms have to incur significant costs when they switch lenders. Hence, the reduction in credit supply would in general lower investment and economic activity. In an effort to disentangle the effect of pre-existing economic conditions from the effect of

[17] The results depicted a tightening of the association between internal funds and investment.
[18] The first critique is the loan demand critique where critics argued that it is difficulty to separate credit supply shock from endogenous decline of credit demand. The second critique is the quality of money critique by Rockoff (1993), where he argued that Bernanke's result is not robust to how money is defined.

bank failures on real economic activity, Ashcraft (2003) studies FDIC- induced failure of otherwise healthy subsidiary banks and shows that the dissolution of these institutions significantly reduce bank lending and permanently reduce the real income by 3%. It is crucial to appreciate that these healthy bank failures tend to understate the effect of liquidation of banks on real activity. In a systemic banking crisis, the disruption of normal bank lending activity has far-reaching real effects. Driscoll (2002), on the other hand, uses a panel of US state level data to test if changes in loan supply affect output but does not find any significant relationship between bank loan supply and output. He thus rejects the hypothesis that bank lending channel was at work. However, the author is quick to point out that his result does not rule out the possibility that banks plays a role in economic fluctuation, through the financial accelerator mechanism or broad credit channel.

Besides the United States, we can also gain valuable lessons from the experience of Japan's early 1990s economic downturn. Brunner and Kamin (1998) find that proxies for financial factors enter significantly into the behavioural equations for loan supply, loan demand and aggregate demand. There was evidence that these financial factors had contributed to Japan's recession. Besides that, their simulation results also rule out the alternative hypothesis that the decline in bank loans was due to an exogenous contraction in aggregate demand. Similarly, Bayoumi (1999) argues that the disruption of financial intermediation was largely responsible for the extended slump in Japanese economy. His main argument is that financial intermediation magnifies the impact of asset prices in economy. Banks that were undercapitalised responded to the dip in asset prices and other balance sheet pressure by restraining lending as they struggled to keep

up to the capital adequacy standard. The resultant credit crunch disrupted the economic activity.

Other than the credit view which focuses primarily on asymmetry information between lenders and borrowers, literature on banking crisis/ bank panics and financial intermediation are also helpful in understanding the effect of the disruption of bank credit on real economy. It is not our intention to do an exhaustive review of those literatures here. Nevertheless, we will briefly discuss some of the papers which we think would enhance our understanding of the subject matter.

Rajan (1994) presents a model where bank managers are rational but only concerned about short term bank reputation. The key assumption of this model is that market can only observe bank's profit but the composition of bank portfolio and performance of borrowers are not easily observable. Therefore, bank managers have incentive to manipulate current earnings in order to shape market expectations. For example, a bank is more likely to roll over bad debts in order to conceal them than to tighten credit or realise the losses when a small group of borrowers defaulted on their loan because doing so will reflect badly on her balance sheet. However, if the entire borrowing sector is hit by an adverse shock, then bank managers have less incentive to keep up the pretence as other banks will be equally hit by the shock. As a result, banks credibly coordinate to tighten their credit when borrowing sector deteriorates. Rajan thus argues that banks' credit policy essentially accentuates demand-side fluctuation, even though it is difficult to distinguish between the two empirically.

Diamond and Rajan (2005) demonstrate how borrowers' balance sheet problems can affect banks supply of loans by making banks insolvent or illiquid. Their basic

argument is that an exogenous delay in the generation of project cash flows by many borrowers concurrently can affect banks adversely. Not only are banks paid less, their abilities to borrow against the future value of the delayed projects are also constrained. If banks fail to raise fund to cover their immediate net liability, then they are literally 'insolvent'. Meanwhile, there is also a problem of liquidity because fewer projects that are completed timely means there is less money in the economy to pay off existing depositors. Their model implies that the borrowers' cash flow problems affect banks' balance sheet and thus inevitably lead to a contraction of loan supply and even credit crunch or meltdown of the whole system. The problem of illiquidity and insolvency of banks could amplify the cash flow problem of borrowers as projects may have to be terminated early or delayed further if borrowers fail to get funding from banks. This perpetuates the vicious cycle.

We now highlight some of the recent papers which call attention to the potential devastating effects brought about by bank runs or bank panics. Sau (2003) bases his discussion on Minsky's (1984) financial fragility hypothesis, argues that the predominant role of banks in the East Asian financial system and the process of disintermediation led to information destruction. The subsequent coordination failure was responsible for the contagion and propagation of shocks in the real-financial system. Ennis and Keister (2003) model bank runs triggered by sunspots and find both the occurrence of a run and the sheer possibility of a run in a given period have a large and persistent impact. They outline three important ways in which the possibility of a bank run affects the growth process. First, there is a disintermediation effect where agents reduce their participations in the banking system. Second, banks tend to adjust

their portfolio of investment to more liquid assets, thus reducing supply of loans for productive investment. Third, when a run occurs, actual liquidation of investment decreases capital formation. However, if bank and economic distress occur at the same time, how do we determine the direction of causality? Dell'Ariccia, Detragiache and Rajan (2005) attempt to tackle this identification problem by conducting an empirical study using difference in difference approach. Using data of 41 banking crises over 1980-2000, they study the real effect of banking crises. They argue that sectors that are more dependent on external finance should perform relatively worse during banking crises. In addition, sectors that predominantly have small firms, thus heavily rely on bank financing also should perform relatively worse during banking crises. Their findings support the hypothesis that the disruption of supply of credit through the lending channel has exogenous negative real effect on economic activities. Their results are consistent with an earlier study by Rajan and Zingales (1998) where they find that financial market constraints have a negative impact on investment and growth.

The literature of financial intermediation suggests that banks are special and are difficult to be replaced in credit creation process and the disruption of banking activity may have macroeconomic consequences.[19] Bernanke and Gertler (1985) discuss the role of banks in the determination of general equilibrium. Central to their theory is the importance of private information. They show that intermediation is affected by the adequacy of bank capital, the risk of investment and the cost of bank monitoring. Their model implies that a financial collapse could reduce marginal efficiency of investment and results in a decline in output. James and Smith (2000) assert that bank loans are

[19] See Gorton and Winton (2002) for a good survey on financial intermediation, with emphasis on the role of bank-like intermediaries in the saving-investment process.

special, thus, their limited substitutability with other balance sheet items of banks and firms. They argue that commitment- based financing is particularly valuable when firms are undervalued in the market. They therefore advocate that bank financing is not only important for small firms, but for large and medium firms as well.

There are others who emphasised the role of lending in cyclical fluctuations by providing insightful descriptive analyses. Wolnilower (1980), as an acute observer in a ringside seat of the New York financial community, recounts the history of the evolution of the United States financial system. He argues that the demand for credit is inelastic with respect to the general level of interest rates. Any significant decline in the growth of credit and aggregate demand is therefore essentially coming from the interruption of the supply of credit. Eckstein and Sinai (1986) find that each of the six recessions in the United States from 1957 to 1892 was preceded by a credit crunch. Lindgren, Garcia and Saal (1996) conclude form their case studies that bank fragility has adversely affected the economic growth. The experience of credit controls in the United States also lends support to the importance of bank lending in economic activity. The credit control that was initiated by Carter Administration from March 14 to July 3 had a remarkable effect on bank lending and the economy. Even though the controls were reputedly symbolic, it had a very powerful real effect. The economy nosedived in the second quarter of 1980, with real GDP contracting at 9.9% annual rate. However, when the controls were lifted on July 3, economic growth resumed (Schreft; 1990).

Having discussed the theoretical models and examined the empirical evidence of the importance of bank credits in propagating shocks and affecting real economy, we next move on to discuss the existing empirical literature which examine the role of

credit channel in amplifying shocks and exerting strain on economic activity in Malaysia and Thailand.

Ding, Domac and Ferri (1998), applying the credit view framework in their discussion and empirical study, find that there was strong evidence of the existence of a credit crunch in Malaysia. There was a significant increase in the general risk premium and the spread between lending rates and risk-free asset yields.[20] Credit crunch was more acute in Merchant Bank, who specialised in lending to Small and Medium Enterprises (SMEs). In addition, there were signs of flight to quality both by banks and depositors, making it even harder for SMEs to obtain credit.[21] At first glance, Thailand did not seem to have suffered from credit crunch as credit variables of banks along with interest rate spread showed no sign of it. However, the authors are quick to point out that the available interest rate data is inadequate for their purpose of investigation. They argue that the increase in real credit could be mostly remedial as credit was extended to prevent loans from turning to NPLs. In addition, there was evidence of flight to quality and credit rationing. The widening spread between the minimum lending rate of finance companies and the prime rate was also consistent with the hypothesis that SMEs should be more severely affected if the decline in loans is due to a reduction in loan supply. Hence, the evidence does point to a constraint in the supply of bank loans in both Malaysia and Thailand. Similarly, Enya, Kohsaka and Pobre (2003) find that during the

[20] The authors took widening of the spread between lending rates and risk- free asset yields as evidence that the demand could not have declined more than the supply of credit. However, as suggested by Agenor and Aizenman (1998), the increase in the spread may result from other factors like an expected increase in monitoring costs or an expected tightening in prudential regulations that require the holding of more liquid assets. Hence, they also look at general risk premium, which measures the yield spread between corporate bonds and government bonds.

[21] Flight to quality is evident when banks shift most of their assets to government securities and depositors move their funds to foreign own, large and state banks.

crisis period of 1998 to 1999, credit crunch was widespread in Malaysia and Thailand and it was extended to 2001 for the case of Thailand.

Ito and Pereira da Silva (1999) define the necessary conditions for credit crunch as: 1) Severe cut in lending and 2) uniform premium in lending rates. In addition, one of the following conditions has to be observed in order to qualify a situation as credit crunch: 1) good borrowers rationing; 2) bank balance sheet problems and 3) loss of market clearing role of interest rate. They test if the above mentioned conditions were observed in Thailand. They find that there was a noticeable slowdown of credit extended by all financial institutions. In fact, they find that finance companies in Thailand stopped lending almost completely after the crisis. They also observe a leftward shift of lending supply curve. In addition, they also find some evidence that good borrowers, like the exporters, had difficulties in securing credit. Besides that, growth in deposit is not translated into new lending, suggesting a liquidity preference by banks. There were also signs of flight to quality where large banks were flushed with excess reserve while small and medium size banks were faced with liquidity shortage and over-exposed balance sheets. Based on this empirical evidence and a survey conducted by Japan Export-Import Bank (JEXIM) on commercial banks, they conclude that there was strong evidence of credit crunch in Thailand from the fall of 1997 to the summer of 1998.

Agenor, Aizenman and Hoffmaister (2004) examine if the credit slowdown in Thailand was driven by demand or supply factor. They study the demand for excess liquidity reserves by commercial banks in the presence of liquidity risks and real sector volatility. They argue that the banks increase their excess reserve holding to buffer

themselves against the higher risk of default by borrowers, the greater volatility of deposits intake and the increased risk of lending. They develop a demand function for excess reserve by commercial banks and use that to establish dynamic projection of the excess reserve for the post crisis period (July 1997- Oct 1998). They argue that if actual value of excess reserve is within one or two standard errors bands, the observed decrease in credit would be consistent with a supply phenomenon. Otherwise, there would be evidence of involuntary accumulation of excess reserves and the credit slowdown is due to a drop in demand for loan. Their result supported the hypothesis that the reduction in bank lending in Thailand was a reflection of supply phenomenon.

On the other hand, the survey conducted by the World Bank between November 1998 and February 1999 revealed that the main causes of output decline in those firms under the survey was the collapse of domestic demand for their products and not because of difficulties in obtaining credit which constraint output production (Dwor-Frecaut, Hallward and Colaco eds, 2000). However, it is important to note that survey evidence can sometime be biased. For example, due to tight credit, firm A was unable to conduct business as usual and thus reduce input demand from firm B. This lack of demand by firm A is then perceived as the main problem by firm B, the respondent of the survey. In actual fact, the underlying problem is credit crunch rather than a lack of demand. In addition, even though the survey data suggests overall credit availability, many firms did feel severely constrained in undertaking viable projects. 25.3% of firms in Malaysia and 56.8% of firms in Thailand reported inadequate liquidity to finance production. Firms in Thailand especially complained about the lack of loans for working capital. The survey finds that those firms in Malaysia and Thailand facing

significant problems of access to working capital were largely exporters. In addition, proportionately more exporters than non-exporters regarded the availability of expansion credit as a significant factor for capacity underutilisation. As exporters were perceived as the least negatively affected group during the crisis, the above observation strongly suggests that the slow down in credit in Thailand and Malaysia was due to the supply side constraint.[22]

From the above discussion, it seems that both Malaysia and Thailand did experience credit crunch; suggesting that it was a supply phenomena even though the demand factor could be at play as well. Even though the World Bank study is always being quoted to support the view that the slow down in output was a demand side problem, the interpretation of World Bank's survey needs special caution. First, the domestic firms did report difficulties in accessing finance, even though their major concern was a decline in domestic demand. More importantly, exporters, the better borrowers, find it more difficult to access credit than non- exporters; an evidence of credit crunch.

We can make several generalisations from the above discussion. First, it is evident that financial crisis affects the economy through the credit channel, besides the monetary channel. Second, it is sometimes immaterial to distinguish if the slow down in credit is supply or demand driven. What is important is there exists a capital crunch which needs to be addressed. Supply constraint can trigger demand constraint and vice versa. So, the distinction is after all not important for the purpose of macroeconomic

[22] Currency depreciation during the crisis had given a boost to the exports sector and the inability for them to obtain bank credit for working capital and expansion purposes strongly suggest that there was credit rationing in the economy.

stabilisation and steering the economies back to its original trajectory. The existence of broad credit channel means that bank restructuring effort must be complemented by corporate restructuring efforts as well. Third, the danger of bank runs and financial institution's difficulties should be tackled head-on as it can undermine the recovery process. As discussed by Bernanke (1983), the duration of credit effects depends on the amount of time it takes to 1) establish new or revive old channels of credit flow after a major disruption, and 2) rehabilitate insolvent debtors. These two factors seem to suggest the importance of undertaking swift measures to address the balance sheet problems of the banking and corporate sectors. In other words, the problem of debt overhangs need to be addressed speedily and intervention by the government might be desirable (Allen and Gale, 1999; Shleifer and Vishny, 1992). This is because overhangs are hard to eliminate as the market for loan is thin and the liquidation value is bound to be low when the others are facing similar liquidity problem. Fourth, what appeared to be an aggregate demand contraction as a result of currency crisis became aggregate supply contraction as the increase in the cost of intermediation makes channeling funds to their best use the more difficult. The adverse economic shock was thus overblown. Therefore, it is important to make sure that the cost of intermediation is kept low to avoid a vicious cycle of economic contraction. This is consistent with Bernanke and Gertler's (1990) argument that the government bailout of insolvent debtors might be advantageous in the period of extreme financial fragility due to aggregate demand externality. They think that the transfers to borrower can increase welfare and output. Diamond and Rajan (2002) also argue a possible role for government intervention as the contraction in the common pool of liquidity implies that the failures of some banks

could lead to a meltdown of the system through contagion effect. There is unequivocal evidence of credit crunch in Malaysia and Thailand during the early months of the crisis. Hence, the speed of economic recovery in these economies would be determined by the effectiveness of the bank and corporate restructuring policy in keeping the cost of intermediation at an affordable level, besides overcoming the problem of credit crunch.

Before we move on to examine how the resumption of bank intermediation had an impact on the economic recovery in Malaysia and Thailand, let us reiterate the objective of the literature review. This literature review is essential to understand the Asian financial crisis. It underscores the importance of resolving financial distress for post-crisis recovery. Financial shocks affect the performance of an economy by weakening the balance sheets of firms and banks, which in turn impede the banks' credit intermediation role and thus curtail economic activities. Hence, it is important to resolve the problem of firm's debt overhang; otherwise the firms are unable to borrow and the banks are unable to lend. We will show that a centralised national asset management company (NAMC) could effectively resolve financial distress in chapter 2 and 3 of this thesis. The relevant literature on the effectiveness of NAMC is covered in chapter 2 while the literature on the resolution of corporate distress and bankruptcy law is covered in chapter 3.

3 Malaysia and Thailand's Experience: from Crisis to Recovery

The common cause of bank disintermediation and a decline in the borrowers' net worth is debt deflation. History has repeatedly provided evidence -- from the Great Depression to New England in early 1990s; from the lost decade of Japan to the East Asian crisis -- that a decline in the prices of real estate and stock price directly affect the

capitals of banks thereby compromising their ability to lend. In addition, debt deflation also erodes the borrowers' net worth and affects the banks' willingness to lend. Debt deflation distributes wealth away from the borrowers and thus increases their dependence on external financing.[23] Ironically, it is exactly because of debt deflation that it is increasingly difficult for borrowers to get credit. Kindleberger (1973) argues that deflation spirals as new lending halts due to the falling prices (deflationary shock) and at the same time the prices keep falling because of a lack of new lending. A denial of credit invariably means viable projects have to be stalled, further slowing down aggregate spending and economic activity. The consequential fall in prices aggravates real indebtedness and results in prolonged recession or economic stagnation. There was a strong evidence of debt deflation in both Malaysia and Thailand; from the eve to the depth of the crisis (1997-98), as depicted in Table 2 and 3. The stock market index was slashed by more than half in both Thailand and Malaysia in 1998 as compared to their level in 1996 while the property prices nosedived in 1997-98. Debt deflation strained both the banks' and borrowers' balance sheets and thus constraint credit growth and brought about the subsequent decline in investment and output growth.

Table 4 presents the balance sheets of banks in Malaysia and Thailand. The capital adequacy ratio of both countries' commercial banks has been more than 12% since 1999. Nevertheless, the data suggest that Malaysian banks began to recover in 1999 while Thai banks' profit did not recover until 2001. Table 5 shows that except for 1999, Thailand has a higher interest rate spread between lending and deposit rate; reflecting the high cost of NPLs and the perceived risks in issuing new loans.

[23] The concept of debt deflation was first introduced by Irving Fisher (1933).

Meanwhile, study by Claessens (2005) on corporate sector's performance produces mixed results for Malaysia's corporate while Thailand's corporate sector started to recover only in 2001. As shown in table 6, after a dip in 1998, the interest coverage ratio in Malaysia improved steadily, except for a minor adjustment in 2001.[24] In contrast, Thailand's ratio is choppier and the ratio was still below 2 in 2000; implying that Thai's corporate sector has less ability to service their loans. The corporate sector's profitability ratio, on the other hand, shows that Malaysia's corporate sector is still in the doldrums several years beyond the crisis (Table 7). This figure is inconsistent with the interest coverage ratio discussed earlier and we believe that there is a high possibility that the data is distorted by large corporation losses.[25] Meanwhile, Thailand's corporate sector began to recover in 2001.

Table 2: Average Stock Price Index and Residential Property Rental , 1996-2005

Country	Malaysia	Thailand	Malaysia	Thailand
Indicator	Average Stock Price Index, in Local Currency (1996=100)	Average Stock Price Index, in Local Currency (1996=100)	Monthly rental for mid-market residential apartment (RM)	Monthly rental for mid-market residential apartment (THB)
1996	100	100.00	4,500	85,000
1997	85.71	51.21	4,500	69,000
1998	45.46	30.16	3,500	56,000
1999	61.36	36.12	2,500	45,000
2000	74.14	29.30	2,500	53,000
2001	56.10	26.04	3,000	50,000
2002	62.63	31.41	3,000	60,000
2003	62.12	41.58	3,000	60,000
2004	75.03	56.91	3,200	60,000
2005	79.70	59.36	3,200	60,000

Source: EIU database.

[24] Interest Coverage Ratio shows the extent of company's profit to cover its interest expenses

[25] Note that Claessens looks at the median of interest coverage ratio but the average of the profitability ratio. Malaysia's corporate sector landscape was characterised by a few conglomerate which made huge losses during the crisis and this might account for the negative corporate performance.

Table 3: Commercial Property Prices, Peak and Trough during 1990-1997

	Peak		Trough	
	Index	Date	Index	Date
Malaysia	100	1995Q2	86	1997Q4
Thailand	180	1991Q4	93	1997Q4

Source: BIS 68th Annual Report, 1998

Table 4: Performance Indicator of Banking Sector, 1995-2005

	Malaysia		Thailand	
Indicator	Banking Sector Profitability (%)	Capital Adequacy Ratios of Commercial Banks, end of period (%)	Banking Sector Profitability (%)	Capital Adequacy Ratios of Commercial Banks, end of period (%)
1995	1.9	-	1.6	-
1996	2.0	-	1.1	-
1997	1.3	-	-1.0	-
1998	-0.9	11.7	-5.6	10.9
1999	0.7	12.8	-5.5	12.4
2000	1.5	12.3	-0.02	12.0
2001	1.0	12.8	1.3	13.9
2002	1.3	13.2	0.3	13.7
2003	1.3	14.0	0.7	14.0
2004	1.4	14.3	1.3	13.1
2005	1.4	13.5	1.3	14.2

Source: ARIC, ADB Database

Table 5: Interest Rate Spread between Lending and Deposit rate, 1996-2004

	Malaysia	Thailand
	Interest Rate Spread	Interest Rate Spread
1996	2.86	3.06
1997	2.85	3.13
1998	2.62	3.77
1999	4.44	4.25
2000	4.31	4.54
2001	3.75	4.71
2002	3.32	4.90
2003	3.23	4.61
2004	3.10	4.50

Source: EIU database

Table 6: Interest Coverage Ratio of the Corporate Sector in Malaysia and Thailand, 1994-2002 (median of listed firms' ratio of fixed charge coverage)

	Malaysia	Thailand
1994	7.47	4.04
1995	7.79	3.13
1996	5.58	2.13
1997	3.96	1.30
1998	1.58	2.24
1999	1.92	1.14
2000	3.51	1.70
2001	3.21	2.97
2002	3.65	4.10
Average number of firms	390	235

Source: Claessens (2005)

Table 7: Profitability of Corporations (return on assets) in Malaysia and Thailand, 1994-2002

	Malaysia	Thailand
1994	6.5	5.1
1995	6.7	4.3
1996	5.8	3.0
1997	1.3	-11.21
1998	-8.3	1.7
1999	-2.2	-2.2
2000	-2.7	-3.7
2001	-3.6	2.1
2002	-7.1	6.6
Average number of firms	390	235

Source: Claessens (2005)

The above discussions suggest that Malaysia's banking and corporate sectors' balance sheet began to improve in 1999 while Thailand's only in 2001. The literature on the credit channel informs us that banks should start to resume their intermediation role when the corporate sector's balance sheet, together with theirs; improved over time. Table 8 shows the banks real credit growth for Malaysia resumed in 1999 while for Thailand, in 2002. The higher credit growth is translated to a higher investment level

and output growth. Table 9 shows that Malaysia's post- crisis gross domestic investment as % of GDP was higher than Thailand's from 1997-2002, except in 2001. Recall that Table 1 shows that Malaysia experienced higher real GDP growth than Thailand from 1999-2000 and from 2004 to 2005 while Thailand has higher real GDP growth from 2001-2003, inline with the improvement in its investment climate since 2001.

Table 8: Banks' Real Credit Growth Rate (%), 1997-2005

	Malaysia	Thailand
1997	20.18	13.57
1998	-2.31	-11.29
1999	-0.64	-6.04
2000	4.64	-17.16
2001	3.30	-11.07
2002	5.04	14.91
2003	4.63	4.95
2004	20.51	2.38
2005	13.41	2.23

Source: ARIC, ADB Database

Table 9: Gross Domestic Investment as % of GDP, 1995-2005

	Malaysia	Thailand
Indicator	Gross Domestic Investment as % of GDP	Gross Domestic Investment as % of GDP
1995	43.64	42.09
1996	41.48	41.82
1997	42.97	33.66
1998	26.68	20.45
1999	22.38	20.50
2000	27.30	22.84
2001	23.93	24.10
2002	24.00	23.81
2003	21.62	24.92
2004	22.74	27.09
2005	19.94	31.64

Source: ARIC, ADB Database

There are a few observations that warrant further discussion before we conclude on the findings of this section. We note that Thailand's banking and corporate sectors' balance sheet as well as the investment and the output growth started to improve substantially from 2001-2003. This might be due to the shift in the asset resolution policy from a decentralised approach to a centralised approach where a centralised national asset management company (NAMC), the Thai Asset Management Corporation (TAMC) was set up in June 2001. By late 2000, there was growing discontent among the Thai on the high NPL in the system which was perceived as the main obstacle to more dynamic economic recovery. The Federation of Thai Industries in November 2000 called for the establishment of a NAMC to help resolve the problem of financial distress. They argued that the capacity utilisation of the manufacturing sectors was as low as 50 to 60 percent and that a NAMC should be established to help small and medium enterprises, which accounted for 60 to 70 percent of total loans. They perceived a NAMC as capable of preventing assets from losing value besides increasing liquidity in the system (Nareerat, 2000). A month later, the Thai Bankers Association issue similar statement and argue that the decentralised approach was not practical to reduce the NPL rate as market failed to clear NPLs (Jiwamol, 2000). It is not our intention here to establish the correlation between the better performances of Thailand in 2001-2003 to the establishment of TAMC. It is suffice to note that a comparison of Malaysia and Thailand's performance after 2001 is less meaningful as both countries embark on similar asset resolution policies. In addition, the Malaysian economy was badly affected by the global economic downturn of 2001 as its economy was heavily

relied on the export of electronic products, which had sluggish demand in 2001-2002 due to the global economic downturn.

Last but not least, our empirical findings suggest that banks play an important role in explaining the financial crisis and the recovery process. Even though the crisis was triggered by currency speculative attack, it was evident that debt deflation was prevalent in the eve of the crisis. The currency devaluation further aggravated debt deflation in these economies and the banking sector propagated and amplified the shock. With the restoration of banks and corporate sectors' balance sheet however, banks began to resume their intermediation role and accelerated economic recoveries in these economies.

4 Comparative Analysis on Policy Response in Malaysia and Thailand

This section aims to review the post- crisis policy response in Malaysia and Thailand. While both countries were hit by similar nature of crisis, their policy responses were different to a certain extent. Thailand sought liquidity assistance from the IMF and her policy responses were conditioned by the IMF's structural adjustment programme while Malaysia managed to maintain policy independence. As will be shown in the following discussion, contrary to the general perception, the major policy differences in Thailand and Malaysia was not in macroeconomic policies; rather they differ in bank restructuring policies. Thailand had market- based approach in bank restructuring while Malaysia had government- initiated approach. Specifically, they had very different asset resolution policy. Malaysia established a centralised national asset management company (NAMC) to deal with NPLs problems in the financial system

while Thailand opted for a decentralised approach where no NAMC was set up before June 2001.

4.1 Macroeconomic Policy

When IMF was called in by the Thai government, the key to stabilise the exchange rate, in its view, was to employ tight monetary policy by raising the interest rate, along with a tight fiscal policy. Unfortunately, the economic effects of the program were not what had been expected. Despite adhering to the IMF's prescription, the value of the Baht continued to tumble and the real and financial sectors of the economy continued to deteriorate. By mid- 1998, there was widespread discontent on the lack of rapid recovery and the growing disarray in the economy. There was mounting pressure on the government to reverse its previous policy stance. In May 1998, the fourth Letter of Intent (LOI) demonstrated the first initiative by the Thai government to change its policy focus. This was started off by reversing its deflationary stringency into a policy of Keynesian stimulus. A fiscal deficit of -2.5 was allowed in the fourth LOI as compared to the first LOI of a target of 1% surplus. The fiscal targets were reduced to -3.5% and -5% of GDP, respectively, excluding the cost of financial sector assistance, in the subsequent fifth and sixth LOIs. This was followed by substantial easing of interest rates to provide liquidity and to stimulate domestic demand in August 1998 (stated in the fifth LOI).[26]

In August 1997, after a few days of trying, the central bank of Malaysia, Bank Negara Malaysia (BNM) abandoned Ringgit defence. The Ringgit depreciated; but till

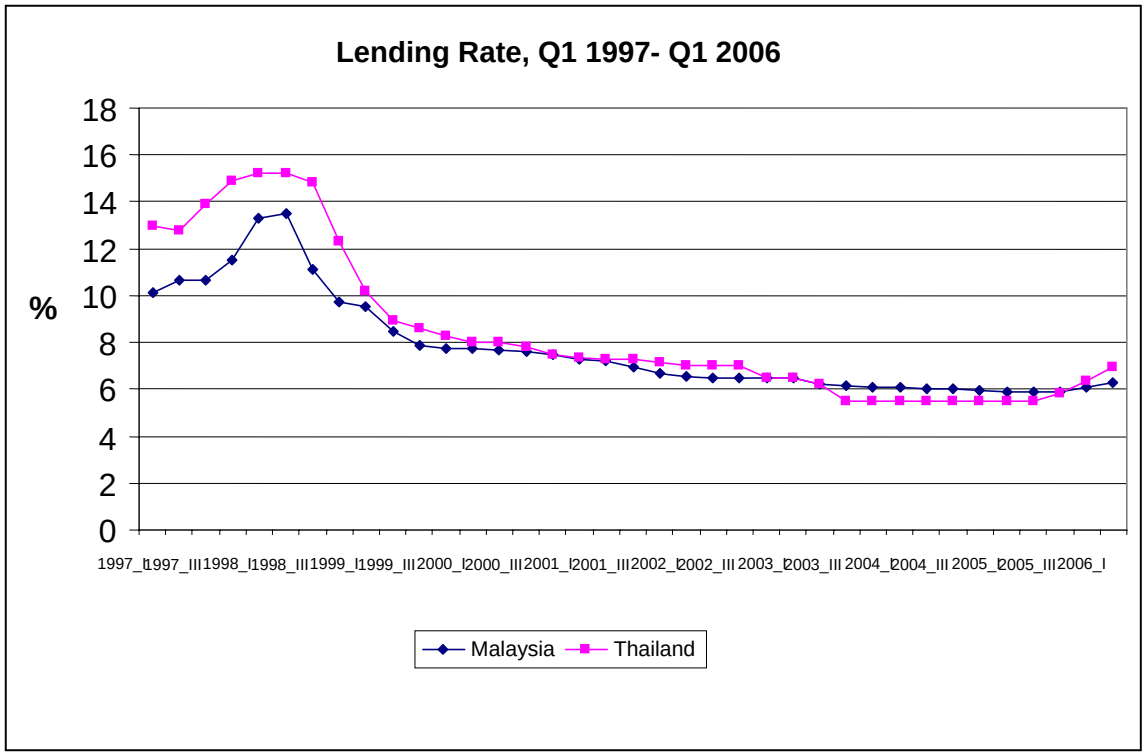
[26] See Flatters (2000) for a detailed account about policy response.

late 1997, the output expansion was comparatively little affected. Hence, the macroeconomic policies were considerably restrained. The fiscal policy was tightened in October 1997 with the announced 1998 budget targeting a surplus of 2½ percentage of GDP. However, by early1998, the real and financial sector of the economy began to feel the negative impact of the crisis and the government quickly revised its fiscal plan and aimed at a smaller surplus of 0.5 percent of GDP. In July 1998, there was evidence of output collapse and this has prompted the government to further relax its fiscal target to a deficit of 2.5 percent of GDP. On the monetary front, Bank Negara intervention rate was reduced in three steps from 11 percent to 9½ percent in August 1998.[27]

From the above discussion, it is evident that the adoption of countercyclical macroeconomics policies in both countries occurred almost at the same time even though Malaysia did not turn to IMF. As shown in Figure 1, lending rates in both countries peaked in the second quarter of 1998 and were moving in the same direction and with only small differences since then. Fiscal stimulus packages were launched in both countries from second quarter of 1998, though with varying degree of intensity and focus. Therefore, we argue that both countries adopted parallel basic macroeconomic framework in crisis resolution. Both countries began to ease their interest rate and employed the Keynesian stimulus policy in the second half of 1998.

[27] See Meesook, 2001 for a detailed description on Malaysia's recovery.

Figure 1 Malaysia and Thailand: Lending Rates



Source: EIU

4.2 Policies to Deal with Banking Sector's Distress

4.2.1 Overall Bank Restructuring Strategy

An examination of the bank restructuring efforts in these two countries reveals two major differences in policy response of Malaysia and Thailand in addressing the banking sector's problems. First, the Malaysian government assumed a leading role in coordinating all the restructuring efforts to ensure the cohesiveness of policy response while the Thai government adopted a market- based approach where it played minimal role in coordinating restructuring efforts and the resolution of distressed assets were left to the financial institutions. Second, they differ in terms of prioritising the agenda of structural reform. Thailand forged ahead with closing down unsound finance companies

while Malaysia tackled the NPLs problems before moving forward to consolidate its banking sector.

In Malaysia, in order to contain the looming banking crisis and to restore liquidity and avoid credit crunch, a national committee, the National Economic Action Council (NEAC), was set-up to give strategic direction to the restructuring exercise.[28] The NEAC proposed the establishment of Danaharta, Danamodal and Corporate Debt Restructuring Committee (CDRC) and provided the strategic direction for overall restructuring exercise.[29] In contrast, even though Thailand offered to inject funds to recapitalise ailing financial institutions and established the Corporate Debt Restructuring Advisory Committee (CDRAC) to facilitate out-of-court debt restructuring, Thailand did not establish a centralised national asset management company (NAMC) to manage distressed assets in the banking system. Neither had Thailand set up an overarching body to oversee bank and corporate restructuring activities.[30]

In Thailand, the government spent the first four years of the crisis on recapitalisation, merger and privatisation rather than on carving out bad assets and restructuring the financial institutions. The government suspended a total of 58 finance companies by early August 1997. The authority finally decided to close down the 56 suspended finance companies in December 1997. However, prior to this decision,

[28] The council was chaired by the Prime Minister and its members comprised not only of officials from the ministries and central banks, but also representatives from industries, banking and finance, trade unions and consumer associations.

[29] Danamodal was set up to recapitalise Financial Institutions, under the direct control of the central bank of Malaysia. CDRC facilitated the resolution of corporate debts by providing a platform for both borrowers and creditors to work on restructuring.

[30] On August 1998, the Thai authority announced the creation of a high-level financial restructuring advisory committee (FRAC) to advise the Ministry of Finance and the governor of the BOT. However, in practice, FRAC did not play any important or coordinating role in Thai restructuring.

confused and inconsistent signals were sent out and the original 45-day suspensions were dragged on for months; further dampening market confidence. The hasty suspensions and closures deprived many borrowers of access to credit and worsen the economic condition by causing runs and interruptions in business investment. We argue that during a systemic crisis, it might be better to leave financial institutions open rather than to close them as it is difficult to close a large part of the financial system even if many of these financial institutions are insolvent. In addition, it is difficult to distinguish problems of illiquidity from problems of insolvency and the government is constrained in its ability, both financially and institutionally, to take on a large number of insolvent Financial Institutions (FIs). As a result, the decision to close can be discretionary and the closure of FIs can be independent of the viability of the FI.[31] Bongini, Claessens, and Ferri (2000) thus argued that the closure of FIs, in some respects, may have amplified the crisis as the closure may have added to the overall uncertainty and loss of confidence in the countries. Earlier work by Goodhart (1985) also advocated a temporary assistance to insolvent banks as, in his words, 'distinction between illiquid and insolvency is a myth'. As implied in the earlier discussion in section II, the closure of these finance companies resulted in disintermediation and amplified the financial shocks to the economy, primarily through the bank lending channel.

In addition, with the benefit of hindsight, the haphazard intervention of insolvent FIs and the subsequent forced mergers was a policy mistake as the immediate expansion had not only strained the existing state banks' management, but also made banks too

[31] See Demirguc- Kunt (1989) and Thomson (1992).

large for future privatisation.[32] The forced mergers was wrongly timed as those banks have difficulty in integrating, especially those FIs that were intervened often had poor and outdated systems. In time of crisis, priority should be given to managing bad assets and reviving the banks' conventional role of giving out credit than worrying about integration which required considerable resources and time; imposing a heavy burden on the core institutions. Moreover, state banks did not reap any benefits of economies of scale from the forced mergers as the government was reluctant to lay-off redundant workers. Again, because the merger was carried out without a carefully designed implementation plan, there were inadequate efforts to safeguard the quality of the assets of FIs that were merged into the state banks, causing the deterioration of the value of those assets.[33]

In contrast, Malaysia's priority had been to carve out the non- performing loans (NPLs) from the system and to recapitalise financial institutions. The merger programme of the banking institutions only began to crystallise at the end of January 2000 when the central bank announced a new list of ten anchor banks.[34] It is important to note that the merger exercise only kicked off after the financial system has been stabilised. Besides that, the government also decided to merge the two troubled banks that she intervened earlier, namely Sime Bank and Bank Bumiputra, with stronger banks. To avoid burdening the acquiring banks, the government transferred all the NPLs to Danaharta. Therefore, unlike the case in Thailand, the merger exercise in Malaysia

[32] The criteria used to trigger intervention were not clear initially and the authorities had no concrete plans on what to do with those FI that they intervene.
[33] This was a result of the myth that 'market would work its way to equilibrium'.
[34] Initially the plan was to create six anchor banks and the merger exercise was to be completed by end 1999. However, due to objections on the top down approach, negotiations were restarted and it was finalised to 10 anchor banks.

hardly strained the capacity of the FIs. In fact, this consolidation exercise addressed the structural weaknesses of the FIs and better prepared them to face future challenges.

4.2.2 Asset Management Policy

Successful asset resolution policies would speed up bank restructuring by effectively resolve problems of NPLs besides providing the right incentive structure to promote corporate restructuring. There are two distinctive approaches in resolving NPLs in the banking system; the centralised and decentralised approach. The centralised approach is government funded and under government's close scrutiny while the decentralised approach could be either government or privately funded. The decentralised approach is market- driven and can be in the form of a separate entity, subsidiaries of banks or workout units within the banks. We see AMCs that are set up and funded by the government but operate exactly like the private AMCs with no special legal powers as in the case of the state-owned AMCs established in Thailand from 1998-2000 under the decentralised approach. The following subsection discusses the respective NPL resolution approaches adopted by Thailand and Malaysia.

4.2.2.1 Thailand's Decentralised Approach

Thailand's decentralised approach was characterised by pervasive banks' passivity in dealing with NPLs. Many banks were hesitant to write- off bad debts because a hair cut (i.e. a reduction in either the principal or interest or both) necessitated a capital reduction and new capital funds were difficult to tap. In addition, the tax system provided neither the creditors nor the debtors incentives to do so. Commercial

banks were ordinarily required to pay taxes on accrued interest and principal even though they have yet to collect them. However, the tax law stipulated that tax refunds on irrecoverable portion of accumulated debt service were only allowed for an amount of less than 500,000Baht; official prosecution was required for amount exceeded that limit. On the debtors' side, forgiven debts were treated as income and were subjected to 30% business tax.

The severity of the NPLs problem had prompted the Thai authority to come out with AMC Emergency Decree in August 1998 to facilitate the transfer of NPLs to Asset Management Companies (AMCs). By the end of 2001, there were 16 AMCs in operation. Among the 12 private AMCs that were established from 1998-2001; 10 of them were established as subsidiary to purchase NPLs from their mother banks while 2 others were established to manage NPLs purchased from other banks. Unfortunately, the banks did not transfer large amount of NPLs to these private AMCs because the transferred amount would still appear in the consolidated balance sheet, necessitating provision for possible losses. Therefore, around 80% of the assets transferred to the AMCs were conducted by the 4 state- owned AMCs.[35] These state- owned AMCs were established to handle the NPLs of five state- owned banks.[36] Unfortunately, these state-owned AMCs purchased NPLs at inflated prices, based on banks recapitalisation needs rather than quality of the assets. The authorities had also made these AMCs absorb most

[35] The four state-owned AMCs are BAM, SAM, PAM and Radhanasin AMC. While Radhanasin AMC was set up to facilitate privatization and BAM to handle the assets of a bank that the authority intervene prior to the crisis, both SAM and PAM were set up to expedite NPL resolution of state-owned banks.

[36] It is noted that NPLs of state- owned banks were of extremely low quality because those assets were originally belonged to private banks which collapsed in the past. In addition, executives of state- owned banks were reluctant to make decision on the NPLs; i.e. to restructure or write- off as they are susceptible to legal penalty for the decisions they made. As a result, they would rather sit on the NPLs than to take any action that might jeopardise their career.

of the NPLs as they plan to privatise the state- owned banks in the future. For example, around 52 percent of Krung Thai Bank's (KTB) total loans were transferred to SAM; consequently the bank's NPL ratio declined from 58 percent at the end of 1999 to 8.4 percent at the end of 2000. (Veerathai, 2003) This remarkable decrease in NPLs on the book, nonetheless, did not bring meaningful results to economic activities as they were just warehoused in the state- owned AMC. The authorities had given little thought to the capability of the state-owned AMCs to carry out their role. As a result, both SAM and PAM initially engaged the original banks to manage and service these NPLs on their behalf; defeating the purpose of establishing AMC. For example, SAM initially engaged KTB to manage NPLs for 6 months while looking for professional asset managers. Unfortunately, SAM took more than 18 months before deciding to engage another finance company, TISCO, to manage its remaining NPL (Veerathai, 2003). NPLs were virtually left unattended by serious asset managers during this time, causing a deterioration of the quality of the assets.

Table 10 shows the NPLs in the whole economy. NPLs in the state banks were very high in July 2000, amounted to 921 billion baht. However, NPLs for state banks dropped largely in September 2000 when the state- owned AMCs started to carve out NPLs at inflated price from the state banks. Nonetheless, the NPLs in the system still stood high at 31.63 %. The high NPLs in the system suggests that the restructuring efforts failed to resolve the problems of finacial distress. Table 11 shows that debt restructuring in Thailand was superficial; often in the form of maturity stretching and extension of grace period; without embarking on financial and operational restructuring. Only 6-9% of NPLs restructured during the period of 1999-2001 involved hair- cut on

principal and accrued interest while more than 60% was restructured by the extension of loan maturity and the granting of grace period for interest and principal repayments. However, we observe that the NPLs in the system started to decline steadily since June 2003, suggesting that the establishment of TAMC had started to yield positive results two years into operation. In fact, the then prime minister, Mr. Thaksin remarked that "If the government had not set up the TAMC to solve the problem of non-performing loans in the banking system, the economy will not have been able to make progress" in Dec 2004 (Bangkok Post, 21/12/2004). His remarks was supported by TAMC's report that it has completed at that time debt restructuring of loans worth 767.05 billion baht, or 98 percent of the total NPLs transferred from financial institutions and 69% of those loans represented companies that were back in business.

Table 10: Thailand: Total Distressed Loans in the System, as at July 2000-Dec 2005

	NPLs in FI			NPLs in AMCs			Total NPL (%)
	Private	State		Private	State		
Date	million baht	million baht	% of total loan	million baht	million baht	% of total loan	
Dec 1998			45.02			NA	45.02
Dec 1999			38.93			NA	38.93
July 2000	572,404	920,698	31.0	n.a	n.a	0.0	31.0
Sept 2000	528,320	494,453	22.7	41,770	399,933	9.0	31.6
Dec 2000	476,359	303,160	17.6	44,885	399,933	9.2	26.8
June 2001	470,466	89,357	12.6	47,102	399,933	9.6	22.2
Dec 2001	370,479	71,469	10.4	78,679	360,444	10.0	20.4
June 2002	362,930	77,217	10.2	77,785	585,879	14.8	25.0
Dec 2002	583,099	116,682	15.7	69,096	574,276	13.4	29.1
June 2003	610,158	107,193	15.7	66,379	451,596	10.8	26.5
Dec 2003	495,259	95,760	12.7	41,423	408,596	9.2	21.9
June 2004	450,295	141,520	12.2	40,844	288,447	6.5	18.7
Dec 2004	419,426	137,572	10.7	54,669	205,447	5.0	15.7
June 2005	419,321	131,516	10.3	52,964	84,367	2.7	13.0
Dec 2005	348,791	112,237	8.2	60,940	67,604	2.2	10.4

Source: BOT's website

Table 11: Thailand: Breakdown of Restructured Loans by Restructuring Methods, 1999-2001

Restructuring Methods	% of Total Amount Restructured		
	1999	2000	2001
Extension of maturity	41	41	39
Provision of grace period on principle or interest payments	20	21	24
Reduction of interest rate	22	20	17
Forgiveness of principle or accrued interest	6	6	9
Debt- asset swap	6	5	6
Debt- equity swap	3	4	3
Other Methods	2	3	2
Total	100	100	100

Note: We only examine data before 2001 because TAMC has been established since June 2001

Source: CDRC

4.2.2.2 Malaysia's Centralised Approach

Malaysia has adopted a centralised approach in its asset management policies by setting up a centralised national AMC, Pengurusan Danaharta Nasional Bhd (Danaharta) on June 20 1998 to remove NPLs from the banking system. The Malaysian government was of the view that the resolution of the banking sector's problem had to be government- driven as only the federal authorities had the means to act quickly to stabilise the situation and to provide the required capital (Mahani, 2002). To ensure operational efficiency, Danaharta only acquired NPLs worth more than RM5 million. The acquisition value of the loan was dependent on the type of loan; secured loans were bought at the market value of the collateral while unsecured loans were valued at 10% of the principal outstanding. There was no evidence of NPLs being transferred to Danaharta at inflated price as NPLs were acquired at an average discount rate of 56%.

Table 12 illustrates the total distressed assets in the banking system. Danaharta completed its acquisition exercise in March 2000 and processed all the loans acquired by 31 July 2002.[37] The ability of Danaharta to move quickly to acquire, manage and resolve NPLs has helped to contain the problems of distressed loans from turning into a systemic banking crisis. Danaharta adopted a carrot and stick approach to encourage the financial institutions to carve out the NPLs from the banking system. To encourage financial institutions to sell their NPLs, Danaharta let the selling banks retained a right to receive at least 80% of any profits realised from the sold assets. Financial institutions were also given five years to amortise the difference between the book value and the price sold to Danaharta. In addition, in exchange for the non-earning illiquid NPL,

[37] Process means review and decide on the most appropriate recovery strategy.

banks received income-generating, readily-marketable and zero-risk weighted bonds. If a financial institution declined the offer for a NPL purchase made by Danaharta, it was required to write down the NPL to 80% of the offer price and immediately recognise any loss.[38] In so doing, Danaharta compelled the financial institutions to deal with the NPLs problem upfront; it was either for Danaharta to manage bad assets on behalf of them or they have to write down the NPLs.

Table 12: Malaysia:Total Distressed Loans in the System, as at Dec 1998-Dec 2005

	Dec 98	Dec 99	Dec 00	Dec01	Dec02	03	04	05
Assets Managed (RM bil)	11.62	26.39	27.1	27.9	27.94			
Assets Acquired (Rm bil)	8.106	19.127	20.39	19.82	19.82			
Total Bad Loans carve out from the banking system (Rm bil)	19.73	45.52	47.49	47.72	47.76			
Gross value of loans restructured or disposed (RM bil)	n.a	17.61	35.83	47.69	47.76			
Bad loans in Danaharta(Rm bil)	32.40	27.91	11.66	0.03	0.00			
Total Loans (RM bil)	414.65	395.10	416.30	432.30	452.44			
Danaharta's NPL as a % of total loan	7.81	7.06	2.80	0.01	0.00	0.0	0.0	0.0
NPL as a % of total loans in the banking system	13.60	11.00	9.70	11.5	10.20	8.90	7.5	5.8
Total distressed loans in the system (%)	21.41	18.06	12.50	11.51	10.20	8.90	7.5	5.8

Source: Danaharta Operational Report, various issues

Danaharta was empowered to appoint Special Administators (SAs) to propose work out plan, without having to resort to the usual tedious court process. This had greatly expedited the debt restructuring process. SAs were appointed and assumed the control and management of the assets and affairs of those companies where loan

[38] See Danaharta Final Report, pg. 17 for more a detailed discussion on the carrot and stick approach.

management strategy had failed or that Danaharta thought was not viable but still could be turned around with serious restructuring effort. Once appointed, SAs took over the control and management of the assets and affairs of the corporate borrower and a 12 month moratorium automatically takes effect to allow SAs to perform their tasks. SAs could expedite not only financial restructuring but also operational restructuring in the intervened firms, thus raising the recovery value of the distressed assets.

Table 13 provides an analysis of the Danaharta's recovery methods and shows that Danaharta achieved a remarkable recovery rate of 58%.[39] The analysis also implies that Danaharta had not hesitated to foreclose assets and plain loan restructuring (rescheduling) was least used as a restructuring method, suggesting the seriousness of Danaharta to resolve problems of distressed assets.

Table13: Danaharta: Analysis of Recovery from Various Recovery Method, as at 30 Sep 2005

	Recovery (RM billion)		Recovery Rate (%)	
Recovery method	Acquired NPLs	Managed NPLs	Acquired NPLs	Managed NPLs
Plain loan restructuring	0.86	3.58	80	95
Settlement	3.11	6.41	88	75
Schemes of arrangement	1.84	4.32	59	63
Appointment of special administrators	0.84	0.58	51	22
Foreclosure	2.62	1.65	29	45
Others	1.74	2.60	46	79
Legal action	0.06	0.14	20	13
Total	11.07	19.28	49	65
Overall	30.35		58	

Source: Danaharta (2005)

[39] See chapter 3 for a detailed discussion on Danaharta's operational efficiency as well as factors that had contributed to its success.

4.2.2.3 Comparative Analysis on Asset Resolution Policy Response

The preceding discussions signify that Malaysia was able to take pre-emptive measures to prevent problems of NPLs from becoming a systemic one. Danaharta effectively removed NPLs from the banking system and allowed the financial institutions to concentrate on their conventional role of credit intermediation. On the other hand, Thailand's decentralised approach resulted in inaction from both the private AMCs and the state- owned AMCs. The cosmetic carving out of distressed assets from state banks at an inflated price and the subsequent passive management of these assets had led to further deterioration of the quality of the assets and the worsening of the problems of NPLs. By September 2000, there was a systemic crisis where non-performing assets in the Thai economy stood at 31.6% as compared to 12.5% in Malaysia as at December 2000.

5 Conclusions

We have studied the effect of bank credit channel in propagating shocks and affecting economic recovery. History has repeatedly shown us that the disruption in the supply of credit has devastating effects on investment and output of an economy. The constraint in the supply of credit often works through both the bank lending and broad credit channel. Therefore, it is imperative to resolve the problem of weak balance sheets of both the banking and corporate sectors. Previous works on the Asian financial crisis suggest credit crunch in both Malaysia and Thailand, especially in the early months of the crisis and in the case of Thailand; the problem of credit crunch might have extended to 2001. We find evidence of credit channel in propagating shocks in both countries and

conclude that the speedier economic recovery in Malaysia might be related to the earlier improvement in the balance sheets of the banking and corporate sectors. We have shown that the major policy difference in Malaysia and Thailand is their policy in dealing with bank distress in general and asset resolution in particular. As argued by Scott (2002), the explicit delegation of the work of crisis management to a technically competent team could significantly increase the efficiency of crisis resolution. Thailand seemed to have fallen short in this respect; the government did not play an important role in coordinating the restructuring efforts and it seemed to have wrongly prioritised the structural reform sequence. Efforts to close down financial institutions and force mergers among FIs without resolving the underlying balance sheet problem only aggravated the already weak banking system and further exacerbated the economic downturn. Our case study also suggests that Thailand's decentralised approach in asset resolution did not produce the expected results and it had no choice but to recourse to a centralised approach in 2001. On the other hand, the establishment of a NAMC in Malaysia seemed to have saved the country from a larger banking crisis. While the literature of credit view mentioned nothing about the role of NAMC in resolving financial crisis, we argue that if the establishment of a NAMC could improve the balance sheets of both banks and borrowers by promoting bank and corporate restructuring, then the establishment of a NAMC is the optimal policy choice in resolving financial crisis as it could effectively attenuate the propagation of shocks through broad credit channel. Chapter 2 and 3 of this thesis provide further evidence on the role played by a NAMC in resolving financial distress.

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Chapter 2

Optimal Asset Resolution Policy: Centralised vs Decentralised Approach

1 Introduction

Financial crises and their subset, banking crises have become worldwide phenomena in recent years. There have been 117 episodes of systemic banking crises documented since 1970 (Caprio and Klingebiel, 2003). The high frequency of such episodes, together with the fact that banks are central to modern economic activities, underscores the need for effective policies to facilitate efficient and sustainable recovery. Government's involvement in restructuring bank is especially evident during systemic crises where there are widespread banking system distress, large scale defaults and soaring of non- performing loans (NPLs) and an economic slowdown (Claessens, Klingebiel and Laeven, 2003). Dziobek and Pazarbasioglu's (1997) study on bank restructuring in a sample of 24 countries find that the common tools in bank restructuring include the setting up of asset management companies to deal with loan distress, merger with other banks and operational restructuring where non profitable units are disposed off. The focus of this paper is to examine the optimal policy to deal with distressed assets in the banking system. Specifically, we attempt to shed light on the following questions. Is the transferring of non- performing loans (NPLs) to a centralised national asset management company (NAMC) the optimal policy to clean up bank's balance sheet, given the fact that all of the East Asian financial crisis-hit countries had eventually set up a NAMC? Under what circumstances should the government not intervene and let the banks deal with their own distressed assets? How

have financial shocks affected banks' and firms' behaviour and the regulator's optimal policy in resolving problem of NPLs?

There are two types of asset resolution approaches: (i) a centralised approach where a government-owned asset management company (NAMC) is established and (ii) a decentralised approach where restructuring and selling of assets is taken up privately by banks.[40] Each approach has its merits and limitations and has been discussed by Rose (2005), Ingves et al (2004), Dado and Klingebiel (2002), Woo (2000), Klingebiel (2000), Hawkins and Turner (1999) and Lindgren et al (1999). We summarise their arguments as follows. The main argument for carving out bad loans from the banking system to a NAMC is that it enables banks to resume their intermediation role. Banks who are preoccupied with managing bad debts may become risk-averse and are reluctant to grant new loans. There is also the possibility that banks are not able to extend credit even if they wish to because of their own frail balance sheet. The corollary credit crunch will have a devastating effect on an already slowed down economy.[41] Hence, cleaning up banks' balance sheet could mitigate the risk of a credit crunch. In addition, a centralised NAMC may reap economies of scale when there are a large number of banks in difficulty (especially in time of crisis) or when the assets acquired resemble certain degree of homogeneity. NAMC with clear legal mandate is better positioned to negotiate with delinquent borrowers and it is able to break the links

[40] Banks can also set up their own asset management companies (AMCs) to help them to manage their distressed assets. Under the decentralised approach, there might be a few AMCs in the system, as in the case of Thailand before 2001; 16 AMCs were set up at the same time. These AMCs could be subsidiaries of banks, workout units within the bank or independent entities.

[41] See Bernanke (1993) for excellent discussions on the role of credit in macroeconomy, Calomiris (1993) for financial factors in explaining economic depression. Chapter 1 of this thesis also discusses the literature on the role of credit in propagating shocks.

between banks and corporations; thus improving the chances of collectability of loans. Centralised ownership of collateral may also give NAMC more leverage over debtors and more effective management of distressed assets. More importantly, the management of impaired assets requires commercial skills that are different from lending skills. Banks often lack the resources, expertise and capacity to mange defaulted debtors' properties or business (in the case of debt-equity swap) and it is best left to professional asset mangers to carry out this task. However, the opponents of NAMC are concerned with the ability of NAMC to withhold political pressures. In addition, some argue that it is better to leave the loans with the originating banks as those banks have informational advantage over NAMC and it is easier for banks with extensive branch network to collect loan than NAMC. Others also opine that it is desirable for banks to maintain some experience with work-out procedures. Table 1 and 2 provide a summary of the advantages and disadvantages of centralised versus decentralised approach in managing distressed assets.

Table 1 Advantages and Disadvantages of Centralised Approach
Advantages
• Reap economies of scale if assets are homogenous.
• Centralizes ownership of collateral, thus increasing leverage over debtors hence more effective management.
• break ownership links between banks and corporation so as to accelerate loan collection.
• Centralises scarce human resources.
• Leapfrog the deficiency of legal structure with special legal powers to expedite loan recovery and bank restructuring.
Disadvantages
• Subject to political interference and lack of administrative flexibility.
• Values of acquired assets may erode quickly if AMC is not efficiently run.
• Risk of NPLs and collateral being warehoused in an AMC instead of being liquidated.
• Difficult to determine the transfer prices of assets.

Table 2 Advantages and Disadvantages of a Decentralized Approach
Advantages
• Better knowledge of the borrowers may facilitate debt restructuring.
• Easier access to borrower through existing branch network.
• Banks are able to provide additional funding which might arise in the course of restructuring.
• Might provide better incentives for recovery.
• Free from political pressure
Disadvantages
• Lack of resources to restructure large amount of NPLs in time of crisis.
• Lack of skills for managing troubled debt and operations of debtors companies.
• Less up-front loss recognition.
• Window dressing instead of real restructuring.
• Distract normal banking function

Some governments prefer a centralised approach because they are concerned of the repercussion of leaving the distressed assets in the banking system which could paralyze economic activity as a result of credit crunch in the system. The existence of externalities; i.e. systemic risk, however, is only a necessary but not a sufficient condition for government to opt for a centralised approach. [42] While we are mindful of the danger of overstating market supremacy, we have to be equally watchful of overemphasizing the merits of government intervention. Government's involvement in asset resolution is only justified if the policy of a centralised approach brings about better outcome than the decentralised approach. The objective of this paper is to analyse the comparative advantage of one policy over another in a crisis setting. Specifically, we analyse the policy tradeoffs of a centralised approach where a NAMC with clear

[42] Daniel (1997), for example, argues for the government's assistance if there is a clear systemic risk.

legal mandate is set up and a decentralised approach where NPLs in the banking system are left to banks and AMCs to manage.[43]

Most empirical studies on AMC emphasise on the attributes or enabling environment that ensure the success of AMC, be it government-led centralised or creditor- led decentralised AMCs.[44] Only very few of them attempted to investigate the effectiveness of a NAMC or decentralised creditor-led restructuring. Klingebiel (2000) made the first attempt by reviewing the role of NAMC in seven episodes of banking crises. Four countries set up NAMC as an asset disposition vehicle while the other three functioned as restructuring agencies. He finds that two out of three of the NAMC that were set up to expedite corporate restructuring did not manage to attain their objectives while two out of four NAMC that were set up to dispose off assets managed to meet their goal, leading him to conclude that NAMC can only be effectively used for narrowly defined purpose of resolving insolvent and unviable financial institutions and selling off their assets. In a companion paper, Dado and Klingebiel (2002) look at the experience of asset resolution where the work out of bad assets was left with the banks. Only three out of the seven countries under study managed to restructure their corporate sector with companies attaining viable financial structure.[45] These case studies do not provide conclusive results about the effectiveness of a centralised or decentralised

[43] Note that we have made an implicit assumption that the centralised approach only includes the establishment of a centralised NAMC with legal mandate. Other public AMCs that were set up and operate exactly like private AMCs and subject to the same constraints like private AMCs do not fall under the category of centralised approach. For example, Thailand set up 4 public AMCs in 1998 and their operational model was no different from that of private AMCs and was thus considered as a decentralised approach.

[44] See Cooke and Foley (1999), Neyen (2003), Fung et al (2004), Ingves et al (2004), Rose (2005).

[45] The authors rated the financial health of the corporate sector by examining two factors: the weighted interest coverage ratio of the sector and the share of companies with interest coverage ratio of less than one.

approach. The authors reiterate that there are sets of prerequisites that must be satisfied to ensure the success of either approach, suggesting that it is the enabling environment that determines the effectiveness of asset resolution policy.

Similarly, the theoretical literature on optimal asset resolution policy is very sparse. While there are many studies that analyse regulatory responses to banking crisis, only Mitchell (2001) deals specifically with the issue of cleaning up banks' balance sheets. Using a two- tier hierarchical framework consisting of a regulator, banks and firms, Mitchell examines how hidden information and moral hazard problems affect agents' behaviour. She identifies two types of effects of the regulator's policy choice: a direct effect on a bank's willingness to reveal its bad loans versus hiding them by rolling over defaulted loans, and an indirect effect of policy on firm's behaviour as a function of the bank's response; i.e. firm manager's asset dissipation decision. Her framework is applied to the transition economies where many of the commercial banks inherited a sizeable quantity of bad loans at the point of inception as they were created by dividing up the assets and liabilities of the previous monobank. As such, Mitchell uses her framework to analyse tradeoffs between three policies: a laissez-faire policy, transfer of debt to an asset management company and cancellation of debt inherited from the previous policy.[46] She finds that, similarly with earlier empirical findings by Klingebiel (2000) and Dado and Klingebiel (2002), no single policy is unconditionally optimal; there are several qualifications that must be met for a policy to be optimal. For example, she finds that the transfer of debt to an AMC is only optimal when there is

[46] She defines policy of self- reliance as leaving banks to manage their own bad loans without intervention from the government.

minimal loss of inside information when debt is transferred to AMC and if banks have strong incentives to rollover defaulted loans under the policy of self- reliance.

A related paper but which has less direct relevance to the study of this paper is Aghion et al (1999), where they examine how bank recapitalisation policies could affect the incentives of bank managers to disclose truthfully the level of non- performing loans (NPLs) on their balance sheet. Similar to Mitchell, their focus of study is on transition economies and they find that tough bank recapitalisation policy have counterproductive effects on bank managers' incentive to disclose prudently and could induce further build-up of NPLs in banks' portfolios while soft recapitalisation policy create incentives for managers to overstate loan losses to obtain larger recapitalisation and create dead-weight cost due to excessive recapitalisation. The authors show that a duly designed conditional recapitalisation scheme where government's transfers to insolvent banks are linked to revelation and liquidation of NPLs is the optimal recapitalisation policy.

While these two papers provide valuable insight to the issue of resolving banks' balance sheet problem, their frameworks are more applicable to transition economies' experience where the problem of balance sheet is inherited and endemic. In contrast, banks' balance sheet problem that arose during the East Asian Financial Crisis was more the consequence of financial shocks than endemic. During the Asian Financial crisis, many fundamentally sound firms defaulted on their loans because they were unprepared for the financial shock and struggled to cope with the consequential liquidity problem due to disturbance in demand, cash flow and profit. However, the crisis had also uncovered structurally weak firms where they were push into the brink of insolvency because of mismanagement or venturing into unviable projects as a result of

the preceding economic boom. These insolvent firms might not suffer from liquidity problem till the eve of insolvency. Therefore, Mitchell's assumption of perfect correlation between illiquid and insolvent firms is less applicable to the case of the East Asian crisis.[47] In our paper, we assume that there is no correlation between the problem of insolvency and illiquidity and we study how financial shocks affect agents' behaviour and the regulator's policy choice. In addition, we explicitly examine the role of NAMC in asset resolution and gain important insight into how political interference affects the effectiveness of the policy of debt transfer to a NAMC since political interference is the main concern of the opponents of NAMC.[48] We only deal with the issue of who should manage NPLs in our paper; we believe that the issue of recapitalisation should be dealt with separately. For example, Malaysia set up two special purpose vehicles; Danamodal to recapitalise undercapitalised banks and Danaharta, as a NAMC to deal with problems of NPLs. It is observed that some banks that transfer their NPLs to Danaharta needed no capital injection from Danamodal; suggesting that the issue of recapitalisation and debt transfer should be dealt with separately. This functional division is important to promote operational efficiency. In addition, it reduces moral hazard problem of transferring debt to AMCs at inflated price as a mean to recapitalise banks, which could result in creating more new NPLs; as happened in Thailand before 2001 (Terada- Hagiwara and Pasadilla, 2004).

[47] Mitchell assumption of perfect correlation is plausible for transition economies as those firms had chronic balance sheet problems and illiquid firms were often insolvent, vice versa.
[48] In Mitchell's paper, AMC has the same objective function as bank. In our paper, we incorporate separate objective function for NAMC where we could take into consideration how political interference affects banks net worth.

Our basic model is inspired by Mitchell (2001) who derives optimal policy of cleaning banks' balance sheet under asymmetric information between the regulator and banks and between banks and firms. As mentioned above, her framework is more applicable to analyse the situation in transition economies while our framework is built to analyse the resolution of NPLs in the banking system as a result of financial shocks, as observed during the Asian Financial Crisis. Our paper is the first to study formerly the optimal asset resolution policy when an economy is hit by financial shock. It offers interesting policy implication and identifies areas for future research, which we believe will contribute significantly to the knowledge of what could and should be done after a crisis struck an economy.

We show that there are a number of factors which influence the regulator's optimal policy choice: the information asymmetry between the regulator and banks regarding the amount of bad debt on banks' balance sheet, the efficacy of legal system and the effectiveness of corporate governance of firms which determine the magnitude of indirect effect of policies on firm behaviour, the degree of political interference in NAMC as well as the probability and severity of financial shocks.

There is anecdotal evidence of the tendency of bank managers to rollover defaulted loans in order not to lose their bank.[49] Due to the information asymmetry between bank and the regulator, a bank's manager is inclined to rollover defaulted loans during a systemic crisis because invoking bankruptcy on these loans would reveal their financial status to the regulator as well as investor and might induce bank runs or the bank might be forced to close down its operation if it is found insolvent by the

[49] See Lindgren et al (1996).

regulator. Rajan (1994) argues that bank mangers whose primary concern is reputation have incentives to hide bad loans by extending the terms of the loans as they try to shape market perception by manipulating current earnings.[50] In such cases, banks are trapped into the second best credit policy because the market expects it. Based on their empirical study on East Asian's firms, Claessens et al (2003) find that the close relationship with banks reduces the likelihood of invoking bankruptcy on defaulted firms during bad time. This implies that bankruptcy is not a credible threat if the regulator were to choose a decentralised policy. Caprio and Honohan (1999) argue that the 'evergreening' of loan is made possible because it is sometime difficult for supervisor to challenge banks' assessment of their loans on a case-by-case basis. Therefore, the presence of asymmetric information not only means that banks have the capacity to hide bad loans but also that the regulator has to take into account the effect of the policy choice on bank's willingness to reveal and deal with its bad loans. We find that if the regulator anticipates that under the decentralised approach, banks would rollover NPLs in order to hide their insolvency, the regulator should opt for a centralised approach instead.

The efficacy of the legal system and the effectiveness of corporate governance determine the extent of the indirect effects of the regulator's policy choice on firms' behaviour. The indirect effect of a policy choice arises from the asymmetric information between a bank and a firm on a firm's value and a firm manager's use of a firm's asset. If the legal system is inefficient, then it will be costly for a bank to gather information

[50] Corbett and Mitchell (2000) also highlighted the reputation effect where banks are unwilling to accept the government's offer to recapitalise their banks. In all cases, this reputational concern slows down restructuring.

and find out a firm's value.[51] In addition, an inefficient legal system implies that the threat of bankruptcy is less credible. Therefore, a firm's continuation value is lower as the probability that a firm manager dissipate her firm's asset without being caught is higher and that give her the incentive to engage in unproductive activities. Similarly, the effectiveness of corporate governance influences a firm manager's incentive to behave prudently. If the corporate governance of a country is weak, it implies that there is no effective monitoring and disciplinary mechanism in place to check a firm's manager opportunistic behaviour of dissipating assets. In both cases, the indirect effect of the regulator's policy choice is quite important. If the regulator opts for a decentralised approach but the legal and corporate governance institutions are weak, firms in the economy would have higher incentives to engage in unproductive activities which could result in a reduction in both the firms' and banks' value as compared to their value under the centralised approach. Thus, we find that if a country has weak legal and corporate governance structure, it is better off for the regulator to adopt a centralised approach than a decentralised approach.

The extent of political interference could affect the efficiency of a NAMC and thus the effectiveness of a centralised approach. If there is extensive political interference in the operation of a NAMC, the chances of a NAMC to maximise its loan recovery is slim as a NAMC cannot professionally carry out its role of resolving distress assets. For instance, some firms that should have been liquidated to maximise loan recovery might be kept in operation if they are owned by affiliates of politicians. The delay in the closure of insolvent firms by firm manager decreases the value of those

[51] See Townsend (1979) for costly state verification model.

firms substantially. We find that if a NAMC is designed such that political interference is capped at a minimal level, then a centralised approach is preferred to a decentralised approach as firms' and banks' value is maximised under the centralised approach.

Financial shocks could affect the liquidity or/and solvency of a firm. We thus include two effects of financial shocks in our model: shock that affects the liquidity of a firm and shock that affects the solvency of a firm.[52] We show that the severity of the financial shocks affect the regulator's optimal policy choice as a result of changing behaviour of firms and banks. We find that the firms' and banks' value dwindles as the severity of shocks that affect firms' solvency increases, irrespective of the policy chosen by the regulator. However, we find that the shock that affects the liquidity of firms may help banks to identify early those firms which are insolvent and thus maximising loans recovery, provided that banks do not rollover their loans.

The rest of the paper is organised as follows. Section 2 presents the basic model. We incorporate financial shock into our model in section 3 and gain additional insight on how shocks could affect the regulator's optimal policy choice. We discuss about policy implications from the findings in these two sections wherever is appropriate. Section 4 discusses in broader perspective the application of the model, policy implications as well as the assumptions, limitation and scope for extension of the model before we conclude in section 5.

[52] We term the two effects of the shock as liquidity and solvency shock respectively. Note that it is not the nature of the shock that is different but the impact of shock on firms' liquidity and solvency is what we are concerned about.

2 The Basic Model

2.1 The Structure

Consider a 3 period model and an economy with banks, borrowers and the regulator. In period 0, the regulator has to choose a regulatory framework to deal with problem of NPLs. The regulator has to decide whether to transfer debts of banks to a centralised national asset management company (NAMC) or to leave these debts with the original banks and allow them to manage their own assets; termed as centralised and decentralised approach respectively. The decision is based on the maximisation of the expected value of banks and firms, taking into account banks and firms behaviour under different policies. Each commercial bank in the economy has a continuum of debtors of measure 1 with loans equal to *d* for each debtor. Interest payment *sd*, where *s* represents the interest rate, is due in period 1 while the principal *d* is due in period 2. Each bank has amount *H* in deposit.

There are ex-ante identical firms, indexed by *i*. At the beginning of period 1, firms realise their period 1 income (y_i) and learn their continuation (x_i) and liquidation value (l_i) for period 2; this information is private to them. Firms which are illiquid default on their loans' interest payment.[53] Next, banks, if the government has opted for the decentralised approach, have to choose either to rollover or to invoke bankruptcy for the defaulted loans. Here, the term bankruptcy has been used loosely to include every effort of restructuring; including out of court workout, reorganisation or liquidation of firms. The choice of bankruptcy enables banks to evaluate the firms at a cost and slow down asset dissipation in an effort to maximise recovery. On the other hand, rollover

[53] See definition 1, pg. 74.

implies passive behaviour of banks where no attempts have been made to monitor firms or to slow down asset dissipation as defaulted loans are simply rolled over without any evaluation on the firms' ability to pay. After the banks decide on rollover or bankruptcy, firm managers choose the level of asset dissipation (Δ) to be taken in period 1. The action of asset dissipation which lowers firms' period 2 value can be in any form where firms' assets are used in activities that are not profit maximising.[54] For example, the channelling of firm's asset or output to another firm where the manager has a stake at an artificially low price or investing in projects that yield private benefits to the manager.

Note that there is no issue of a choice of rollover or bankruptcy if the government has chosen to transfer the debts to a NAMC instead. As the only objective of the establishment of a NAMC is to deal with bad assets, all defaulted loans are scheduled for bankruptcy or more precisely restructuring. In addition, we assume that a NAMC is able to halt asset dissipation in those companies that have defaulted on their loans. By incurring some cost, a NAMC with legal mandate is better able to gather information about the defaulted firm and actively engage in restructuring of those defaulted loans; leaving no room for the firm managers to dissipate firms' asset. Moreover, a NAMC granted with special legal power is able to leapfrog the deficiency in the legal structure and allow them to bypass the intricate court procedures, hence serving as a credible threat to hinder firm managers from dissipating firms' assets. For example, Danaharta, the Malaysian NAMC, was able to halt asset dissipation because it was empowered with legal mandate to check on firm manager's behaviour by verifying

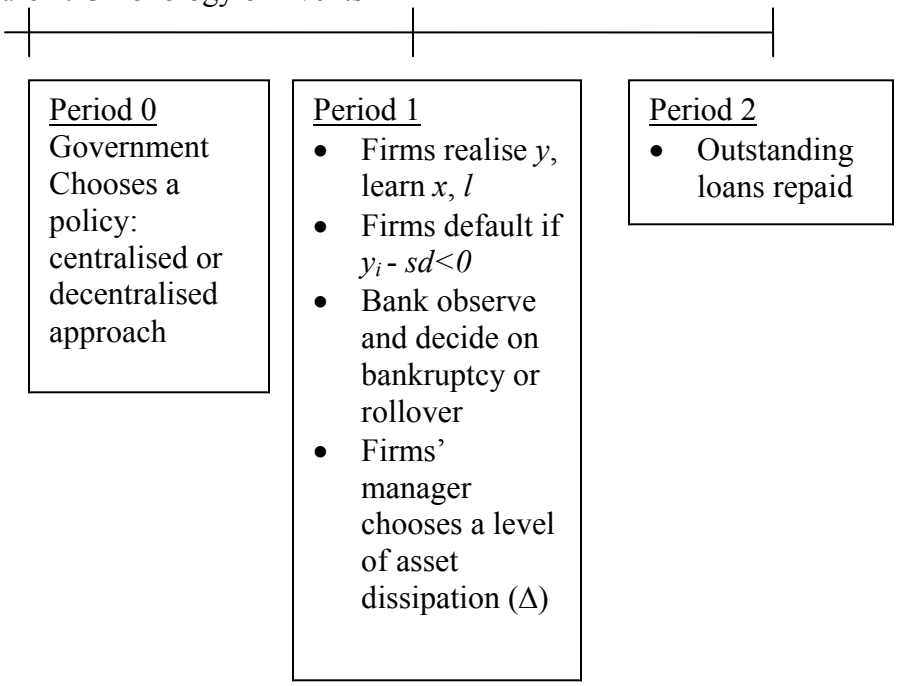
[54] See Bolton and Scharfstein (1990) and Hart and Moore (1995, 1998) for discussions on the assumption that firm managers have tendency to appropriate firms' asset for personal benefits.

firm's asset as well as appointing special administrator (SAs) to replace the existing management if it needed be.[55]

All outstanding loans are repaid in period 2. If a firm manager dissipates assets in period 1, the value of the firm that is realised at period 2 is lower than the value that would have been realised had no asset dissipation occurred.

The timing of events is summarised in Figure 1.

Figure 1: Chronology of Events



We model 4 classes of firms in the economy and the class of firms is determined in period 1 based on their period 1 income and the maximum expected value of firm in period 2 (i.e. expected period 2 value without asset dissipation). A firm which has enough period 1 income to pay off interest is defined as liquid. Similarly, if a firm's

[55] See Chapter 3 for a more detailed discussion.

period 2 maximum values, i.e. value when there is no asset dissipation, is more than enough to pay off her principal, it is considered as solvent.

Definition 1*: A firm is liquid if* $y_i \geq sd$

Definition 2*: A firms is solvent if* $x_i \geq d$

We define that a firm which is liquid and solvent as class 1 firm (k_1), liquid but insolvent as class 2 firm(k_2), illiquid but solvent as class 3 firm(k_3) and illiquid and insolvent as class 4 firm(k_4), as depicted in table 3. As information about the class of firm is private to firms only, banks and the government cannot ascertain if a firm which has defaulted on their interest payment belongs to which of the two illiquid classes, they can only calculate the probability of a firm being in either of these.

We consider the case where *y* is uniformly distributed on the interval $[0, \bar{y}]$ with distribution function $F_1(y)$. Similarly, *x* is uniformly distributed on the interval $[0, \bar{x}]$ with distribution function $F_2(x)$.[56] As discussed earlier, we assume that what happens in period 1 is statistically independent of period 2; that is the solvency of a firm is not dependent on the liquidity of the firm in period 1.

Let $y \sim F_1$
Prob{firm is illiquid}$= F_1(sd) = \chi_1$
Prob{firm is liquid: $y \geq sd$ }$= 1\text{-}F_1(sd)$
$= 1 - \chi_1$
and $x \sim F_2$
Prob{firm is insolvent}$= F_2(d) = \chi_2$
Prob{firm is solvent: $\overline{x_k} \geq d$ }$= 1\text{-}F_2(d)$
$= 1 - \chi_2$

[56] Uniformity of distribution is assumed to get a closed form function and the result is not dependent on this assumption.

Therefore, banks, NAMC and the government anticipate that a firm is of class 1 with probability $(1-\chi_1)(1-\chi_2)$, class 2 with probability $\chi_2(1-\chi_1)$, class 3 with probability $\chi_1(1-\chi_2)$ and class 4 with probability $\chi_1\chi_2$. As each bank has a continuum of debtors of measure 1, the proportion of firms being liquid and solvent, liquid and insolvent, illiquid and solvent, illiquid and insolvent to be $(1-\chi_1)(1-\chi_2)$, $\chi_2(1-\chi_1)$, $\chi_1(1-\chi_2)$, $\chi_1\chi_2$, respectively.

Table 3: Class of Firms

	solvent	insolvent
liquid	k=1 $(1-\chi_1)(1-\chi_2)$	k=2 $\chi_2(1-\chi_1)$
illiquid	k=3 $\chi_1(1-\chi_2)$	k=4 $\chi_1\chi_2$

2.2 Firm's Behaviour

A firm's continuation value and liquidation value is a function of the level of asset dissipation (Δ). The continuation value $x_i(\Delta)$ is decreasing in Δ, with $x_i(0) = \bar{x}_i$ and $\bar{x}_i$ is the maximum possible continuation value of the firm. Similarly, $l_i(\Delta)$ is nonnegative and decreasing in Δ, with $l_i(0) = \bar{l}_i$. A firm's period 2 value, gross of debt payment, is therefore the maximum of the continuation and liquidation value $V(\Delta)=\max\{x(\Delta), l(\Delta)\}$.

The level of asset dissipation chosen by a firm manager is endogenous and is a function of the firm's type/class, government's policy choice and bank's response to default. We denote $\overline{\Delta}$ as the maximum feasible value of asset dissipation (Δ).

Assumption 1*: The maximum feasible value of* Δ *is given by* $\overline{\Delta} \leq 1$

The value of $\overline{\Delta}$ differs across countries, depending on the institutions of corporate governance and the efficiency of the bankruptcy law. In countries where the institution of corporate governance is weak, $\overline{\Delta}$ will be close to 1. A firm manager has incentive to engage in unproductive activities because she gains private benefits from dissipating firm's assets.[57]

Assumption 2*: Firm's manager utility function is* $U_i = b(\Delta) + P_i(\Delta)$ where *b denotes current private benefit while* P_i *denotes future private benefits.*

We have normalised utility from salary to zero in assumption 2 and assume that manager's utility is entirely determined by private benefits obtained by manager from asset dissipation. Asset dissipation bestows current (period 1) benefits to the manager, where b(0)=0 and b(·) increasing and note that b is independent of the class of firms. However, asset dissipation reduces manager's future benefit as P_i is a function of firm's future value, which is decreasing with asset dissipation. Denote $P_i(\Delta) = \xi \bullet Max$ [0, firm's (net) continuation value], where $0 \leq \xi \leq 1$ and ξ represents the degree of reliance of a manager's future private benefit on the continuation of the operation of the firm. ξ is a function of institution of corporate governance and some other factors like the extent of a manager's remuneration package that is tied to the firm's future

[57] See Jensen and Meckling (1976) for agency problem.

performance and the time horizon of a firm's manager with that particular firm. The higher the value of ξ, the higher the future private benefit of a manager will be and this gives her less incentive to dissipate firm's asset. Hence, there is a trade-off between current and future private benefits that a firm manager can acquire out of asset dissipation.

In our model, we assume that all class 1 debtors (k_1), irregardless which policy the government and bank choose, do not dissipate firm's asset to the level of making the solvent firm into an insolvent one. We denote the level of asset dissipation by this group of debtors as Δ_G. This assumption is plausible as liquid and solvent firms are most likely to have high continuation values that it does not pay for the manager to dissipate asset excessively as the loss in future private benefits outweigh the additional current private benefits enjoy by the manager. Assumption 3 formalised this idea.

***Assumption 3**: $P_i(0) > b(\overline{\Delta})$ for all class 1 debtors, irregardless of the policy chosen by the government and banks.*

Assumption 3 sets the condition that ensures no excessive asset dissipation by class 1 firm. As a firm's future private benefits, given no asset dissipation, is always higher than its current private benefits if it were to dissipate assets at the maximum level, the firm manager will only dissipate Δ_G level of asset where $0 \le \Delta_G < \overline{\Delta}$ and $x_i(\Delta_G) \ge d_i$. The firm manager maximises her utility at this level of asset dissipation. Hence, liquid and solvent firms will always remain solvent in period 2.

As class 2 and 4 are insolvent firms, $P_i(\Delta) < 0$ as firms period 2 value is negative. Hence, firms will dissipate asset to the maximum if the banks choose to

rollover. As for class 3 firms, we assume that due to the banks' policy of rollover, class 3 firm managers would dissipate assets to the point of becoming an insolvent firm in period 2. This is because if the debtors could simply get away when they default on their loans in period 1, the firm manager will have incentives to dissipate assets to the maximum in order to maximise their current private benefits, knowing very well that banks are passive and could not take any action against them.

> ***Assumption 4****: Loans that are rollover appears as performing in the bank's book. Bank's passivity encourage firms to dissipate assets at the maximum possible level,* $\overline{\Delta}$*, except for the case of class 1 firms as highlighted in assumption 3.*

Assumption 4 tells us that banks which rollover defaulted loans do not have control over asset dissipation by the firm managers of class 2, 3 and 4 firms as they do not have information about firms' value of assets and thus would not be able to monitor firms' activities. Moreover, due to the absence of bankruptcy threat, the firm managers have incentives to dissipate firms' assets to the maximum level.

2.3 Bank's Behaviour under Decentralised Approach

Upon observing loan default by firms, a bank has to decide whether to declare bankruptcy or rollover on all the defaulted loans.[58] A bank manager has the tendency to choose rollover over bankruptcy if declaring all the defaulted firms bankrupt will expose bank's insolvency prematurely. Before we discuss further on banks' decision to

[58] We assume that a bank applies the same policy/action to all the debts. This assumption is made for expositional convenience and would not affect the qualitative results.

rollover or invoke bankruptcy on defaulted loans, it is useful to define what bankruptcy and rollover entail and their associated level of asset dissipation.

> ***Assumption 5****: At a cost of $C_B(n)>0$, a bank that invokes bankruptcy learns value of each defaulting firm and can halt asset dissipation (Δ_B) to a certain extent, though not completely where $0 < \Delta_B < \overline{\Delta}$. The cost function $C_B(n)$ is strictly increasing and strictly convex. n is the number of defaults in a bank. As only illiquid firms, χ_1 default on their loans, $n= \chi_1$.*

A bank is able to halt asset dissipation, though not completely, when it invokes bankruptcy. By incurring a cost, C_B, a bank is able to gather information about firms that have defaulted on interest payment and better monitor them. However, as the bankruptcy procedure is usually lengthy, it is not possible for the bank to halt asset dissipation completely. In the case of out-of-court workout, the ownership remains in the hand of the debtors and it is relatively more difficult to slow down asset dissipation.

Note that the presence of costly activities associated with bankruptcy implies that it is impossible for banks to engage in bad loan workout activities without being observed by the government. Therefore, if a bank manager wishes to hide the bank's insolvency, she has no choice but to rollover the defaulted loans, even though doing so would deprive her of maximum loan recovery because of the continued operation of insolvent firms and her failure to check asset dissipation.

2.3.1 Bank's Policy Choice: Bankruptcy vs Rollover

The banks' two- period expected profit function incorporates firms responses to the banks' policy choice. The expected bank profit function when it chooses to invoke bankruptcy is

$$\Pi_D^B(\chi_1,\chi_2)=(1-\chi_1)(1-\chi_2)(1+s)d+\chi_2(1-\chi_1)\left[sd+V\left(\overline{\Delta}|k_2\right)\right]+\chi_1(1-\chi_2)d+\chi_1\chi_2V\left(\Delta_B|k_4\right)-C_B(\chi_1)-H \quad (1)$$

The first term on the right hand side (r.h.s.) of equation (1) represents the income that a bank collected from class 1 debtors while the second, third and fourth terms represent the income collected from class 2, 3, and 4 debtors respectively. When a bank chooses the policy of bankruptcy, it is able to halt asset dissipation to some extent and recover $V\left(\Delta_B|k_4\right)$ from insolvent firms that defaulted in period 1. We assume that banks write off interest payment for class 3 debtors and they only pay principal, d in period 2.[59] Note that it is not possible for banks to check asset dissipation by class 2 firms as these insolvent firms do not default in period 1, thus bank have not been alerted to monitor their activities.

Although a bank does not learn a firm's period 2 value if it chooses rollover, it knows the general probability distribution function of defaulted firms' continuation or liquidation value and thus could calculate the conditional expected value of firms in period 2, which is a function of firm's type and level of asset dissipation. As banks

[59] The qualitative result will not change if this assumption is dropped and we assume that banks are able to pay both accrue interest payment and principal in period 2 instead. We model this second scenario in section 3 where we attempt to see how the possibility of financial shocks affects optimal policy choice.

rollover all the defaulted loans, all firms continue their operation in period 2, thus the conditional expected value of a firm is denoted by $x\left(\overline{\Delta}|k\right)$. The expected bank profit function when the manager chooses to rollover is

$$\Pi_D^R\left(\chi_1,\chi_2\right)=\left(1-\chi_1\right)\left(1-\chi_2\right)\left(1+s\right)d+\chi_2\left(1-\chi_1\right)\left[sd+x\left(\overline{\Delta}|k_2\right)\right]+$$
$$\chi_1\left(1-\chi_2\right)x\left(\overline{\Delta}|k_3\right)+\chi_1\chi_2 x\left(\overline{\Delta}|k_4\right)-H \qquad (2)$$

A comparison of equation (1) and equation (2) reveals that there are two major differences. First, class 3 firms would remain solvent and pay their principal debt to a bank in period 2 if banks invoke bankruptcy under the decentralised approach. However, if banks rollover the defaulted loans, class 3 firms would engage in excessive asset dissipation until they become insolvent in period 2. Second, by incurring a bankruptcy cost of $C_B\left(\chi_1\right)$, banks are better able to halt asset dissipation if they opt for bankruptcy than rollover ($\Delta_B<\overline{\Delta}$) and enjoy higher profits as long as bankruptcy costs is not too high.

Assumption 6*: The banker's objective function is $W_{bank}(\Pi,\rho)=max\ [\Pi_D,0]+\rho$ where Π represents expected two period bank profit and ρ is the private benefits to the banker for maintaining the bank in operation.*

Assumption 6 suggests that a bank manager would try to keep the bank in operation for as long as possible as she obtains private benefits from the continuation of the operation of the bank. The implicit assumption that a bank will be closed or its manager be replaced if the bank becomes insolvent implies that bank manager always has an incentive to rollover defaulted loans so as to hide the insolvency. If a bank is insolvent but liquid in period 1, the bank manager has incentive to rollover defaulted

loans so that the bank's insolvency as a result of non- performing loans would not be uncovered by the regulator and she can continue to enjoy her private benefit (ρ) in period 1. Note that banker's objective function is maximised by maximising ρ if bank's expected two period profits, which is equivalent to her net worth, is zero.

We define $\left(\chi_1^*, \chi_2^*\right)$ by the value of $\left(\chi_1, \chi_2\right)$ such that $\prod_D^B\left(\chi_1^*, \chi_2^*\right) = 0$. Banks will rollover defaulted loans for some value of $\left(\chi_1, \chi_2\right)$ when its net worth is negative in order to hide its insolvency from the regulator.[60] The bank's decision to rollover or invoke bankruptcy on defaulted firms is based on the critical value of $\left(\chi_1^*, \chi_2^*\right)$. Therefore, it is important to establish the relationship between χ_1^* and χ_2^*.

Let $\prod_D^B\left(\chi_1^*, \chi_2^*\right) = 0$

$$\Rightarrow \left(1-\chi_1^*\right)\left(1-\chi_2^*\right)(1+s)d + \chi_2^*\left(1-\chi_1^*\right)\left[sd + V\left(\overline{\Delta}|k_2\right)\right] + \chi_1^*\left(1-\chi_2^*\right)d + \chi_1^*\chi_2^* V\left(\Delta_B|k_4\right) - C\left(\chi_1^*\right) - H = 0$$

$$\Rightarrow (1+s)d - \chi_1^* sd - \chi_2^* d + \chi_2^* V\left(\overline{\Delta}|k_2\right) + \chi_1^*\chi_2^*\left[V\left(\Delta_B|k_4\right) - V\left(\overline{\Delta}|k_2\right)\right] - C\left(\chi_1^*\right) - H = 0$$

$$F_{\chi_1^*} = -sd + \chi_2^*\left[V\left(\Delta_B|k_4\right) - V\left(\overline{\Delta}|k_2\right)\right] - C'\left(\chi_1^*\right)$$

$$F_{\chi_2^*} = -d + V\left(\overline{\Delta}|k_2\right) + \chi_1^*\left[V\left(\Delta_B|k_4\right) - V\left(\overline{\Delta}|k_2\right)\right]$$

$$\frac{\partial\chi_1^*}{\partial\chi_2^*} = -\frac{F_{\chi_2^*}}{F_{\chi_1^*}} = -\frac{-d + V\left(\overline{\Delta}|k_2\right) + \chi_1^*\left[V\left(\Delta_B|k_4\right) - V\left(\overline{\Delta}|k_2\right)\right]}{-sd + \chi_2^*\left[V\left(\Delta_B|k_4\right) - V\left(\overline{\Delta}|k_2\right)\right] - C'\left(\chi_1^*\right)} \tag{3}$$

[60] Here, we have made an implicit assumption that it is always socially desirable for a bank to invoke bankruptcy; i.e. bank's 2 period net worth is always higher when bank opt to invoke bankruptcy on defaulted loans than rollover those loans. However, due to the fact that banks would want to hide their insolvency, bank managers would rollover loans if $\prod_D^B\left(\chi_1^*, \chi_2^*\right) \leq 0$

The numerator for equation (3) is always negative as $d > \chi_1^* V\left(\Delta_B \middle| k_4\right) + \left(1-\chi_1^*\right) V\left(\overline{\Delta} \middle| k_2\right)$. An increase in insolvency results in bank losing d of debt payment and get $V\left(\Delta_B \middle| k_4\right)$ with probability χ_1 from class k_4 firms and $V\left(\overline{\Delta} \middle| k_2\right)$ with probability of $\left(1-\chi_1\right)$ from class k_2 firms instead.

Therefore,

Proposition 1(a)*:*

$\frac{\partial \chi_1}{\partial \chi_2} > 0$ *if the denominator is positive*; $\chi_2\left[V\left(\Delta_B \middle| k_4\right) - V\left(\overline{\Delta} \middle| k_2\right)\right] > C'\left(\chi_1\right) + sd$

Proposition 1 says that if the gain to the bank (the l.h.s of the inequality) from additional insolvent firms going into illiquidity in period 1 is greater than the cost (the r.h.s of the inequality) of being so, then χ_1^* and χ_2^* has positive relationship. Banks gain by being able to halt asset dissipation by insolvent firms and the costs that it has to pay is the cost of invoking bankruptcy and interest rate foregone in period 1. In this case, it is in the bank's best interest to hope for an increase in the number of illiquid firms, given an increase in the number of insolvent firms, for the bank's profit to remain unchanged.

***Proposition 1(b)**:*

$\frac{\partial \chi_1}{\partial \chi_2} < 0$ *if the denominator is negative*; $\chi_2\left[V\left(\Delta_B|k_4\right) - V\left(\overline{\Delta}|k_2\right)\right] < C'\left(\chi_1\right) + sd$

In this case, the marginal cost of invoking bankruptcy as well as interest rate forgone in period 1 is greater than the gain from slowing down asset dissipation that it is better off for the bank to have fewer debtors that are illiquid, given an increase in the number of insolvent firms in order to keep the bank's profit unchanged.

Lemma 1: Define $\left(\chi_1^*, \chi_2^*\right)$ by the value of $\left(\chi_1, \chi_2\right)$ such that $\prod_{SR}^{B}\left(\chi_1^*, \chi_2^*\right) = 0$. The bank manager will choose rollover if

1) $\left(\chi_1, \chi_2\right) \geq \left(\chi_1^*, \chi_2^*\right)$ if $\chi_2\left[V\left(\Delta_B|k_4\right) - V\left(\overline{\Delta}|k_2\right)\right] < C'\left(\chi_1\right) + sd$

2) $\left(\chi_1 \leq \chi_1^*, \chi_2 \geq \chi_2^*\right)$ if $\chi_2\left[V\left(\Delta_B|k_4\right) - V\left(\overline{\Delta}|k_2\right)\right] > C'\left(\chi_1\right) + sd$

Bank's net worth is negatively associated with the proportion of insolvent firms (χ_2) in its portfolio.[61] The higher is the proportion of insolvent firms in the bank's portfolio; the lower is the bank's net worth. Hence, banks will rollover defaulted loans if $\chi_2 \geq \chi_2^*$ However, the relationship between illiquid firms (χ_1) and bank's net worth is not always straight forward. The increase in illiquid firms can have positive or negative impact on bank's net worth, depending on conditions specified in Lemma 1. The increase in illiquid firms results in lower bank's net worth when the gains from collecting higher period 2 value of insolvent firm is less than the interest rate foregone

[61] Recall that the numerator in equation (3) is always negative.

and costs involved in invoking bankruptcy. In such case, bank will rollover defaulted loans if $\chi_1 \geq \chi_1^*$. On the other hand, if the gains from collecting higher period 2 value of insolvent firm is larger than the interest rate foregone and costs involved in invoking bankruptcy, bank rollover loans when $\chi_1 \leq \chi_1^*$.

2.4 National Asset Management Company (NAMC)

If the regulator chooses a centralised approach in asset resolution, a centralised national asset management company (NAMC) is established immediately and banks' assets are transferred to the NAMC. We assume that the government is able to structure the incentive framework of NAMC such that the NAMC manager is efficient.

Assumption 6*: The manager's objective function is represented by*

$W_{NAMC}(\Pi) = max[\Pi, 0]$ *where* Π *represents expected two period NAMC profit.*

Unlike the banker's objective function, there is no private benefit component (ρ) in NAMC manager's function. This is not an unreasonable assumption because NAMC is under public scrutiny and the chief operating officer has to answer to any suspicious deal. In addition, the government can tie the remuneration package of the managers of NAMC to their performance; i.e. the extent of restructuring and recovery of loans.

As the NAMC is established with legal mandate, finite horizon and with main objective of resolving non- performing loans (NPLs), the asset manager will always incur cost $C_{NAMC}(\chi_1)$ and invoke bankruptcy on all defaulted loans. The legal mandate and the accompanied special power conferred to NAMC; together with the conscientious monitoring by NAMC manager ensure that NAMC is able to halt asset

dissipation completely on defaulted loans.[62] Hence Δ=0 for all firms that default in period 1. In addition, we assume that NAMC given the legal mandate conferred to NAMC and the economies of scale enjoyed by it, NAMC is able to find out information and monitor the firm at a lower cost when it invokes bankruptcy on the firm. Assumption 7 formalises this idea.

***Assumption 7**: $C_{NAMC}(n) < C_B(n)$ for all level of n.*

Nevertheless, we note that this assumption is not essential for our subsequent results. This assumption is made because it reflects the experience of the Malaysian NAMC, Danaharta, which will be discussed in details in chapter 3.

While NAMC manager can be efficient if the right incentive framework is in place, we do not rule out the possibility that NAMC is subject to political interference. In fact, many oppose the establishment of a NAMC because they argue that NAMC is often used by politicians to bailout their cronies. We model the possibility of political interference in the operation of NAMC with probability θ where $0 < \theta < 1$ and this interference would reduce NAMC's 2-period net worth function by ϕ. We model that political interference occurs when some of the class 4 firms which should have been liquidated were kept open, leading to a reduction of NAMC's 2-period net worth by ϕ. Note that political interference could be in the form of looting too; where solvent but illiquid firms are liquidated and sold to cronies of the politician. In this case, the value of ϕ would increase further.

[62] Special power could include the appointment of special administrators (SAs) to take over the incumbent management of the defaulted firm. This would ensure no asset dissipation in the defaulted firms. See chapter 3 for more discussion on the role of SAs.

The expected 2 period net worth function of a NAMC is thus given by

$$\begin{aligned}\prod_C^{NAMC}(\chi_1,\chi_2) &= \theta\{(1-\chi_1)(1-\chi_2)(1+s)d+\chi_2(1-\chi_1)\left[sd+V\left(\overline{\Delta}\middle|k_2\right)\right]+\\ &\chi_1(1-\chi_2)d+\chi_1\chi_2V\left(0\middle|k_4\right)-C_{NAMC}(\chi_1)-\phi\}+\\ &(1-\theta)\{(1-\chi_1)(1-\chi_2)(1+s)d+\chi_2(1-\chi_1)\left[sd+V\left(\overline{\Delta}\middle|k_2\right)\right]+\\ &\chi_1(1-\chi_2)d+\chi_1\chi_2V\left(0\middle|k_4\right)-C_{NAMC}(\chi_1)\}\end{aligned} \tag{4}$$

Equation 4 shows that the lower the probability of political interference, the higher the 2 period net worth of NAMC will be. Furthermore, the degree of political interference also affects NAMC net worth. The more frequent and intense the interference is, the higher ϕ will be and this further reduces NAMC's net worth.

2.5 Optimal Policy Choice

The regulator chooses a policy that maximises the expected value of banks and firms' assets. This expectation is taken over the numbers of defaults in the economy and the behaviour of firms and banks at each level of default. The optimal policy will thus depend on the distribution of illiquid and insolvent firms and other parameter values. We make the following pair-wise comparison between the centralised and decentralised policies in our effort to evaluate what is the regulator's optimal policy choice. The aggregate balance sheet of banks and firms under different policy approach are presented in Appendix.

Proposition 2 (a):

If a bank invoke bankruptcy on defaulted firms, then centralised approach dominate decentralised approach if [63]

$$\chi_1\chi_2\left[V\left(0|k_4\right)-V\left(\Delta_B|k_4\right)\right]+\chi_1\left(1-\chi_2\right)\left[V\left(0|k_3\right)-V\left(\Delta_B|k_3\right)\right]+\left[C_B-C_{NAMC}\right]>\theta\phi$$

Proposition 2 (b):

If a bank rollover its defaulted firms, then centralised approach dominate decentralised approach if

$$\chi_1\left(1-\chi_2\right)\left[V\left(0|k_3\right)-x\left(\overline{\Delta}|k_3\right)\right]+\chi_1\chi_2\left[V\left(0|k_4\right)-x\left(\overline{\Delta}|k_4\right)\right]>+\theta\phi+C_{NAMC}$$

Proof: See Appendix for a comparison of the expected value of bank and firm under various policies adopted by the regulator and bank.

The first and second terms on the l.h.s. of Proposition 2(a) and 2(b) show asset recovery from class 3 and 4 firms respectively. Proposition 2(a) says that as NAMC is able to halt asset dissipation of illiquid firms completely at a lower cost than that incurred by the bank through bankruptcy procedure, NAMC is always a better policy choice if these gains are greater than the cost of political interference, $\theta\phi$. Note that the finding that a centralised approach dominates the decentralised one is still valid, even without satisfying assumption 7. The result will still go through if $C_{NAMC} > C_B$ as long as the gains from the l.h.s of the inequality outweigh the costs on the r.h.s. of the inequality. Proposition 2 (b) says that it is optimal for the regulator to choose a

[63] Note that we have derived conditions for a bank to invoke bankruptcy or rollover defaulted loans in Lemma 1.

centralised approach over a decentralised approach if cost saving from excessive asset dissipation by illiquid firms is greater than the political and informational cost incurred by NAMC.

There are a few interesting observations and policy implications from the discussions and results of this section. First, it is impossible for the regulator or the bank to check asset dissipation of firms which have not defaulted in period 1; even though they are the insolvent ones. In this case, a NAMC does no better than the bank in halting asset dissipation no matter how well- designed the NAMC is. Hence, if there are many class 2 debtors in the economy, transferring of bad debts to NAMC would not change the collectability of loans very much and many firms will fail to pay their principal comes period 2. This might give a false impression thus the allegation that NAMC is corrupted and fail to maximise loan recovery. Second, if there are many class 3 firms in the economy and a strong possibility that banks will rollover defaulted loans, it is always better to set up an NAMC than to leave the NPLs in the system. This helps to curb opportunistic behaviour of class 3 firm managers where solvent firms are turned into insolvent ones because of excessive asset dissipation, as long as political interference is not excessive in the operation of NAMC.

3 Financial Shocks and the Regulator's Optimal Policy Choice

Macoeconomists, starting from Irving Fisher (1933) have argued that financial markets are important propagators of shocks and have impact on real economy. The Asian financial crisis and even the earlier Great Depression experience demonstrated that a resilient banking sector is important to ensure speedy and sustainable recovery of the economies from financial shock. Specifically, the ability of banks to resume its intermediation role in large part determines economic activities and thus corporate sector's recovery.[64] Therefore, it is vital for the regulator to design effective asset resolution policy to ensure minimum disruption of the banks' credit intermediation role. In this section, we examine how the possibility of financial shocks affects banks' and firms' behaviour which in turn affects the regulators' optimal policy choice.

3.1 Extension of the Basic Model to incorporate Financial Shocks

We consider an economy that may be hit by financial shocks in period 1 with probability λ. We assume that shocks enter the timeline in period 1, immediately after the regulator chooses its policy and before firms realise their income and learn about their period 2 value. This shock could affect the economy in two ways; it affects firms' realised income (y_i) in period 1 as well as firms' continuation value (x_i) in period 2. Financial shocks essentially shift $\bar{y}$ by η and $\bar{x}$ by β where $\eta \in [0,1), \beta \in [0,1)$. The more severe the shock is, the lower the value of η and β will be. Shock that affect $\bar{y}$ is viewed as temporary liquidity shock while shock that affects $\bar{x}$ is viewed as solvency

[64] See Chapter1 and 1 for more detailed discussion on the role of credit channel in propagating shocks and economic recovery.

shock as it affects firms' continuation value.[65] In order to see the effects of financial shocks, we substitute value to χ_1, χ_2 and see how changes in these values as a result of shocks affect bank' 2-period net worth.

The following depicts the probability that a firm is liquid, illiquid, solvent or insolvent when an economy does not experience financial shocks (denoted by NS) as well as when the economy is hit by financial shocks (denoted by S).

3.1.1 Economy without shock (NS)

$Prob\{$firm is illiquid: $y < sd\} = F_1(sd) = \chi_1^{NS} = \frac{sd}{y}$

$Prob\{$firm is liquid: $y \geq sd\} = 1\text{-}F_1(sd) = 1 - \chi_1^{NS} = 1 - \frac{sd}{y}$

$Prob\{$firm is insolvent: $x < d\} = F_2(d) = \chi_2^{NS} = \frac{d}{x}$

$Prob\{$firm is solvent: $x \geq d\} = 1\text{-}F_2(d) = 1 - \chi_2^{NS} = 1 - \frac{d}{x}$

3.1.2 Economy with Shock (S)

When the economy is hit by financial shocks, χ_1^S and χ_2^S become $\frac{sd}{\eta y}$ and $\frac{d}{\beta x}$ respectively.

[65] Note that the occurrence of liquidity and solvency shock is independent from each other.

3.2 The Impact of Financial Shocks on the Banks' and the NAMC's Expected Two-Period Net Worth

To analyse how the possibility of financial shocks affects the regulator's optimum policy choice, we examine banks' 2-period net worth and see how the probability and severity of shocks affect banks' two period net worth. We draw inferences on banks' and firms' behaviour when the economy is hit by shocks and explain how this would change the regulator's optimum policy choice.

A bank's two- period net worth if it rollovers defaulted loans when the economy might be hit by shock is

$$\prod_D^R = (1-\lambda)\{(1-\chi_1^{NS})(1-\chi_2^{NS})(1+s)d + \chi_2^{NS}(1-\chi_1^{NS})\left[sd + x\left(\overline{\Delta}|k_2\right)\right] +$$
$$\chi_1^{NS}(1-\chi_2^{NS})x\left(\Delta|k_3\right) + \chi_1^{NS}\chi_2^{NS}x\left(\overline{\Delta}|k_4\right)\} +$$
$$\lambda\{(1-\chi_1^{S})(1-\chi_2^{S})(1+s)d + \chi_2^{S}(1-\chi_1^{S})\left[sd + x\left(\overline{\Delta}|k_2\right)\right] +$$
$$\chi_1^{S}(1-\chi_2^{S})x\left(\Delta|k_3\right) + \chi_1^{S}\chi_2^{S}x\left(\overline{\Delta}|k_4\right)\}$$

We substitute the value of $\chi_{1,}\chi_2$, then

$$\prod_D^R = (1-\lambda)\{(1+s)d + \frac{sd}{\overline{y}}\left[x\left(\overline{\Delta}|k_3\right) - (1+s)d\right] + \frac{d}{\overline{x}}\left[x\left(\overline{\Delta}|k_2\right) - d\right] +$$
$$\frac{sd^2}{\overline{y}\,\overline{x}}\left[x\left(\overline{\Delta}|k_4\right) - x\left(\overline{\Delta}|k_3\right) - x\left(\overline{\Delta}|k_2\right) + d\right]\} +$$
$$\lambda\{(1+s)d + \frac{sd}{\eta\overline{y}}\left[x\left(\overline{\Delta}|k_3\right) - (1+s)d\right] + \frac{d}{\beta\overline{x}}\left[x\left(\overline{\Delta}|k_2\right) - d\right] +$$
$$\frac{sd^2}{\eta\overline{y}\beta\overline{x}}\left[x\left(\overline{\Delta}|k_4\right) - x\left(\overline{\Delta}|k_3\right) - x\left(\overline{\Delta}|k_2\right) + d\right]\}$$

To see how the severity of shock that constraints firms' liquidity affects banks' profit, we differentiate $\prod$ with η;

$$\frac{\partial \prod_D^R}{\partial \eta} = \lambda \left\{ -\frac{sd}{\eta^2 \bar{y}} \left[x\left(\Delta | k_3\right) - \left(1+s\right) d \right] - \frac{sd^2}{\eta^2 \bar{y} \beta \bar{x}} \left[x\left(\bar{\Delta} | k_4\right) - x\left(\bar{\Delta} | k_3\right) - x\left(\bar{\Delta} | k_2\right) + d \right] \right\}$$

$$= \frac{\lambda sd}{\eta^2 \bar{y} \beta \bar{x}} \left[\beta \bar{x} \left(1+s\right) d - \beta \bar{x} x\left(\bar{\Delta} | k_3\right) - dx\left(\bar{\Delta} | k_4\right) + dx\left(\bar{\Delta} | k_3\right) + dx\left(\bar{\Delta} | k_2\right) - d^2 \right]$$

$\frac{\partial \prod_D^R}{\partial \eta} > 0$ if

$$\beta \bar{x} \left(1+s\right) d - \beta \bar{x} x\left(\bar{\Delta} | k_3\right) - dx\left(\bar{\Delta} | k_4\right) + dx\left(\bar{\Delta} | k_3\right) + dx\left(\bar{\Delta} | k_2\right) - d^2 > 0$$

$$\Rightarrow \left(1 - \frac{d}{\beta \bar{x}}\right) \left[d - x\left(\bar{\Delta} | k_3\right) \right] + sd > \frac{d}{\beta \bar{x}} \left[x\left(\bar{\Delta} | k_4\right) - x\left(\bar{\Delta} | k_2\right) \right] \quad (5)$$

Inequality (5) says that banks' profits increase if the gains (l.h.s of the inequality) outweigh the costs (r.h.s of the inequality) of less severe liquidity shocks. The banks are able to gain by collecting more interest and receive full payment of principal from class 3 firms if the liquidity shock is less severe. However, this costs the banks to miss the opportunity to detect insolvent firms in period 1 as these firms appear to be liquid due to the less severe liquidity shock. We assume that insolvent firms are ex-post identical in size, that is $x\left(\bar{\Delta} | k_2\right) = x\left(\bar{\Delta} | k_3\right) = x\left(\bar{\Delta} | k_4\right) = a$, therefore r.h.s of inequality (5) equals 0.[66] We know that $d - x\left(\bar{\Delta} | k_3\right) > 0$, hence the inequality is always true for any level of β. Therefore, under the case of rollover, bank's profit will always be higher the less severe the liquidity shock is.

[66] We assume that when firms dissipate assets at the maximum level and firms are insolvent, the scrap value for these firms is the same, irregardless of their liquidity status in period 1. This is a reasonable assumption as at the end of period 2, all insolvent firms' value converge to 'a' (ex post identical in size), at a given level of institution of corporate governance in the country, as firm managers dissipate assets at the maximum level.

On the other hand, to see how the severity of shock that impinges on firms' solvency affects banks' profit, we differentiate $\prod$ with β.

$$\frac{\partial \prod_D^R}{\partial \beta} = -\frac{d}{\beta^2 \bar{x}}\left[x\left(\bar{\Delta}|k_2\right) - d\right] - \frac{sd^2}{\eta \bar{y} \beta^2 \bar{x}}\left[x\left(\bar{\Delta}|k_4\right) - x\left(\bar{\Delta}|k_3\right) - x\left(\bar{\Delta}|k_2\right) + d\right]$$

$$= \frac{d}{\eta \bar{y} \beta \bar{x}}\left\{\left[d - x\left(\bar{\Delta}|k_2\right)\right]\eta \bar{y} - sd\left[x\left(\bar{\Delta}|k_4\right) - x\left(\bar{\Delta}|k_3\right) - x\left(\bar{\Delta}|k_2\right) + d\right]\right\}$$

$$\frac{\partial \prod_D^R}{\partial \beta} > 0 \text{ if } \left[d - x\left(\bar{\Delta}|k_2\right)\right]\eta \bar{y} > sd\left[x\left(\bar{\Delta}|k_4\right) - x\left(\bar{\Delta}|k_3\right) - x\left(\bar{\Delta}|k_2\right) + d\right]$$

$$\Rightarrow \left(1 - \frac{sd}{\eta \bar{y}}\right)\left[d - x\left(\bar{\Delta}|k_2\right)\right] + \frac{sd}{\eta \bar{y}}\left[x\left(\bar{\Delta}|k_3\right) - x\left(\bar{\Delta}|k_4\right)\right] > 0 \qquad (6)$$

Inequality (6) says that banks' profits increase as the solvency shock becomes less severe. This is because there are now more liquid firms that fall into class 1 instead of class 2 category and hence banks receive more full payment of principal. Similarly, as we assume $x\left(\bar{\Delta}|k_2\right) = x\left(\bar{\Delta}|k_3\right) = x\left(\bar{\Delta}|k_4\right) = a$, therefore the second term on the l.h.s. of the inequality (6) equals 0. We know that $d - x\left(\bar{\Delta}|k_2\right) > 0$, hence the inequality is always true for any level of η.The result suggests that in the case of rollover; bank's profit will always be higher the less severe the solvency shock is.

$$\frac{\partial \prod_D^R}{\partial \lambda} < 0 \qquad (7)$$

Finally, the inequality (7) shows that an increase in the incidence of financial shock always reduces bank's profit. Financial shock reduces banks' profits by reducing banks' period 1 income and expected period- 2 values.

Proposition 3*: When a bank rollovers all the defaulted loans, its profit will always be higher if the liquidity shock or the solvency shock is less severe or the probability of shocks is smaller.*

Proof: It is self- evident from the preceding discussions.

Meanwhile, a bank can choose to invoke bankruptcy instead of rolling over defaulted loans. When a bank invokes bankruptcy, it will be able to stop opportunistic behaviour of class 3's firm managers to a certain extent and unlike the case where the bank rollovers defaulted loans, illiquid but solvent firms will remain solvent in period 2. Next, we consider the case where these solvent firms' period 2 value is sufficient to pay off both the interest owed to the bank in period 1 and principal *d* in period 2.[67]

A bank's two- period net worth if it invokes bankruptcy on defaulted loans when the economy might be hit by shock is

$$\begin{aligned}
\Pi_D^B &= (1-\lambda)\{\left(1-\chi_1^{NS}\right)\left(1-\chi_2^{NS}\right)(1+s)d+\chi_2^{NS}\left(1-\chi_1^{NS}\right)\left[sd+V\left(\overline{\Delta}\middle|k_2\right)\right]+\\
&\chi_1^{NS}\left(1-\chi_2^{NS}\right)(1+s)d+\chi_1^{NS}\chi_2^{NS}V\left(\Delta_B\middle|k_4\right)-C_B\left(\chi_1^{NS}\right)\}+\\
&\lambda\{\left(1-\chi_1^{S}\right)\left(1-\chi_2^{S}\right)(1+s)d+\chi_2^{S}\left(1-\chi_1^{S}\right)\left[sd+V\left(\overline{\Delta}\middle|k_2\right)\right]+\\
&\chi_1^{S}\left(1-\chi_2^{S}\right)(1+s)d+\chi_1^{S}\chi_2^{S}V\left(\Delta_B\middle|k_4\right)-C_B\left(\chi_1^{S}\right)\}-H
\end{aligned}$$

$$\begin{aligned}
&=(1-\lambda)\{(1+s)d-\frac{d^2}{\overline{x}}-\frac{s^2d^3}{\overline{x}\overline{y}}+\frac{d}{\overline{x}}V\left(\overline{\Delta}\middle|k_2\right)+\frac{sd^2}{\overline{y}\overline{x}}\left[V\left(\Delta_B\middle|k_4\right)-V\left(\overline{\Delta}\middle|k_2\right)\right]-C_B\left(\chi_1^{NS}\right)\}\\
&+\lambda\{(1+s)d-\frac{d^2}{\beta\overline{x}}-\frac{s^2d^3}{\eta\overline{y}\beta\overline{x}}+\frac{d}{\beta\overline{x}}V\left(\overline{\Delta}\middle|k_2\right)+\frac{sd^2}{\eta\overline{y}\beta\overline{x}}\left[V\left(\Delta_B\middle|k_4\right)-V\left(\overline{\Delta}\middle|k_2\right)\right]-C_B\left(\chi_1^{S}\right)\}-H
\end{aligned}$$

$$\frac{\partial\Pi_D^B}{\partial\eta}=\lambda\left\{\frac{s^2d^3}{\eta^2\overline{y}\beta\overline{x}}-\frac{sd^2}{\eta^2\overline{y}\beta\overline{x}}\left[V\left(\Delta_B\middle|k_4\right)-V\left(\overline{\Delta}\middle|k_2\right)\right]-C_B'\left(\chi_1^{S}\right)\right\}$$

[67] We assume that no compound interest is charged to the accrued interest payment in period 1. If firm's period 2 continuation value is insufficient to pay off period 1's interest to bank, bank could choose to write off those interest payment in order to induce firm to restructure. This latter case would not change our qualitative result though.

$$= \lambda \left\{ \frac{sd^2}{\eta^2 \bar{y} \beta \bar{x}} \left[sd - V\left(\Delta_B \middle| k_4\right) + V\left(\bar{\Delta} \middle| k_2\right) \right] - C_B'\left(\chi_1^S\right) \right\}$$

$$\frac{\partial \Pi_D^B}{\partial \eta} > 0 \text{ if } sd - V\left(\Delta_B \middle| k_4\right) + V\left(\bar{\Delta} \middle| k_2\right) > C_B'\left(\chi_1^S\right) \frac{\eta^2 \bar{y} \beta \bar{x}}{sd^2}$$

$$\Rightarrow sd - \left[V\left(\Delta_B \middle| k_4\right) - V\left(\bar{\Delta} \middle| k_2\right) \right] - C_B'\left(\chi_1^S\right) \frac{\eta^2 \bar{y} \beta \bar{x}}{sd^2} > 0 \qquad (8)$$

As the shocks that affect firm's liquidity become less severe, the bank's net worth increases only if inequality (8) is satisfied. Inequality (8) says that if the increase in the interests payment collected (the first term on the l.h.s of the inequality) is greater than the total sum of the loss from being unable to detect insolvent firms earlier and halt asset dissipation (the second term on the l.h.s of the inequality) and the change in monitoring cost that this entails (the third term on the l.h.s of the inequality); the banks' profit will increase when the liquidity crisis is less severe. Otherwise, the banks two-period net worth would increase with the severity of liquidity shocks. This is because banks could thus identify insolvent firms earlier and slow down the firms' asset dissipation to a certain extent; leading to a greater period 2 recovery of firms' value than is possible if the firms were allowed to dissipate their assets to the maximum.

$$\frac{\partial \Pi_D^B}{\partial \beta} = \lambda \left\{ \frac{d^2}{\beta^2 \bar{x}} + \frac{s^2 d^3}{\eta \bar{y} \beta^2 \bar{x}} - \frac{d}{\beta^2 \bar{x}} V\left(\bar{\Delta} \middle| k_2\right) - \frac{sd^2}{\eta \bar{y} \beta^2 \bar{x}} \left[V\left(\Delta_B \middle| k_4\right) - V\left(\bar{\Delta} \middle| k_2\right) \right] \right\}$$

$$= \frac{\lambda d}{\eta \bar{y} \beta^2 \bar{x}} \left\{ d\eta \bar{y} + s^2 d^2 - sd \left[V\left(\Delta_B \middle| k_4\right) - V\left(\bar{\Delta} \middle| k_2\right) \right] - \eta \bar{y} V\left(\bar{\Delta} \middle| k_2\right) \right\}$$

$$\frac{\partial \Pi_D^B}{\partial \beta} > 0 \text{ if } \quad d\eta \bar{y} + s^2 d^2 - \eta \bar{y} V\left(\bar{\Delta} \middle| k_2\right) > sd \left[V\left(\Delta_B \middle| k_4\right) - V\left(\bar{\Delta} \middle| k_2\right) \right]$$

$$\Rightarrow d + \frac{sd}{\eta y}(sd) > \left(1 - \frac{sd}{\eta y}\right) V\left(\bar{\Delta} \middle| k_2\right) + \frac{sd}{\eta y} V\left(\Delta_B \middle| k_4\right) \quad (9)$$

The inequality (9) always holds true as the additional debt repayments (the first term on the l.h.s of the inequality) received by the banks from insolvent turned solvent firms as a result of less severe solvency shock is always greater than the period 2 value that would have been recovered from insolvent firms, be it from class 2 or class 4 firms (the first and second term on the r.h.s. of the inequality) had the solvency shock not become less severe. Note that the second term on the l.h.s of the equality captures the additional interest payment received from k_4 turned k_3 firms as a result of less severe solvency shock. [68] Therefore, the banks' profit will always increase with the decrease in the severity of solvency shocks.

$$\frac{\partial \prod_D^B}{\partial \lambda} < 0 \quad (10)$$

As in the case of rollover, the increase in the incidence of financial shock always reduces bank's profit as financial shocks reduce the banks' profits by reducing the banks' period 1 income and the expected period- 2 values.

Proposition 4(a)*: If a bank invokes bankruptcy and the economy is hit by severe than moderate liquidity shock, then a bank's profit might increase due to its ability to detect insolvent firms in period 1 and thus slow asset dissipation of these firms.*

Proof: as shown in inequality (8).

[68] Recall that we assume that $x \geq (1+x)d$ for k_3 firms, bank thus require illiquid firm to pay out their interest payment in period 2.

Unlike the case of rollover, the severity of the liquidity shock does not always have a negative relationship with the bank's profitability when the bank invoke bankruptcy on defaulted firms. In this case, liquidity shock could serve as a 'filtering tool' to identify insolvent firms in period 1. These insolvent firms would not have surfaced if there is no liquidity shock; bank would, in such case, miss the opportunity to check the opportunistic behaviour of manager dissipating firms' asset. Therefore, a more severe liquidity shock may be good for the banks as it increases the banks' profit instead of decreasing it as it enables banks to check firms' asset dissipation and recover a greater value of their loans. This is especially true if there are many liquid but insolvent firms in the economy.

Proposition 4(b)*: Solvency shock that affects a firm's solvency is always bad for the bank's profit, whether the bank chooses rollover or invokes bankruptcy.*

Proof: Corollary from inequality (6) and (9)

Proposition 4(c)*: The higher the incidences of shocks, the worst off are the banks and firms.*

Proof: Corollary from inequality (7) and (10)

It should be clear by now that the financial shocks affect the NAMC's 2 period net worth in a similar manner as how they affect bank's profit if they were to invoke bankruptcy on defaulted firms. What is different between the two is that the second period firms' value is higher in the case of NAMC because of its ability to halt asset

dissipation completely. Hence, the interpretation of how shocks affect NAMC's net worth is the same as that of a bank when bankruptcy is invoked.

3.3 Financial Shocks and Optimal Policy

We have, in this section, incorporated financial shocks into our model and study how these shocks affect the banks' expected two- period net worth, which is determined by the firms' expected two- period value. Note that the mechanism of arriving at an optimal policy when an economy might be hit by shocks is exactly the same as what has been discussed in section 2. What is different here is that as the possibility of shocks moves firms from one class to another; the urgency/ advantages of NAMC may become more apparent in an economy that is faced with potential financial shock than not, provided that the political interference of the operation of NAMC is capped at a minimal level. We show that the occurrence of financial shocks changes banks' profit. A shock that affects firms' solvency reduces bank's net worth. This will increase the chances of the bank rolling over defaulted loans to hide its insolvency. This in turn encourages asset dissipation. Hence, the optimal policy is one that is able to reduce the moral hazard problems between the banks and the regulator, and between the firms and the banks due to information asymmetry among them. A centralised policy of setting up an NAMC seems to be a good alternative as long as there is little political interference and the costs of evaluating and monitoring defaulted firms are not too high. In addition, we find that the shock that affects the liquidity of firms may be beneficial to a bank as it helps the bank to identify insolvent firms and slow asset dissipation activities of this group of debtors. In such cases, an increase in the severity of shock does not necessarily

increase the chances of the bank rolling over defaulted loans. If banks two-period net worth increases as a result of liquidity shock, the banks might invoke bankrupt rather than rollover. However, it is important to note that liquidity shocks could swing the banks' two- period net worth the other way and reduce the banks' net worth substantially, thus inducing bank managers to rollover defaulted loans instead. A centralised policy, on the other hand, could do no worse than a decentralised policy as a NAMC is always able to halt asset dissipation more than the banks, as long as the extent of political interference in the operation of NAMC is not serious.

4 Discussions

This paper demonstrates that troubled banks have incentives to passively rollover their defaulted loans and analyses how this behaviour affects the regulator's policy choice to resolve the problem of NPLs in the banking system. Banks rollover defaulted loans for several reasons. We could obtain valuable insights from the literature of soft budget constraint (SBC) and creditor passivity even though the phenomena are often discussed in the context of transition economies.[69] Berglöf and Roland (1998) identify five different origins of soft budget constraints: 1) ex-post benefits of refinancing; 2) high costs of liquidation where there are strong interdependencies between enterprises; 3) poor quality of competiting projects as an alternative to refinance existing loans; 4) bank's incentive to hide bad loans and gamble for resurrection; 5) rent- seeking activities of banks to exploit the softness of

[69] SBC is a syndrome where organisations expect themselves to be rescued from trouble and this expectation affects their behaviour. See Kornai et al (2003) for conceptual clarification of SBC and a survey of formal theoretical literature on SBC.

government. Note that the first three origins explain that SBC arises due to the sunk cost nature of the initial investment where it might be profitable ex post to refinance loans that are not profitable ex ante.[70] The last two origins of SBC argue that banks' incentives are distorted due to limited liability and imperfect monitoring of the banks' behaviour by the regulator.[71] Even though the problem of creditors' passivity in the East Asian economies was less of a problem of sunk cost investment as that of transition economies, the East Asian economies were not spared from SBC as the fear of economic spillover effect prompted the government to intervene and 'rescue' businesses. If a big enterprise goes under, it might drag its suppliers down too, starting a chain reaction of bankruptcies. This phenomenon of 'too big to fail' has the same implication as the 'too many to fail' phenomenon observed in the banking sector.[72] In both cases, the possibility of bail out softens the discipline imposed on corporate borrowers and banks and further encourages creditors' passivity. Banks' anticipation that they might be bailed out by the government in the event that they become insolvent give them incentives to gamble for resurrection by rolling over defaulted loans. In this case, banks will benefit from any upside gain while bailout serves as the downside insurance. Moreover, the prospect of too many to fail creates strategic complementarities in banking crisis where banks rollover their loans in expectation of being rescued if detected. In our paper, we model that banks rollover loans to hide their insolvency because bank managers obtain private benefits from the continuation of the operation of banks. From the literature of SBC, however, it seems that banks often have

[70] See Dewatripont and Maskin (1995), Berglöf and Roland (1997) and Maskin and Xu (2001).
[71] See Mitchell (1993, 1998).
[72] Bongini et al (2000) find evidence of 'too big to fail' in East Asia. Also, see Perotti (1998) and Mitchell (2001) for model of 'too many to fail'.

more reasons to rollover defaulted loans than that specified in our model. This, in turn, would further encourage asset dissipation by firm managers as there are no credible threats to invoke bankruptcy and to check on their opportunistic behaviour. Therefore, the extent of creditors' passivity and the corollary asset dissipation might be many folds more severe in reality than suggested by our model and a decentralised approach would lead to the build up of NPLs in the banking system and thus prolong the financial distress in the economy, as evident in the case of Thailand before the setting up of a NAMC in 2001.[73]

It is often stated that an effective legal regime is vital to the success of a NAMC.[74] Does this mean that in the absence of an efficient legal system, it is better for the regulator to opt for a decentralised approach instead? In our model, we have assumed that an NAMC is able to halt asset dissipation completely. However, this assumption is made not based on the efficiency of the prevailing legal system, but the ability of the regulator to overcome the impediments of the existing legal environment. As evident in the case of Danaharta, special legislation was passed to give Danaharta the necessary legal power to execute its task so that it could expedite the restructuring process. Among others, Danaharta could appoint Special Administrator (SAs) to propose workout plans without the usual court process and possess the ability to foreclose on assets and sale through private treaty by bypassing court auction process. [75] In fact, we argue that the weaker the legal system of a country, the more imperative it is

[73] See Chapter 3 for a discussion on Thailand's performance under the decentralised approach as opposed to Malaysia's performance under the centralised approach.
[74] For example Klingebiel (2000), Fung et al (2004)
[75] See Chapter 3 for more discussions on the role of SAs. Also, see Rose (2005) for other examples on extraordinary legal or administrative power given to NAMCs of different countries.

for a country to set up a NAMC as the problem of creditor passivity is especially severe when there are institutional constraints in enforcing contract. Weak legal and judiciary system aggravate the problem of passivity as ultimately, bankruptcy is the only credible mean to discipline defaulting debtors. A NAMC with special legal power could fill up the vacuum left by weak legal system and impose discipline on defaulted firms. This disciplinary effect is especially valuable when the corporate governance of a country is weak. Therefore, we argue that an efficient legal and judicial framework is not a pre-requisite for the success of a NAMC; it is the design of operational framework and structure of a NAMC that will ensure the performance of a NAMC. A well designed framework can contain political interference and ensure the efficient functioning of its role in resolving financial distress.

We have made a strong assumption that there is no issue of pricing in transferring NPLs from the banks to the NAMC as all the assets of banks; good and bad, are transferred to a NAMC. This assumption is most relevant if our model is applied to sector- specific shock. For example, if financial shock affects the real estate sector the most, then the regulator could set up a NAMC to carve out all loans to the real estate sector to the NAMC. Note that the qualitative results would remain the same if we model that only bad assets are transferred to the NAMC. In this case, the transfer price is important in determining the willingness of banks to transfer their loans to the NAMC. However, this issue should not be viewed as a deterrent to opt for a centralised

approach as the regulator can always adopt a carrot and stick approach to ensure that the objective of carving out NPLs from the banking system is attained.[76]

We have not dealt with the issue of strategic default formally in our model. In our model, we assume that only illiquid firms default on their loans. However, there is always the possibility that the firms default strategically if they anticipate that the banks would rollover their loans instead of invoking bankruptcy. This is especially true when bankruptcy costs are substantial and the scrapping values of the firms are low.[77] Strategic default was widely observed in Thailand, before they opted for centralised approach in 2001. In fact, Pakorn (2001) claims that one- third of Thai's NPLs was in the form of strategic NPLs. Our results will still go through qualitatively if we were to consider strategic default by class 2 firms. These firms will default strategically if they anticipate that banks are going to rollover defaulted loans. Due to the zero profit condition explained earlier, the banks would in turn be more likely to rollover as a result of this strategic behaviour of class 2 firms. In such situation, it is even more compelling to set up a NAMC as it could check this strategic behaviour.

We have assumed in our model that all class 3 firms will dissipate their assets to the maximum and became insolvent if banks were to rollover their loans in period 1. The assumption was made because if an agent knows that the bank is passive and no penalty was imposed on him even though he defaulted in period 1, he would have every incentive to dissipate the assets to the maximum in order to maximise his own utility. Our results will still go through if we were to relax this assumption and allow some

[76] Recall chapter 1 discussions on how Danaharta used a carrot and stick approach to ensure banks transferred most of the distressed loans to Danaharta.
[77] See Hart and Moore (1998), Bolton and Scharfstein (1990, 1996) for discussion on strategic default.

class 3 firms to remain solvent as they do not dissipate asset to the maximum, i.e. $\Delta = \Delta_G$ instead of $\overline{\Delta}$.[78] Nevertheless, the condition for the establishment of NAMC is weaker now.

5 Conclusions

The literature on financial crisis and the propagation of shocks through the credit channel focus on the transmission of shocks via their effects on the balance sheets of the borrowers and on the supply of credit by banks. Bernanke (1983) explicates that the weakening of borrowers' balance sheet and the contraction in banks' credit supply increase the cost of intermediation and magnify the adverse economic shocks further.[79] Our paper offers new insight and new dimension to the credit view literature. We show that the banks' tendency to rollover defaulted loans encourages the firm managers to dissipate their assets and consequently lower the banks' and the firms' value. This implies that the very act of rollover defaulted loans by banks lead to an increase in cost of intermediation as banks tighten credit due to the dwindling value of its capital base and the weakening of firms' balance sheet also make access to credit more difficult and costly. Therefore, the tendency of banks to rollover loans could slow credit growth and dampen economic activity, as observed in Thailand before 2001.[80] If the regulator anticipates that, for various reasons discussed above, the banks are likely to rollover defaulted loans than invoking bankruptcy on defaulted firms, the regulator should opt

[78] In this case, we assume no moral hazard problem; class 3 firms are illiquid because of exogenous shocks and they will strive to remain solvent, as in the case of class 1 firms.
[79] See Calomiris (1993), Clamomiris and Berry (2004) for review of Bernanke's thesis.
[80] Chapter 1 and 3 discuss how the passiveness (i.e. rescheduling of loans, which effectively means rolling over loans) of Thai bank had constrained credit growth in Thailand.

for a centralised approach by setting up a NAMC as NAMC could provide the right incentive for both banks and firms to engage in restructuring, provided that there is not too much political interference in the operation of NAMC.

The inclusion of the possibility of financial shocks in our model also offers interesting policy implications. Our results suggest that liquidity shock may be good for the economy as it enables banks to identify insolvent firms earlier and prevent the channelling of resources to unproductive use, on the condition that the banks invoke bankruptcy on those defaulted firms under the decentralised policy. Hence, under these circumstances, liquidity shocks can promote restructuring; which is good for the economy as the two-period value for banks and firms increases as a result of that. In such circumstances, the government's role is to ensure that the legal and judiciary system is effective so that the level of asset dissipation (Δ_B) is as small as possible. However, if banks were to rollover defaulted loans, liquidity shocks will decrease firms' and banks' value further and the government might want to introduce measures that could directly reduce the severity of the liquidity shock, η. Among others, the government could ensure that banks are granting out loans to help firms to tie-over this liquidity constraint period. However, the pre-requisite for the resumption of banks' intermediation role is that NPLs have to be removed from their balance sheets. Otherwise, the NPLs will clog up the banking system and the banks would be unable to extend credit to firms. A NAMC is able to solve this problem by carving out NPLs from the system and enables banks to resume their credit intermediation role. Note that asset resolution under a NAMC would produce better results than banks even if the banks

were to invoke bankruptcy if political interference in NAMC is not excessive and the legal system in an economy is generally weak.

In addition, we find that the shock which impinges on firms' solvency is always bad for the banks, firms and the economy as a whole, irregardless of whether the banks choose rollover or invoke bankruptcy. Hence, the government might consider introducing measures to reduce the severity of the solvency shock, β. Among others, the government could ensure that the contagion effect of the shock is contained as far as possible. This could be done by ensuring that firms are engaged in both financial and operational restructuring instead of allowing the firm managers to dissipate assets away. Again, a NAMC could assist in promoting corporate restructuring by stopping asset dissipations and providing technical and professional assistance for restructuring of the firms.[81] As such, the domino effects of failed firms could be avoided and thus the severity of the solvency shock contained.

Lastly, we would like to address concerns on the possibility of the problem of circularity in our argument. Specifically, since our model suggests that the establishment of a NAMC is the optimal policy choice, why did Thailand not adopt a centralised approach at the first place? In other words, did Thailand rightly opt for a decentralised approach because it anticipated political interference in the operation of a NAMC? We argue that Thailand's policy choice under the tutelage of IMF might not be endogenously determined and the lack of progress in restructuring in the decentralised regime indicates that it was perhaps not the right choice. Furthermore, the subsequent change to a centralised approach in 2001 and its accompanied recovery in credit growth

[81] See discussions in Chapter 3 on how Danaharta promote corporate restructuring.

indicates that the decentralised approach might not have been the optimal choice even taking into account the potential for political interference. In addition, Malaysia's corporate landscape was not spared from political interference. In fact, many had accused the former Prime Minister, Mr. Mahathir for practicing nepotism. Therefore, the fact that Malaysia performed better than Thailand suggests that due to its ability to halt asset dissipation of firms and prevent banks from 'evergreening' loans, the establishment of a NAMC is indeed an optimal policy choice in dealing with distressed assets, especially in the emerging market economies where the problem of information asymmetry is severe and the legal and corporate governance institutions are generally weak. The cases of Malaysia and subsequently Thailand suggest that even if there was political interference, it was unlikely to have been large enough to overturn the gain from using a centralised approach.

Appendix

The Total Asset Values for Firms and Banks for Differing Policy Choices:

1)The two- periods net worth function for a bank under the decentralised policy when bank invoke bankruptcy is

$$\prod_D^B(\chi_1,\chi_2)=(1-\chi_1)(1-\chi_2)(1+s)d+\chi_2(1-\chi_1)\left[sd+V\left(\overline{\Delta}\middle|k_2\right)\right]+\chi_1(1-\chi_2)d+$$
$$\chi_1\chi_2V\left(\Delta_B\middle|k_4\right)-C_B(\chi_1)-H$$

The followings are the corresponding expected income for firms of different classes:

k=1, $(1-\chi_1)(1-\chi_2)\left[y_i+V\left(\Delta_G\middle|k_1\right)-(1+s)d\right]$

k=2, $\chi_2(1-\chi_1)(y_i-sd)$

k=3, $\chi_1(1-\chi_2)\left[y_i+V\left(\Delta_B\middle|k_3\right)-d\right]$

k=4, 0

2) The two- periods net worth function for a bank under the decentralised policy when bank rollover is

$$\Pi_D^R(\chi_1,\chi_2)=(1-\chi_1)(1-\chi_2)(1+s)d+\chi_2(1-\chi_1)\left[sd+x\left(\overline{\Delta}|k_2\right)\right]+$$

$$\chi_1(1-\chi_2)x\left(\overline{\Delta}|k_3\right)+\chi_1\chi_2x\left(\overline{\Delta}|k_4\right)-H$$

The following are the corresponding expected income for firms of different class:

k=1, $(1-\chi_1)(1-\chi_2)\left[y_i+x\left(\Delta_G|k_1\right)-(1+s)d\right]$

k=2, $\chi_2(1-\chi_1)(y_i-sd)$

k=3, $\chi_1(1-\chi_2)[y_i]$

k=4, 0

3)The two- periods net worth function for a NAMC under the centralised policy is

$$\Pi_{DT}^{NAMC}(\chi_1,\chi_2)=\theta\left\{\begin{array}{l}(1-\chi_1)(1-\chi_2)(1+s)d+\chi_2(1-\chi_1)\left[sd+V\left(\overline{\Delta}|k_2\right)\right]+\\ \chi_1(1-\chi_2)d+\chi_1\chi_2V\left(0|k_4\right)-C_{NAMC}(\chi_1)-\phi\end{array}\right\}+$$

$$(1-\theta)\left\{\begin{array}{l}(1-\chi_1)(1-\chi_2)(1+s)d+\chi_2(1-\chi_1)\left[sd+V\left(\overline{\Delta}|k_2\right)\right]+\\ \chi_1(1-\chi_2)d+\chi_1\chi_2V\left(0|k_4\right)-C_{NAMC}(\chi_1)\end{array}\right\}$$

The following are the corresponding expected income for firms of different class:

k=1, $(1-\chi_1)(1-\chi_2)\left[y_i+V\left(\Delta_G|k_1\right)-(1+s)d\right]$

k=2, $\chi_2(1-\chi_1)(y_i-sd)$

k=3, $\chi_1(1-\chi_2)\left[y_i+V\left(0|k_3\right)-d\right]$

k=4, 0

Note that banks have to minus deposit, H, from their profit function. A NAMC, on the other hand, does not take deposits and thus H does not appear in the profit function. However, when we make comparison against the firms, banks and AMC's values under the different policy choice, we implicitly assume that H enters AMC profit function as the price AMC paid for the assets transferred to it. This implicit assumption is made for exposition convenience only as we can thus cancel out H from the comparison of the impact of different policy choice and does not change the qualitative result.

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Chapter 3

Resolving Financial Distress: Lessons from Malaysia

1 Introduction

The Asian Financial Crisis which was triggered by Baht devaluation in July 1997 affected not only the financial system of the countries but the corporate sector and economies in general. The twin shocks of exchange rate devaluation and interest rate spikes raised the real value of debts and service requirement of debtors. Many debtors were unable to service their debt, especially in the face of economic contraction. Many banks and financial institutions were thus saddled with non- performing loans (NPLs) which threatened the stability of the banking system. Therefore, effective measures to tackle the widespread financial distress in both the banking and corporate sectors were crucial for a speedy and sustainable recovery. Claessens et al (2001) argue the fact that there exists important link between solvency and performance of the banking and corporate sector, even during normal time, suggests that bank restructuring should be complemented with corporate restructuring. The literature on broad credit channel offers valuable insights on how the balance sheet problem of the borrowers could affect banks' balance sheet; the extension of bank credit and output growth.[1] Unfortunately, the critical linkages between banking and corporate sectors have often been overlooked and the failure of government to develop appropriate policies to deal with both in the context of systemic crisis lies at the heart of many asset resolution problems (Neyens, 2002).

[1] See Chapter 1 for detailed discussions on the credit view literature.

During a systemic crisis, case by case restructuring is not feasible as the incentive framework under which agents operates is unlikely to be conducive and private capital is limited. It is further worsened by the presence of coordination problem. As such, the government has an imperative role in formulating asset resolution policies that not only speed up bank restructuring by effectively resolving NPLs in the banking system but also provide the right incentive structure to promote corporate debt restructuring. There are generally two main approaches to deal with NPLs in the banking system; a centralised approach where a centralised national asset management company (NAMC) is established by the government to carve out NPLs in the banking system and a decentralised approach or bank- led restructuring where NPLs are left with the original banks.

Financial distress if left unresolved could deepen the severity and duration of financial crises and complicate macroeconomic management. There are a number of policy papers that discuss the role of asset management companies (AMC) in restoring banking system. However, many of these papers are normative in nature where they prescribe broad guidelines that would ensure the success of AMC (Ingves et al, 2004; Cooke and Foley, 1999; Rose, 2005; Fung et al, 2004). Kawalec, and Rymaszewski (1994) and Scott (2002) and Neyens (2002) remarked that there was no clear evidence that a NAMC is more effective than bank-led restructuring efforts. Nevertheless, their remarks were mere personal observation, not verified by any formal systematic empirical studies. Klingebiel (2001) and Dado and Kilingebiel (2002) were the few who attempted to evaluate formally the effectiveness of AMC and decentralised approach in asset resolution. Klingebiel (2000) argues that AMC can only be effectively used for

narrowly defined purpose of rapidly disposing assets of unviable financial institutions and not in expediting corporate restructuring. He reviews NAMCs' role in 7 episodes of banking crises; 4 of which act as asset dissipation vehicles (Mexico, Philippines, Spain and the United States) while 3 others act as restructuring agencies (Finland, Ghana and Sweden). He finds that Mexico and Philippines fared badly due to political interference. Spain and the United States, on the other hand, managed to dispose off more than 50% of the assets within the first 5 years of their establishment. Meanwhile, Finnish Arsenal and Swedish Securum seemed to have successfully restructured their assets. However, the author attributes their success to the homogeneity of the assets being managed (i.e. real estate) and the fact that the distressed assets were only about 5% of the financial system's assets. He also argued that Ghana's AMC failed due to a lack of political independence and skilled resources. A companion paper by Dado and Kilingebiel (2002) studies the efficacy of decentralised approach where banks were left to manage their own NPLs in 7 other banking crises. They find that only Chile, Poland and Norway managed to reduce corporate distress and improve the financial structure of the corporate sectors while Argentina, Hungary, Japan and Thailand failed to do so. They attribute the success of the former countries to their abilities to create an environment that was conducive for a decentralised approach.

The existing cross- countries studies suggest that it is the enabling environment, the severity of the banking crisis and the nature of the distressed assets that determine the effectiveness of asset resolution policy, rather than the approach chosen by the government. While we do not deny that it is virtually impossible to arrive at a policy that is unconditionally optimal, we will argue that a centralised approach has a better

chance to effectively resolving financial distress in both the bank and corporate sectors than a decentralised approach, especially when the banking crisis is systemic as a NAMC is better able to mitigate frictions during the renegotiation process.[2] We note that the efficacy of a NAMC would be compromised if there is political interference in the operation of the NAMC. However, we will argue that if a NAMC is well designed and structured, there is little room for political interference and the centralised approach is preferable than a decentralised approach in resolving financial distress.

We argue that besides carving out NPLs from the banking system, the establishment of a NAMC can also efficiently assist corporate debt restructuring and thus promote overall speedier recovery in the economy. We support our argument by highlighting Danaharta's, the Malaysian NAMC, role in resolving financial distress and thus promoting loan growth and corporate recovery in Malaysia. We evaluate Danaharta's performance by examining its achievement of its two main objectives of establishment. First, it was set up to remove the distraction of managing NPLs from financial institutions (FIs), thus allowing FIs to concentrate on their intermediation role. Second, Danaharta was expected to maximise the recovery value of acquired assets. It is important to note that the first objective of allowing banks to resume their intermediation role could help the corporate sectors by making available funds that are crucial for their operations. The second objective of maximising loan recovery necessitates Danaharta's active management of the acquired distressed assets.

[2] See interesting paper by Schoors and Sonin (2005) where they argue that the mere introduction and implementation of bankruptcy rule is not adequate to induce creditors to leave the creditors' passivity trap that arises due to the externality effect of a firm's passivity on other creditors. To leave the passivity trap, a sufficiently large number of banks needs to coordinate to enforce their contract and they opine that the government is best positioned to take the coordination role. Our result seem to supplement their argument in that the setting up of a NAMC is essentially forcing the creditors out of the passivity trap as banks transfer their distressed assets to NAMC and NAMC in turn enforce the contract on behalf of the banks.

Danaharta's active involvement in this regards could accelerate corporate restructuring efforts. To evaluate the extent of achieving its first objective; we examine the bank credit growth rate as well as the trend of NPL ratio in Malaysia, using Thailand as a comparator to contrast the economic performance in these countries. In addition, we construct a test using difference- in differences approach to evaluate the effects of the establishment of Danaharta on corporate sector performance. We look at the asset recovery rate of Danaharta as well as its role in assisting corporate restructuring and avoiding fire sale of assets in order to assess if Danaharta managed to achieve its second objective.

Let us be careful of what we find, and about what we have to say. Our findings suggest that Malaysia's bank and corporate sectors' performance improved considerably post 1998. First, Malaysia's bank real credit growth rate and NPL ratio improved after Danaharta came into force in September 1998. However, other than the establishment of Danaharta, the government had also set up Danamodal, a special vehicle to recapitalise bank and CDRC, a corporate restructuring committee to facilitate out-of-court debt restructuring in the middle of 1998. In addition, the government had eased its monetary policy substantially and embarked on an expansionary fiscal policy in the second half of 1998 besides introducing capital controls in September 1998. How can we ascertain if the positive results in the real credit growth rate, a decline in NPL ratio and better corporate performance are due to one factor and not the other? In order to overcome this problem, we use Thailand as a comparator and argue that Thailand, having had almost similar crisis resolution mechanism in place in 1998, except for the establishment of a centralised national asset management company, did not experience

the same recovery in credit growth and were still being burdened with high NPL till 2000.[3] We thus infer that the establishment of Danaharta enabled the banks to concentrate on their core business of extending loans and assisted economic recovery. Some may argue that Malaysia's recovery was due to its better legal institution and stronger banking sector in place before the crisis, so it is not surprising that the economy recovered faster than others. To test if this argument has its base, we use our second test, difference in differences model to trace out country specific institutional factors and still find that Malaysia's corporate sector recovered substantially post 1998. We also find that Danaharta achieved remarkable recovery rate with relatively low costs. While our findings seem to support the hypothesis that the establishment of a NAMC is vital in resolving financial distress, promoting economic activity and improving banking and corporate sectors' performance, we must point out that our findings are country-specific and a generalisation cannot be drawn. However, given the fact that the number of alternative approaches in resolving financial distress is limited and the basic resolutions features are universal, we believe that our case study is important for a better understanding of the value of NAMC in resolving financial distress as well as the enabling framework and guiding principles that ensure the success of NAMC.

The rest of the section is organised as follows. Section 2 discusses the role of a NAMC in resolving financial distress by examining how a NAMC could resolve bargaining frictions and upholding asset value during the renegotiation process. We use Danaharta as our case study to highlight the key features and structure of a NAMC

[3] Even Thailand had capital controls in place but the extent of coverage was less comprehensive than that of Malaysia's. See Edison and Reinhart (2001).

which would ensure the success of a NAMC in resolving financial distress. Section 3 evaluates Danaharta's performance. We study the trend of NPL ratio and real bank credit growth in Malaysia and Thailand as well as the opportunistic costs involved under the decentralised approach. Section 4 examines the role of Danaharta in improving corporate sector's performance before we conclude in section 5.

2 Theoretical Underpinnings

There has been extensive theoretical work on resolving financial distress. Specifically, literature on bankruptcy law and bankruptcy reform has informed us about efficient ways to resolve corporate distress while the focus on resolving banking sector's distress has been centred on recapitalising financial institutions. However, there have not been many studies done on resolving financial distress in a systemic context; especially on the role of AMC in resolving financial distress. Mitchell (2001) made a first attempt to study the use of AMC in cleaning bank's balance sheet. According to her, if we assume that AMC is as efficient as bank in recovering loans, then AMC is always preferred to bank-led restructuring. Aghion et al (1999) find that the second best recapitalisation policy necessitates the recapitalisation effort to be accompanied by liquidation of NPL. [4]

Although our focus of study is to resolve systemic corporate and banking distress, which is dissimilar to idiosyncratic distress faced by a firm or a bank, we use the insights gained from the bankruptcy literature to show that NAMC is best suited to expedite efforts in asset resolution during a systemic crisis. Specifically, we examine

[4] See Chapter 2, pg 64-65 for a more detailed discussion on Mitchell's and Aghion et al's paper.

the features of bankruptcy procedures around the world and understand which ones work and which do not. We then show that those features that work well to resolve financial distress can be conveniently incorporated to a NAMC. In fact, we show that NAMC is able to overcome shortcomings in existing bankruptcy procedures and thus is better positioned to resolve systemic financial distress.

A review on corporate bankruptcy codes around the world provides us important insights into the common building blocks of bankruptcy practices.[5] The main differences among these laws are the extent of court or administrative involvement in the bankrupt firms and the emphasis given to protecting creditors' right and the third party interests. There is minimal administrative or court involvement in the U.K and U.S but most other countries have greater supervision from the relevant authorities. The U.K's bankruptcy laws are more creditors friendly while bankruptcy laws in developing countries and the U.S Chapter 11 have a more debtor friendly procedure. Some countries, France for example, place greater priority in protecting third party interests and thus adopt a more interventionist approach while others believe in market or contractual approach.[6] Hart (1995) argues that external considerations/ third party interests should be excluded from the definition of ex- post efficiency of bankruptcy procedure. He argues that bankruptcy procedure is the wrong instrument to achieve the objective of employment maintenance and he opines that it is better to have general employment subsidy to save jobs than to distort bankruptcy procedures. These

[5] See Bolton (2002) for a brief overview on the evolution of bankruptcy law in the US as well as bankruptcy practices in other parts of the world. Berkovich and Isreal (1999) also provides interesting analyses of comparative bankruptcy law.

[6] Third parties are those not involved in the negotiation process, they could be the workers of the bankrupt firms where employment maintenance is their main concerns.

variations in the bankruptcy procedures arise mainly due to the differences in the law makers' perspective on the functional role played by bankruptcy law in resolving financial distress; the key elements of preventing a run on firms' assets and preserving the value of going concern are common to all however.

When a financially distressed firm defaults on its debt obligation, creditors could exercise its right under debt contract by foreclosing collaterals, invoking bankruptcy or renegotiate with the debtors in order to maximise recovery. Invoking bankruptcy or foreclosing collateral is often not the first best policy as firms which experience hiccups due to macroeconomic shocks are often sound fundamentally and their assets are worth more as a going concern than if sold piecemeal. The foreclosures of assets interrupt the operations of firms leading to piecemeal liquidation of firms; therefore should only be opted for if there are no other means to recover the defaulted loans. Similarly, for various reasons that will be discussed shortly, it is not efficient to rely on bankruptcy proceeding in time of systemic crisis. Therefore, it is not uncommon for financial distress to be resolved outside of bankruptcy; through private renegotiations among stakeholders though private renegotiations have their own sets of limitations as well.

Existing bankruptcy procedure can be divided into two broad categories: auction under liquidation and reorganisation under structured bargaining. Auction works well when it is not difficult for the bidder to raise funds and the market is thus, competitive. However, in time of crisis, there are widespread liquidity problems which could lead to a financing problem. First, it might be difficult for the bidder to obtain financing from financial institutions because they are more risk averse now and they are uncertain about the viability of the entity under auction. Secondly, if a large entity were put on

auction en block, it is difficult to gather a group of investors due to high transaction costs involved in assembling them.[7] In addition, there is a problem of a lack of competition because preparing auction is a costly and time-consuming process and only the winning bidder could recoup the costs incurred. Thus, it may be an equilibrium for just one bidder to enter an auction and win with a low price as the entry of other bidders make everyone worse off (Aghion et al, 1992). The financing and competition constraints are especially acute during systemic crisis because potential bidders are usually from the same industry as the bankrupt entity and they are likely to be hit by the same shock which sharply decrease their ability to bid.

Structured bargaining (e.g. Chapter 11 in the U. S) allows distressed firms to be reorganised under debtor- in- possession model.[8] However, the coupling of the issues of efficiency and distribution often complicates the renegotiation process and causes delay in the resolution process.[9] Baird (1986) is not in favour of reorganisation under chapter 11 as he thinks that the cost of actual sale is likely to be less than that of a hypothetical one (he sees reorganisation as hypothetical sale) ; he argues that additional costs need to be incurred during reorganisations to prevent manipulation and game-playing among the claimholders. In addition, there is the problem of a lack of incentive in initiating bankruptcy procedure. Baird (1991) points out that the beneficiaries of bankruptcy procedures are the creditors as a whole and not individual creditors within the group. He argues that a creditor who is pursuing an individual remedy may have little to gain by

[7] An entity is put on block because the price to sell the company on going concern is much higher than piecemeal liquidation.
[8] Equivalent to Section 176 of the Companies Act 1967 in Malaysia and in Thailand, the new bankruptcy law passed in 1998 to enable companies to reorganise their business.
[9] See Aghion et al (1992), Hart el al (1997).

forcing the debtor to sort out its affair in a collective proceeding, even though it is in everyone's interest to do so. He adds that some creditors are even worse off because they might have been paid in full had bankruptcy not been filed. These, together with problems like an inefficient and corrupted judicial system, underdeveloped and vague law make formal bankruptcy procedures even less dependable in resolving financial distress in countries with weak institutions.

Renegotiation outside bankruptcy, on the other hand, is saddled with frictions that prevent efficient bargaining from taking place. We first identify these frictions and show how NAMC could overcome these frictions by providing a mechanism to facilitate the efficient renegotiation of incomplete contract and thus expediting bank and corporate restructuring.

2.1 The Role of NAMC in Mitigating Bargaining Frictions and Upholding Asset Value during Systemic Financial Distress

In this section, we show that the establishment of NAMC can improve ex-post efficiency by improving coordination among creditors as well as maintaining asset value during bargaining.[10] We first discuss about frictions in renegotiation and outline briefly how a NAMC could overcome these frictions. However, discussing NAMC's role in general could be rather obscured at times; we thus examine Danaharta in details and highlight its role in mitigating bargaining frictions in the next subsection.

[10] We obtain insights from the bankruptcy literature on the features and principles that are essential in reducing bargaining frictions during renegotiation. However, there are many implementation and enforcement problems in bankruptcy law. The establishment of NAMC could rise above these problems and expedite asset resolution process.

Coordination problem among claimholders of distressed firms is most challenging when the number of claimholders increases and this could impede efficient bargaining outcome. Creditors in their effort to maximise the recovery rate could cause 'creditor run', a phenomenon similar to bank runs modelled by Diamond and Dybvig (1983), which could result in the inevitable dismantling of distressed firms. Other than 'creditor run', coordination problems could lead to hold out problem too.[11] It is difficult for creditors of different types to reach an agreement as each group has different priority and there may be conflicts of interest. Besides that, it is possible for one type of creditor to free- ride on the others. For example, some small creditors may insist on not forgiving debts in the hope that larger creditors would do that, since the larger creditors have more to lose if the renegotiation fails. The renegotiation process would come to a standstill if all parties are adamant on their position. Coordination problems could also lead to problem of inefficient investment (Gertner and Scharfstein (1991)).[12] The problems of coordination are largely due to imperfect and asymmetric information among the claimholders of the distressed firms.[13] Morris and Shin (2001) argue that in a situation where stakeholders are uncertain about the fundamentals and information of others, an efficient ex post bargain is unlikely to be struck between them and there is a role of a facilitator who can mitigate coordination problem. A creditor is not able to make an informed decision if she does not know the exact value of a distressed firm. Similarly, if a creditor is not sure of how much a distressed firm owes other creditors

[11] See Brown (1989) for a discussion on hold out problem and how bankruptcy code reduces the bargaining set available to claimholders and thus reduces their incentives to hold out.
[12] See also Bulow and Showen (1978), White (1980), Mooradian (1994) for discussions on bankruptcy and inefficient investment.
[13]Other causes for coordination failure include opportunistic behaviour of claimholders and divergent incentives among the claimholders. We will explain in more details how NAMC could overcome these two causes in our case study of Danaharta in the subsequent section.

and if those creditors are secured, they will either adopt a wait and see attitude or rush to liquidate the firms; neither of which is efficient. A NAMC could overcome the problem of coordination by playing the role of a facilitator. NAMC helps to verify the value of assets and liabilities of the distressed firms and assembles all the relevant parties to discuss a reorganisation plan which could maximise the distressed firms' value. Transaction costs are also reduced substantially with NAMC's coordination as creditors do not have to duplicate efforts and incur costs to find out information about the distressed firms' value as well as information about other creditors.[14] Although bankruptcy procedure plays the same verification role, bankruptcy procedure is usually a long and tedious process and it could take up to years to complete the proceedings, especially in countries with weak legal institutions and thus is not a good alternative for asset resolution during systemic crisis.

It is fairly difficult to maintain firms' asset value during the course of renegotiation. One of the main reasons is that it is not easy for distressed firms to obtain financing for their operation. As a result, productive assets are left idle. This liquidity constraint problem could lead to underinvestment problem which was highlighted by Myers (1977). In addition, the probability of survival of a distressed firm diminishes as firm could not respond strategically to competitors' action due to financing constraints (Bolton and Scharfstein, 1990). Besides that, the difficulty in maintaining firms' asset value is associated with the unresolved issue of who is in a better position to manage firms' asset during the renegotiation period. The incomplete contracting literature tells us that control rights which were initially in the hands of manager should be transferred

[14] See Townsend (1979) and Attar and Campioni (2003) for discussions on costly state verification model.

to creditors when firms failed to pay their debt.[15] However, the value of a distressed firm would be lost if it is inefficiently run by creditors that do not have knowledge and expertise to run the firm. In contrast, if the distressed firm is left with the incumbent management, there is a risk of gambling for resuscitation where the manager decide to venture into risky project or continue operation for too long (Jensen and Meckling, 1976). A NAMC could help to maintain asset value by forcing the relevant party to engage not only in financial restructuring but also operational restructuring. It would be easier for the restructured firms to obtain financing and thus mitigate the inefficient investment problem. In fact, there are instances where a NAMC arranges financing for distressed firms so that they could continue their business as usual.[16] In addition, a NAMC could help to identify who is the best candidate to manage the distress firms. If the NAMC finds that the incumbent management is responsible for the firms' poor financial state, then they could temporarily take over the management while scouting for new management for the distressed firms. This would minimise the risks of asset dissipations as well as ensuring the firms could continue their operation during the interim period.

In improving ex post efficiency, the establishment of NAMC could also affect the claimant's bargaining power and shape the ex ante incentive even though a centralised NAMC is only resorted in systemic crisis and has a finite life span. While we do not rule out the possibility of moral hazard problem where the debtors and the creditors view NAMC as the readily available government bail out, we believe that with

[15] See, for example, Aghion and Bolton (1992) and Hart and Moore (1998).
[16] TAMC, a Thai centralised national asset management company which was set up in 2001, have been sourcing finance for distressed firms.

carefully designed operational structure and procedure of NAMC in place, taking into account ex-ante incentive of stakeholders, such problem is trivial as compared to the benefits offered by NAMC. Danaharta provides a good example of how the operational design of NAMC could minimise the risks of moral hazard, as will be discussed in greater length in the next subsection.

2.2 Case study: Danaharta

2.2.1 Danaharta's Establishment and Legislative Framework

Danaharta, the Malaysian centralised national asset management company was incorporated under the Companies Act 1965 on 20 June 1998 but was given special power to resolve NPLs by virtue of Pengurusan Danaharta Berhad Act 1998. Danaharta came into force on 1 September 1998 and closed its operation on 31 December 2005. Specifically, the Act conferred two special powers to Danaharta. First, the Act enabled Danaharta to buy assets through statutory vesting, thus allowing it to resume the role of the selling bank. The transfer could take place without the debtor's consent, but third party rights were not affected by the transfer. Second, the Act enabled Danaharta to appoint special administrators (SAs) to manage the assets and affairs of distressed firms. In addition, the National Land Code Act was amended to facilitate the implementation of Danaharta Act. The Act allowed Danaharta to buy NPLs that were secured by land in an efficient and economic manner. Danaharta was neither a rapid disposal nor a warehousing asset management company. Its objective was to remove the distraction of managing NPLs from financial institutions so that financial institutions

could concentrate on their intermediation role and to maximise the recovery value of the acquired assets.[17]

2.2.2 The Operational Efficiency of Danaharta

A well-designed operational structure of NAMC should ensure that it could maximise the total value available for the debtor, creditors and other interested party, given the accumulated NPLs in the past. In addition, NAMC should ensure that the ex-ante cost concerning NPLs is minimised. These two criteria are outlined by Hart (1995) as the goals of bankruptcy procedure. He argues that a good bankruptcy procedure should deliver ex-post efficiency outcome in addition to preserving the bonding rule of debt by adequately penalising manager and shareholders in bankruptcy states.

Danaharta could maximise the total value of distressed firms because it could reduce frictions among claimholders. As will be discussed shortly, Danaharta could lessen coordination failure, liquidity constraints and avoid asset dissipation by the management of distressed firms. Thus, the associated problems of under/over investment which could affect the value of the firms were reduced substantially. In terms of ex-ante efficiency, Danaharta had built in sanction mechanism where the management of a distressed firm could be replaced if they were found accountable for the dire state of the firm.

There were several factors that had contributed to Danaharta's ability to achieve both ex-post and ex-ante efficiency. First, Danaharta was empowered with legal mandate which guaranteed the smooth functioning of its operation. For example,

[17] Danaharta Annual Report 1998, pg. 18

Danaharta could foreclose on assets and sell them through private entity, without the debtor's consent; as long as a 30-days notice was given to the debtor. Danaharta's ability to bypass court auction process expedited the process of foreclosing collateral and maximise the recovery value.[18] In addition, Danaharta could sell collateral either through tender, auction or private contract as compared to auction only if the property was foreclosed by financial institutions. This greater flexibility increased the chances of selling off the collaterals.

Second, the ability of Danaharta to appoint Special Administators (SAs) to propose work out plan without usual court process expedited the debt restructuring process. SAs were appointed and assumed controls and management of the assets and affairs of those companies where loan management strategy had failed or Danaharta thought was not viable but still could be turned around with serious restructuring effort. Once appointed, SAs took over the control and management of the assets and affairs of the corporate borrower and a 12 month moratorium automatically takes effect to allow SAs to perform their tasks. SAs had the power to initiate significant changes in the management and improve the operation and procedure of the intervened firms. Given the great power conferred to SAs, check and balance mechanism was in place to ensure there was no abuse of power. Before SAs could be appointed, Danaharta must seek approval from an Oversight Committee consisted of representative from the Ministry of Finance, the Security Commission and the Central Bank. In addition, the workout

[18] Financial institutions, in contrast, have to obtain court orders, which is time- consuming, before they can sell charged properties. (Danaharta Final Report, pg. 14)

proposals prepared by SAs were reviewed by an Independent Advisor.[19] SAs' proposal and Independent Advisor's report were then given o Danaharta for approval.[20] It is important to note that the appointments of SAs had not only delivered ex-post efficiency outcome, it also provided the right incentive for ex-ante efficiency. The appointments of SAs enhanced ex-post efficiency because their involvement expedited not only financial restructuring but also operational restructuring, which was vital so that the restructured debts did not become non-performing again due to operational weaknesses. The fact that SAs could take over the management of distressed firms provided the right incentive for ex-ante efficiency by reducing the risk of moral hazard. Firms' managers or owners would have fewer incentives to take unwarranted risks or engage in unproductive activities ex ante as the management could be replaced or the ownership of the company could change hand ex post if the distressed firms were found unviable.

Third, the carefully designed organisational and operational structures of Danaharta ensured the efficient functioning of its role. Danaharta has finite life structure and its organisation structure was flat and functional as they adopted an outsourcing philosophy where industry experts and reputable consultants' services were acquired when the needs arise.[21] In addition, more than half of the permanent staffs have more than 10 years of working experience and they were the outstanding professionals from

[19] SAs and Independent Advisors (IAs) were outsourced to independent renowned consultancy firms, ensuring the integrity of the work- out process. Among the SAs and IA are consultants from Pricewaterhouse Coopers, Ernst & Young, KPMG, Deloitte Kassim Chan, Horwath, Ferrier Hodgson MH...etc. See Danaharta Annual Report, 2004, pg 124-141 for the list of SAs and Independent Advisors.
[20] See Danaharta Annual Report, 1998, pg. 42.
[21] See Danaharta Annual Report, 1998, pg. 15. Finite life structure eliminated the incentive for managers of Danaharta to deliberately slow down the restructuring process in the hope of prolonging their employment with Danaharta. Similarly, the outsourcing philosophy could eliminate this incentive besides lessening political interference, if any.

banking industry, multinational and management consultancies. It is important to note that financial institutions are skilled in extending loans but not recovering loans. Danaharta, on the other hand, pooled together experts and reaped economies of scale in managing a large number of NPLs in the system. The management of NPLs was made easier in Danaharta as NPLs in the banking system were concentrated. Danaharta only acquired NPLs of RM5 million and above as 70% of the total NPLs in the system was of more than 5 million in gross value.[22]

Fourth, a vigilantly designed incentive structure was put in place to encourage financial institutions to sell off their NPLs to Danaharta. It was crucial to ensure that financial institutions were willing to sell their NPLs to Danaharta. To encourage financial institutions to sell their NPLs, Danaharta let the selling banks retained a right to receive at least 80% of any profits realised from the sold assets. Financial institutions were also given five years to amortise the difference between the book value and the price sold to Danaharta. In addition, in exchange of the non-earning illiquid NPL, banks were getting income generating, readily marketable and zero-risk weighted bond. If a financial institution declined the offer for a NPL purchase made by Danaharta, it was required to write down the NPL to 80% of the offer price and immediately recognise any loss.[23] In so doing, Danaharta compelled the financial institutions to deal with the NPLs problem upfront; it was either for Danaharta to manage bad assets on behalf of

[22] See Danaharta Annual Report 1998, pg. 35. Nevertheless, a NAMC could still be the preferred mean of managing distressed assets even if there were many small and diverse bad loans in the system. All it has to do is to set up several wholly owned subsidiaries, each with a core asset management activity. This would allow polls of expertise to address assets of similar nature. While the organisational structure of the NAMC may become more cumbersome as a result, it is still possible for NAMC to be efficiently run and expedite economic recovery process.

[23] See Danaharta Final Report, pg. 17 for more a detailed discussion on the carrot and stick approach.

them or they have to write down the NPLs, which implied that banks could not sit on the NPLs for too long as happened in countries like Thailand.

2.2.3 Danaharta's Role in Mitigating Bargaining Frictions during the Renegotiation Process

Danaharta attempted to improve asymmetric information among the stakeholders of distressed firms by assessing the business activities, financial position and economic viability of the defaulted firms. Its verification role had helped to ascertain the underlying causes of firms' default and prevented any opportunistic behaviour of debtors to default strategically.[24] Besides that, Danaharta also played an informational role as they could better identify the best time to liquidate the assets of distressed firms and the best uses of these assets.[25] The renegotiation process is therefore less problematic with improved information among creditors.

It seemed that there was less conflict of interests between Danaharta and the debtor; thus it was easier for them to reach an agreement during the renegotiation process. Being set up as a public company with the implicit objective of improving the overall wellbeing of the economy, Danaharta's position was slightly different from the ordinary creditors where their sole aim was to maximise the recovery of their debts. For these creditors, they would sell off the collaterals and firms' assets even though it is better to keep the firm as a going concern. This conflicting interest between the

[24] Danaharta was able to assume this verification role more efficiently than financial institutions due to the fact that Danaharta had legal mandate and also very often Danaharta became the largest creditor in the distressed firm as it acquired assets for the same company from various banks.
[25] See Iacoviello and Minetti (2005) for macroeconomic rationale for the informational role of asset amnagement company.

creditors and the owner/ manager of the firm which may lead to piecemeal liquidation of firms was not apparent in Danaharta's case as Danaharta had a more macro view than individual creditors and had similar objectives as firms to maximise their value.[26] While there were resistance from certain groups of borrowers, many have chosen to collaborate with Danaharta and seeked their professional advice. In fact, Danaharta has renegotiated on the debtors' behalf in the case of firms being acquired by a third party.[27]

There were instances where Danaharta had stepped in to resolve bargaining deadlocks due to uncooperative financial institutions, which suggests that Danaharta played an important role in overcoming coordination problems among banks.[28] In addition, Danaharta's power to appoint SAs has the leverage effects where larger exposure of the distressed firm had been resolved with only a partial exposure by Danaharta.[29] Danaharta's role in coordinating creditors were especially evident when they managed to resolve cases of financial distress where earlier attempts by the same firms to restructure their debt through bankruptcy (reorganisation) route under section 176 failed.[30]

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[26] For example, when an independent advisor reviews a workout proposal prepared by SAs, he has to take into account the interest of other stakeholders of the defaulted firms too and not merely focusing on maximising recovery of Danaharta. However, conflict of interests do arise if the owner of the distressed firms tried to resuscitate the firms by taking excessive risks and was forbid by Danaharta or when both do not share the same view about what is the best way to restructuring the firms.

[27] Danaharta Annual Report 1998, pg. 39 provides such an example.

[28] Danaharta acquire the bad assts from those uncooperative banks and thus expedite restructuring process by granting consent to feasible workout proposal.

[29] There is no minimum amount required for Danaharta to exercise this special power. For example, in the case of Capitalcorp Sdn Bhd, for an exposure of RM30million, Danaharta was able to facilitate the resolution of RM220 million worth of NPLs. For more details, see Danaharta Annual Report 1998, pg. 40.

[30] Danaharta Annul Report 1998, pg. 40

Due to its legal mandate, Danaharta was more likely to ameliorate hold-out problems than banks. The threat of foreclosure of collaterals was real as Danaharta did not have to go through the tedious court process. This would ensure the cooperation of the debtors without delaying the renegotiation process. Similarly, unsecured creditors which would have supported debtor's decision to gamble for resuscitation since they benefit from upside gain but not down side risk have less incentive to do so now. In addition, as both the SAs work-out proposal and independent advisor's report were prepared by the experts from consultancy firms, secured creditors are more likely to accept than reject the proposals.

2.2.4 Asset Resolution: the Role of Bankruptcy Procedures vs Danaharta

At the outbreak of the crisis, Section 176 of the Companies Act 1965, which is akin to the Chapter 11 of the U.S bankruptcy code, provided the only legal framework to facilitate debt restructuring in Malaysia. Section 176 was enacted to allow breathing space for viable businesses to turn around their operation by granting restraining order (RO) to debtors where threats of liquidation and receivership are removed for a period of six to nine months. It is a debtor initiated framework and the Companies Act was more debtors friendly in that the RO could be granted ex-parte and thus creditors were left with little bargaining power.[31] Although theoretically it is possible for creditors to exercise their procedural rights to intervene and set aside the RO, the courts take a long

[31] The law was amended in the last quarter of 1998 where a RO can only be obtained with the consent of 50% of its creditors. However, the risk of creditors being expropriated was not mitigated entirely as an independent manager (similar to SAs in the case of Danaharta) can only be appointed with the prior approval of the court unless the creditor is a debenture holder. See Khoo (1998), Choo (1998) and Thillainathan (2000) for further discussions on Section 176.

time to dispose off such applications owing to the heavy judicial lists. During this 'waiting' period, the management of the distressed firms are able to carry on business as usual whilst funds otherwise available for distributions to creditors in liquidation might be channelled to other unproductive use. Hence, reorganisation through bankruptcy procedure might have been abused by dishonest distressed firms' management and resulted in asset dissipation. Conversely, there is the risk of excessive wait for debtors before initiating bankruptcy procedure. Bebchuk and Chang (1992) argue that debtors have a tendency to delay initiation of reorganisation procedure because there may be a favourable resolution of uncertainty that would cause the value of the firm to exceed its debt value. This delay could incur financial distress costs that would further erode the firm's value. Danaharta could surmount the constraints in the initiation or during the course of reorganisation. Danaharta initiated the reorganisation process as soon as they found the distressed firm not viable; there were no incentives for them to delay as in the case of firms' manager. In addition, Danaharta could appoint SAs to take over the management of the distressed firms, thus halting asset dissipation by the manager. To be sure, we do not argue that bankruptcy procedure is not relevant. All we say is Danaharta had some advantages in asset resolution over bankruptcy procedures. Danaharta was better able to identify if a loan was viable.[32] Viable loans are given the opportunity to be restructured with minimal intervention from Danaharta or other parties. Danaharta would only foreclose the collateral, reorganise the business by appointing SAs or take legal actions if loans were found unviable. The better ability of Danaharta to identify viable and non viable loans reduces the possibility of creating

[32] Danaharta, being a specialist in asset management has an upper hand over court in verifying the financial statues of distressed firms.

type 1 error where inefficient firms are saved under reorganisation or type 2 error where efficient firms are liquidated. The repercussion for this type of mistakes was especially severe during systemic crisis. Too many of type 1 error would drag the recovery of economy as the underlying problems of financial distressed were not addressed. In contrast, too many of type 2 errors would disrupt economic activities, further deteriorate the economic conditions and the corollary unemployment problems could aggravate the problem of social imbalance and cause social unrest.

3. The Evaluation of Danaharta's Performance

Upon termination of its operation in December 2005, Danaharta managed to meet or exceed the benchmarks set for its entire key performance indicators.[33] Even though Danaharta has often been quoted as the success story of NAMC as it managed to lower NPL resolution cost in Malaysia substantially, there is yet no systematic study that evaluates Danaharta's performance in expediting economic recovery.[34] We intend to bridge the gap by examining if Danaharta managed to achieve its broad objective of resolving financial distress in both the banking and corporate sectors. Danaharta's two explicit objectives were to remove the distraction of managing NPLs form the banking system and to maximise the recovery value of those acquired assets. The study of Danaharta's performance indicators alone does not provide a clear picture of how Malaysia's economy would have fared if Danaharta had not been set up. A natural

[33] For details, see Danaharta Final Report, 2005 pg 43-45.
[34] It turned out that banks' restructuring costs; includes Danamodal's cost of RM 0.6 bil and the restructuring cost for Danaharta's managed (RM11.0 bil) and acquired (RM1.0 bil) NPLs, was only at 3% of GDP. It was much lower than the earlier estimate by BNM of 5% of GDP and IMF's of 18% of GDP.

counterfactual is to look at Thailand's performance as Thailand adopted a parallel basic macroeconomic framework as Malaysia; both began to ease their interest rate and employed Keynesian stimulus policy in the second half of 1998. As shown in Figure 1, lending rates in both countries peaked in the second quarter of 1998 and were moving in the same direction with only a small differential since then. Moreover, fiscal stimulus packages were launched in both countries from second quarter of 1998, though with varying degree of intensity and focus. The major policy difference between these two countries was their asset resolution policy. Malaysia had established a NAMC, Danaharta; while Thailand had opted for a decentralised approach where no NAMC was established till June 2001. [35] However, there were institutional differences between Thailand and Malaysia at the onset of crisis. The court procedures related to bankruptcy and foreclosure in Thailand were lengthy then and presented several loopholes to the advantage of debtors.[36] Nevertheless, the subsequent amendment of the bankruptcy laws in 1998 and early 1999 addressed the legal shortfalls and provided a sound legal framework for bankruptcy and foreclosure. Malaysia, on the other hand, had better legal infrastructure in place at the onset of crisis. Nevertheless, both countries did not have many bankruptcy filings of distressed firms as bankruptcy proceedings were often viewed as the last resort and both the distressed firms and creditors prefer to opt for out-of court renegotiation. The stability of political institutions is crucial for economic activities. Although Thailand's had experienced a period of political instability at the

[35] See Chapter 1 for a brief overview of Thailand's decentralised approach.
[36] Many areas of Thai law lacked the sophistication required to appropriately handle difficulties and problems arising from modern day situations. In fact, the Thai Bankruptcy Act of 1940 that was based on English Bankruptcy Act 1914.

onset of crisis under the Chavalit government, situation improved substantially when Chuan government took office in November 1997. As our evaluation of Danaharta's performance centred on the period after 1998, we believe that the institutional frameworks in Malaysia and Thailand were not so far varied that they had contributed to the different pace of economic recovery in these economies. [37]

In the following subsection, we examine the NPL ratio and the real bank credit growth in Malaysia and Thailand. By contrasting Malaysia's performance with that of Thailand, we are better able to underscore Danaharta's role in assisting financial institutions to resume their intermediation role. Next, we look at the recovery rate of Danaharta. As the recovery rate of the 16 AMCs in Thailand were not reported, it was not possible to contrast the recovery rate of the centralised from that of the decentralised approach. However, the general consensus was that there was limited success of asset resolution by these AMCs in Thailand.[38] In our effort to highlight how Danaharta had maximised the recovery value, we outline the problems that were faced by Thailand but absent in Malaysia. These problems existed primarily because Thai's banking system was still encumbered with NPLs. We believe that had Danaharta not been set up to carve out NPLs from the banking system, Malaysia might have encountered the same problem as Thailand.

[37] Nonetheless, the DID model that we use in the subsequent section takes care of possible institutional difference in these two countries.

[38] The Chairman of the Thai Bankers Association strongly urged for greater government involvement in resolving NPLs as the market based decentralised approach failed to resolve problem of NPL till late 2000 (Jiwamol, 2000). See also Veerathai (2003) on discussion about problems of asset resolution under the decentralised approach. The inefficiency in the decentralised approach had eventually brought about the establishment of a TAMC in June 2001.

3.1 NPL Ratio and Real Bank Credit Growth

After Danaharta's primary carve out exercise in September 1998, the rate of increase of NPLs began to decline at a steady rate of 5 percent a month as compared to rising at 0.9 percent a month prior to its establishment.[39] Table 1 depicts the NPL ratio of Malaysia and Thailand. Both Malaysia's and Thailand's NPL declined steadily from 1998-2005, except in 2001 due to the sluggish world economy. Table 2 shows the real bank credit growth rate of Malaysia and Thailand. Malaysia experienced a contraction of credit in 1998 and 1999 but has since then recovered. This data suggests that Malaysia's banking sector had recovered from the crisis since 1999. Thailand, on the other hand, experienced negative real bank credit growth rate for four years consecutively, from 1998-2001, suggesting that financial institutions might not have resumed their intermediation role. It appears that the NPL ratio in Table 1 masks the real problems of asset resolution in Thailand. Table 3 reveals the puzzling fact about the asset resolution policy failure in Thailand. From the second half of 2000, re-entry NPLs exceeded new NPLs and this carried on till 2003. This data raises doubt about the extent of material workout in Thailand. It seems that doubtful and irrecoverable credits were only being rescheduled. This misclassification of scheduled loans as performing loans implies that the banking system was still vulnerable since material debt restructuring had yet to gain momentum, as evident in the negative real credit growth rate. It is interesting to note that bank real credit growth rate began to recover in 2002 and the NPL re-entry level started to improve in 2004, signifying the role played by the NAMC, Thai Asset Management Corporation (TAMC), which was set up in June 2001.

[39] Danaharta final Report 2005, pg 46.

Table 1: NPL Ratio (%) in the banking system, 1998-2005

	Thailand[a]	Malaysia[b]
Dec 1998	45.02	13.6
Dec 1999	38.93 [c]	11.0
Dec 2000	17.73 [d]	9.7
Dec 2001	10.41	11.5
Dec 2002	15.65	10.2
Dec 2003	12.70	8.9
Dec 2004	10.73	7.5
Dec 2005	8.16	5.8

Note: [a] NPL = past due loans over 3 months. However, the definition has been changed from Dec 2002 to loan classified as substandard, doubtful, doubtful of loss and loss.
[b] Ratio are computed on a net basis. NPL=NPL – interest in suspense–specific provision
[c] NPL peaked in May 1999 at 47.7%
[d] NPL still stood at a high of 31% in July 2000

Source: Bank of Thailand (BOT) website , Annual Report, Bank Negara Malaysia.

Table 2: Real Bank credit Growth Rate (%), 1997-2005

	Malaysia	Thailand
1997	20.18	13.57
1998	-2.31	-11.29
1999	-0.64	-6.04
2000	4.64	-17.16
2001	3.30	-11.07
2002	5.04	14.91
2003	4.63	4.95
2004	20.51	2.38
2005	13.41	2.23

Source: ARIC, ADB Database

Table 3: NPL Re-entry in Thailand, 1999-2005

	Total NPL increasing amount (million baht)	Re-entry NPL (million baht)	Re-entry NPL as a percentage of Total increasing NPL (%)
1999	170,093	32,661	19.20
2000	490,771	209,707	42.73
2001	406,124	235,772	58.05
2002	373,553	225,639	60.40
2003	305,650	207,961	68.04
2004	288,829	140,887	48.78
2005	308,431	98,300	31.87

Source: BOT and author's derivation

3.2 Maximising Recovery Value: Opportunity Costs of Decentralised Approach

Danaharta's expected recovery rate upon its termination of operation was 50% for its acquired NPLs. These NPLs were acquired at 54.6% discount.[40] After deducting the holding costs and surplus sharing with transferring banks, Danaharta recorded zero profits or incurred marginal loss in its entire span of operation. While this data suggests that Danaharta had achieved its narrow objective of maximising the recovery rate of acquired assets, it does not tell us anything about Danaharta's role in reviving economic recovery.[41] We attempt to examine Danaharta's role in this regard by outlining the problems that were faced by Thailand due to its high NPLs that choked its banking system.

Thailand had paid high opportunity costs for failing to resolve problems of NPLs. The ailing banking system as a result of failed asset resolution policy meant that the system was not able to support government's effort of pump- priming. The spill over effects from fiscal stimulus package was minimal because of poor credit growth. Banks were using high interest rate spread to fund NPLs and maintain liquidity. Therefore, as long as NPLs were left in the system, the government's stimulus efforts would be thwarted as bank lending was hindered by high borrowing costs.[42] Moreover, financial institutions would rather park their money in government bonds instead of lending out because of unresolved financial distress in the corporate sector. The

[40] The total recovery rate for was at 59%. Besides acquiring NPLs from financial institutions, Danaharta also managed NPLs on behalf of BNM on assets of two earlier closed down problem banks.
[41] As pointed out earlier, Danaharta contributed to economic recovery by clearing bottleneck in the banking system due to the presence of NPLs as well as promoting corporate restructuring.
[42] See Pasuk and Baker (2004).

exponential growth of government bond in 1997-2000 from 300 billion baht to 1 trillion baht supported this allegation (Jarvis, 2002).

Thai's decentralised approach also failed to discipline debtors and resulted in moral hazard problems in the form of fake or strategic NPLs. Despite their strong servicing capacity, some debtors intentionally refused to service their debt. These fake NPLs were estimated to amount to one- third of reported NPLs (Pakorn, 2001). Ammar (2001) offers justification for such strategic behaviour. According to him, not all debtors defaulted strategically because of ill intention. These firms were forced to withhold payment because of severe liquidity shortage; they need to conserve cash flow as working capital. There was no such fake NPL reported in Malaysia. The establishment of Danaharta prevent liquidity constraints as discussed earlier. In addition, Danaharta was equipped with necessary legal power and expertise to discourage any strategic move from the debtors.[43]

The decentralised approach had also resulted in a shift in capital ownership structure in Thailand. The post-crisis period witnessed huge foreign direct investment inflows to buy up beleaguered companies at very cheap prices. Foreign companies, mostly from the west, were keen in export- oriented manufacturing, financial and modern retail sectors. Of the 13 commercial banks, 4 smaller units were acquired fully or majority by foreign owners. Besides that, foreign ownership in the four largest banks rose to 49 per cent. Foreign ownership was seen in most brokerages and insurance companies too. Two Thai owned modern retail chains were sold and 5 European chains entered the market and took the opportunity to expand while land and other prices were

[43] The threat of bankruptcy and foreclose was real, thus preventing opportunistic behaviour from the debtors.

cheap and competition collapsed (Pasuk and Baker, 2004). There were relatively fewer cases of acquisition of distressed firms by foreign companies in Malaysia and the sale of firms' assets were not done in a hap- hazard and hurried way as Danaharta's whose objective was to maximise recovery value of firms' assets had opted for efficient management of distressed assets rather than rushing to dispose off assets. Danaharta was able to 'wait' for the right timing to dispose off distressed assets because being funded by the government; they were faced with less liquidity constraint. Therefore, there was less incidence of selling distressed firms' assets to foreign companies at exceptionally low price in Malaysia.[44] To be sure, we do not oppose the entry of foreign investment. However, allowing this in the depth of crisis was a cause of profound concern. This was because local businesses were in a disadvantage position as they were cash-strapped and banks were not lending. Consequently, a market- based approach essentially means selling domestic assets and property at a very cheap price to foreigners because of a lack of demand from the local. We therefore argue that the entry of foreign investors which had resulted in a shift of ownership structure in Thailand should be viewed as a cost to Thailand. Our argument is consistent with Krugman's (1998) where he asserted that the acquisitions by foreigners at fire-sale price might have resulted in a net transfer of wealth from the crisis economies.

[44] See Shleifer and Vishny (1992) for a discussion on how liquidity constraint would distress assets price further.

4 The Role of Danaharta in Improving Corporate Sector's Performance

In this section, we evaluate the corporate sector's performance in Malaysia and examine if it was the establishment of Danaharta that had contributed to the better performance of the corporate sector. By removing the distraction of managing NPLs from the system, Danaharta enabled financial institutions to resume their intermediation role and this had assuaged liquidity problems in the corporate sectors and assisted them in carrying out business as usual. Besides promoting banking sector restructuring by acquiring NPLs from the system, Danaharta also facilitated corporate sector restructuring by providing professional advice to distressed firms or intervened directly in the management of the distressed firm by appointing SAs. Danaharta's involvement was important to promote serious financial and operational restructuring in Malaysia and it also helped to prevent domino effects which could result in widespread financial distress. Based on this line of reasoning, we believe that the establishment of Danaharta could improve the corporate sector's performance as a whole. We test our hypothesis by constructing difference-in-differences (DID) model to look at the corporate sector's performance after the establishment of Danaharta.

4.1 Empirical Framework

Before we proceed to discuss our empirical framework, we first outline the general idea of DID model, its common usage in the area of economics and the advantages and limitations of the model. DID is a method to compare outcome before and after a policy change for a group affected by the change (treatment group) to a group not affected by the change (control group). DID models have been used to

analyse a wide range of issues, especially in the area of labour economics (Card 1990; Card and Krueger1994; Kang et al 2006).[45] DID estimates are less subject to criticism about omitted variables or model specification bias due to the use of untreated comparison group. However, there are a few common problems with DID estimates. First, the problem of 'Ashenfelter dip' occurs if there is a breach of the pre-condition of the validity of DID assumption; that the policy is not implemented based on the pre-existing differences in outcome. This could lead to upward bias of the DID estimate of the policy effect. Second, we have to be cautious about the long term response and reliability trade- off when adopting DID model. DID estimates are more reliable when we compare outcome just before and after the policy changes because the underlying assumption of parallel trend is more likely to hold over a short time window. Over time, many things might change and confound the policy change effects. Hence, DID model might not be suitable to study long term effect of a policy even though it is always interesting to know the medium and long term effects of a policy.[46]

The 'Ashenfelter dip' problem, which is often found in labour economics models, does not seem to pose a threat on the validity of our model. One of the popular research areas in labour economics was to study the effects of a training programme on workers' earning. Ashenfelter and Card (1985) argue that the participants for training programme often experience a decline in their income right before they enrol for the programme (in fact this is the main motivation for them to enrol for the programme in the first place). As wage has a natural tendency for mean reversion, the DID estimates is

[45] For theoretical discussions of the DID model, see Meyer (1995), Bertrand et al (2004), Lee and Kang (2006)

[46] See Meyer for more detailed discussions about the threat of internal and external validity.

thus biased upward. Our model does not suffer from this problem as both the treatment and control group was at the depth of the crisis before the introduction of a policy (i.e. establishment of a NAMC) in Malaysia. In other words, there were no pre-existing differences in outcome in these two countries and thus our model is less likely to be subjected to upward bias as in the case of the effects of training programme on workers' income.

The empirical tests examine the corporate sector's performance in Malaysia over the period 1998 to 2000. Danaharta was established in June 1998; hence we take 1998 as pre-establishment period and the average of 1999 and 2000 as post establishment period.[47] We take Thailand as the control group in our model because there was no NAMC established in Thailand until 2001.[48] For estimation, we use the following difference- in- differences (DID) model.

$$y_{it}^{j} = \alpha_0 + \alpha_1 d_t + \alpha_2 d^{j} + \beta d_t^{j} + \sum \gamma Z_{it}^{j} + \varepsilon_{it}^{j} \qquad (1)$$

where y_{it}^{j} is the return on asset (ROA) for firm i in period t. d_t is the period dummy; $d_t = 1$ for post 1998 and 0 otherwise. d^{j} is the group dummy where $d^{j}=1$ for firms in Malaysia and 0 otherwise. The interaction term, d_t^{j} is the treatment dummy; it is a dummy variable for being in the experimental group (Malaysia) after it receive the treatment (after the establishment of Danaharta, that is post 1998).

[47] Danaharta began acquisition of NPLs in November 1998 and first appoint SAs in January 1999. Most restructuring efforts only took place in 1999. We thus allow half a year of lag effect (Danaharta was incorporated in June 19998) and take the average of 1999 and 2000 as the 'post-intervention' period. 1998 is treated as the 'pre-intervention' period as both Malaysia and Thailand were in the depth of the crisis in 1998.

[48] Thailand set up Asset Management Corporation (AMC) in 1997 to participate in The Financial Sector Restructuring Authority's (FRA) auctions of assets of suspended finance companies as the bidder of last resort. However, the AMC was not allowed to acquire bad assets from open institutions, In addition, there was no special power granted to her. Though the name sounds like a NAMC, in actual fact it was not.

From equation 1, we know that

$$E(y|d_t = 0, d^j = 0) = \alpha_0 + \sum \gamma Z_{it}^j \quad (2)$$

$$E(y|d_t = 1, d^j = 0) = \alpha_0 + \alpha_1 + \sum \gamma Z_{it}^j \quad (3)$$

$$E(y|d_t = 0, d^j = 1) = \alpha_0 + \alpha_2 + \sum \gamma Z_{it}^j \quad (4)$$

$$E(y|d_t = 1, d^j = 1) = \alpha_0 + \alpha_1 + \alpha_2 + \beta + \sum \gamma Z_{it}^j \quad (5)$$

We minus (2) from (3) and get (6),

$$\alpha_1 = E(y|d_t = 1, d^j = 0) - E(y|d_t = 0, d^j = 0)$$

$$\Rightarrow \alpha_1 = E(y|d_t = 1) - E(y|d_t = 0) \text{ for } d^j = 0 \quad (6)$$

Therefore, α_1 is Thailand's difference in outcome post and pre 1998.

We minus (2) from (4),

$$\alpha_2 = E(y|d_t = 0, d^j = 1) - E(y|d_t = 0, d^j = 0)$$

$$\Rightarrow \alpha_2 = E(y|d^j = 1) - E(y|d^j = 0) \text{ for } d_t = 0$$

Therefore, α_2 is the pre 1998 period difference of *y* for Malaysia and Thailand.

We minus (4) from (5) and get (7),

$$\alpha_1 + \beta = E(y|d_t = 1, d^j = 1) - E(y|d_t = 0, d^j = 1)$$

$$\Rightarrow \alpha_1 + \beta = E(y|d_t = 1) - E(y|d_t = 0) \text{ for } d^j = 1 \quad (7)$$

We minus (7)- (6) and get difference- in- differences (DID) estimate, β . β is to correct the simple difference before and after for the treatment group by subtracting the simple difference for the control group. β is an unbiased estimate of the effect of the policy changes if, absent the policy, the average $y_1 - y_0$ would have been the same for both treatment and control group.

From the above exposition, we know that α_1 summarises the way both group are influenced by time while α_2 represents time-invariant differences in overall mean between these groups. Hence, α_1 captures common changes like macroeconomic conditions and regional growth trend while d^j corrects for country specific characteristics. We also include Z_{it}^j as additional explanatory variables to adjust for observable differences between the two groups, thus improving the efficacy of the estimate of β by reducing residual variance. Specifically, Z_{it}^j is company- specific control variables which include liquidity ratio, leverage ratio, firm's short run exposure (measured as short term debt to total debt), and size (measured as the logarithm of sales). To control for industry differences across firms, we include industry dummies (based upon Industry Classification Benchmark (ICB) classification) in the regression.

4.1.1 The Data

The sample comprises a set of non- financial public listed companies in Malaysia and Thailand for the period of 1998-2000, obtained from Osiris, Bureau Van Dijk (BvDEP) database. We have limited our sample to non- financial companies as the aim of this study is to examine how the resumption of bank lending assisted corporate

sector recovery. Financial companies were undergoing different sets of restructuring activities and some of them received government's capital injection. Hence, they should not be included in our sample. Our sample selection proceeds as follows. We first collected data for all the non- financial companies that were listed in the stock exchange for both countries. Next, we have excluded from our sample companies that had missing data for the entire sample period, 1998-2000, as these companies underwent reorganisation or bankruptcy procedure during this period and thus there was no reporting of their financial statement. This left us with a total of 587 firms in Malaysia and 265 firms in Thailand in our sample.[49] Table 4 presents some of the summary statistics.

4.1.2 The Comparability between the Experimental and Control Groups

The underlying assumption of DID model is that of equal trends of performance in the absence of treatment. Table 5 shows that Malaysia and Thailand's Stock Market Composite Index had similar trends. Thus, it suggests that the corporate sector's performance in these two countries were comparable.[50]

[49] The data might be contaminated as there were cases where firms did not report their financial statements due to reorganisation, especially in Thailand. Hence, our result might over report the extent of corporate sector's recovery in Malaysia. To overcome this shortcoming, we have considered taking 2001 (where both countries have adopted the centralised policy) as the control and check if there was difference in performance prior to that. However, this comparison is not ideal either as even though both countries had adopted the same policy, the NAMC in these countries were somewhat different in terms of mandate given to them. In addition, the design and structure were also not identical, making them not comparable.

[50] We assume that the stock market composite index which reflects investors' sentiment is representative of the fundamental performance of the corporate sector.

Table 4: Summary Statistics: ROA (independent variables)

		Mean	Median	Minimum	Maximum	Std Dev	Obs
Unbalanced Data							
Malaysia	pre	-3.29	1.34	-276.83	68.70	28.56	587
	post	1.95	3.57	-101.58	39.89	12.86	
Thailand	pre	4.57	4.88	-38.92	41.12	12.19	265
	post	-3.05	2.62	-295.03	109.23	31.20	
Sub-sample: firms in industry of basic material and industrial according to ICB structure							
Malaysia	pre	-0.73	2.38	-215.61	68.70	29.32	193
	post	3.77	5.78	-91.45	39.89	12.99	
Thailand	pre	4.82	6.52	-29.95	41.12	11.53	126
	post	2.21	4.75	-112.82	109.23	19.86	
Balanced Data							
Malaysia	pre	0.18	1.56	-183.27	68.70	17.41	428
	post	2.24	3.00	-66.13	32.86	9.86	
Thailand	pre	4.75	5.02	-38.92	38.01	11.20	96
	post	2.87	3.39	-20.71	28.57	9.22	

Table 5: Stock Market Composite Index: as at end1996-2000

		1996	1997	1998	1999	2000
Malaysia	Index	1,237.96	594.44	586.13	812.33	679.64
	% change		-52.0	-1.4	38.6	-16.3
Thailand	Index	831.57	372.69	355.81	481.92	269.19
	% change		-55.2	-4.5	35.4	-44.1

Source: EIU

4.1.3 The Tests

We first estimate equation 1 by including all the firms in the sample. While including all firms in the sample would subject our model to less constraint and has the benefits of capturing the overall changes in the corporate sector's landscape, our results might be biased if the problem of sample attrition is non- negligible. During the crisis years, many firms got into financial difficulties and were subject to reorganisation plan or were even forced to exit from the industry. There was thus no reporting of financial statements from this group of firms. Two states were observed. First, firms that were having huge losses in the depth of the crisis (1998) might have exited (either temporary or permanently) in the post 1998 period. Second, firms which temporary exited from the industry in 1998 might eventually declared their losses in the post 1998 period. This phenomenon was especially apparent in Thailand. Therefore, our results might overstate the extent of recovery in the corporate sector. To overcome this problem, we complement our analysis by estimating equation 1 using balanced data. Balanced data, on the other hand, totally ignores the movement and changes in the corporate landscape, thus it may not provide a true extent of the corporate recovery in Malaysia as well. We believe that the extent of corporate recovery in Malaysia is likely to lie in between these two extremes.

4.1.4 The Results

4.1.4.1 Primary Results

Table 6 presents OLS models of the corporate sector's performance in Malaysia after the establishment of Danaharta in 1998, as defined by equation 1. Table 6(a) shows the results for unbalanced data while Table 6 (b) for balanced data. The treatment dummy has significant positive coefficient in the post establishment period for both sets of data, though with varying degree of improvement in the corporate performance and the level of statistical significance. As depicted in table 6(a), the ROA for public listed firms in Malaysia has improved by almost 8.7 points in the post 1998 period if we include all firms in our sample in the regression. However, as discussed earlier, this result might overstate the extent of the recovery of the corporate sector; a balanced data reveals that ROA has increased by almost 4.1 points only (see Table 6(b)). The actual contribution of the establishment of Danaharta in terms of an increase in the ROA should lie somewhere in between 4.1 and 8.7 points. Note that both our results from balanced and unbalanced data show that Thailand's corporate sector's performance post 1998 worsened as compared to pre 1998. As discussed earlier, Thailand's NPLs are left in the banking system, choking up the banking system and stifling credit growth. This liquidity crunch affects corporate business and profitability.[51]

[51] Note that this finding reinforces our earlier argument and discussion in section 3 that Thailand fared worse than Malaysia because of its decentralised approach.

Table 6: OLS model of the effect of the establishment of Danaharta
Dependent variable is return on assets (ROA). Intercepts and industry dummies are not reported. We report heteroskedasticity consistent standard errors in parenthesis.

Explanatory variables	(a) unbalanced data	(b) balanced data	(c) Sub-sample: Industrial and basic material	(d) balanced data: difference (eq.2)
leverage	0.0711 (0.0670)	-0.0664* (0.0374)	0.7693* (0.4174)	
liquidity	0.8558* (0.4654)	1.7330*** (0.3036)	1.3952 (0.9119)	
short run exposure	-2.4880 (2.7610)	1.9282 (1.7383)	-6.0000 4.3550	
size	7.2943*** (1.2563)	4.6907*** (0.8860)	7.5145*** (1.7813)	
group dummy, d^j	-5.9884*** (1.7604)	-3.7252*** (1.3908)	-6.9332** (3.2575)	4.3389*** (1.5475)
period dummy, d_t	-4.2513** (1.8358)	-2.5973* (1.4076)	-4.3555 (2.9860)	
treatment dummy, d_t^j	8.6936*** (2.3526)	4.0978** (1.6949)	8.8608** (3.7953)	
sample size	852	524	319	524

*, **, *** superscripts indicate statistical significance at the 10, 5 and 1% level, respectively (two-tailed t –test)

4.1.4.2 Robustness Checks

To check for robustness of our result, we examine the post crisis performance of a sub-sample of firms; firms from the industrial and basic material, according to ICB classification. According to our hypothesis, by carving out NPLs and restoring the banking system, Danaharta was able to alleviate liquidity constraints and accelerated corporate sector recovery. Firms in industries and basic material were the hardest hit

during the crisis as they were usually large and highly leverage; some even with foreign exchange exposure. However, these firms in the industry were able to recover quickly because banks were able to extend loans to them to help them to tie over liquidity constraints with less interruption in their conduct of business. The subsequent corporate restructuring that took place also helped them to focus on the core business and improve their balance sheet. There were also less unfounded foreclosure of assets that could distract the operation and profits of the distressed firms, a phenomenon that would have happened if panicky creditors were rushing to recover their loss as quickly as possible. Hence, the recovery of this sector of industry should correctly reflect the extent of corporate recovery in Malaysia as a result of the establishment of Danaharta. Table 6(d) shows the regression results for firms in the industry of industrial and basic material. The treatment dummy in this regression has similar magnitude as that of all firms in the economy, suggesting that our results are robust.

We also estimate the DID model by using difference instead of level data as specified in equation 1.[52] Thus, we have

$$\Delta y_i^j = \alpha_1 + \alpha^1 d^j + \sum \gamma(\Delta Z_i^j) + \varepsilon_i^j \qquad (8)$$

where Δy_i^j is the growth of ROA over 1998 to 2000 period.[53] d^j is the group dummy where d^j=1 for firms in Malaysia and 0 otherwise. ΔZ_i^j is the growth of company-specific control variables. We find that the coefficient for treatment dummy for

[52] Note that we have to use balanced data to get difference. α^1 of equation 8 should give similar reading as β of equation 1. Both coefficients look at the treatment effect; the former from difference while the latter from level data.

[53] Again, we take 1998 as pre- establishment period and the average of 1999 and 2000 as the post establishment period.

regression using equation 8 is around 4.3, similar in magnitude to the 4.1 points obtained from equation 1 for balanced data (Compare Table 6(b) and 6(d)).

4.2 Could the Better Performance be Due to Factors other than the Establishment of Danaharta?

Our results show that Malaysia's corporate sector performed better post 1998. However, many events took place in 1998. Other than the setting up of Danaharta, the authorities also set up Danamodal to recapitalise financial institutions and the Corporate Debt CDRC to facilitate out- of- court restructuring. In addition, the government imposed the much debated capital controls in September 1998. Could the better post 1998 corporate performance a consequence of these factors and not the establishment of Danaharta? We explore some alternative explanations before drawing the final conclusions.

4.2.1 Other Possible Explanation: Voluntary Out of Court Debt Restructuring via the London Approach Framework

Many countries designed an out- of- court corporate debt workout framework to assist corporate sector restructuring, irregardless of whether they have opted for decentralised or centralised approach in asset resolution.[54] Both Malaysia and Thailand set up a corporate debt restructuring committee (CDRC) to facilitate the resolution of corporate debts by providing a platform for both borrowers and creditors to work on restructuring. This voluntary debt workout framework takes after the London approach

[54] See Woo (2000) for a careful analysis of the out-of –court restructuring framework, the strength, weaknesses and its roles in resolving NPLs.

where the regulator acts as a facilitator to gather the creditors and debtor together to work out a mutually beneficial out of court arrangement. However, unlike Malaysia, Thailand did not have a centralised national asset management company until the middle of 2001. So, the improvement in the performance of the corporate sector in Malaysia was more likely due to the presence of Danaharta than CDRC. In addition, the success of this voluntary framework was limited. In Malaysia, CDRC only succeed in restructuring 57 accounts, which is 1/3 of debts for which CDRC's help was sought.[55] There were 11 cases that were transferred to Danaharta, suggesting that Danaharta, equipped with legal mandate, was better able to resolve bargaining frictions during the renegotiation process.[56] CDRC's less than satisfactory performance was not unanticipated; as pointed out by Meyerman (1999). London Approach has several intrinsic limitations and the efficacy of the London Approach is linked to the particularities of its origin and context. He argued that the London Approach is embedded in a set of cultural, economic and social institutions that are peculiar to Great Britain, but absent in the East Asian countries.[57] In addition, there are numerous studies which find that out- of- court debt restructuring with many creditors are likely to fail.[58] These empirical studies mainly examined distressed firms in the U.S and their findings reinforced the fact that out- of- court restructuring could achieve limited success.

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[55] Some applications were withdrawn due to subsequent economic recovery while others were too complex that the government had to step in, essentially bailed out companies through deprivatisation or renationalisation. For example, Petronas, the national Oil Company, bought into shipping, air transport and automobile entities while Ghazanah, the government investment arm, acquired equity in telecommunications. Whether these were evidence of cronyism is subject to dispute as these companies were in strategic industries.

[56] Note that Danaharta managed to resolve 100% of NPLs acquired by them.

[57] These elements include a culture of cooperation, a commitment to justice and the existence of an efficient framework for bankruptcy and insolvency.

[58] See Gilson, John and Lang (1990), Gilson (1997), Hotchkiss (1995), Frank and Torus (1989, 1994).

4.2.2 Other Possible Explanation: Bank Recapitalisation

Both the Malaysian and Thai government offer to inject capital to FIs to help guard against the financial system's solvency. The key difference between these two countries' approach was that Malaysia's recapitalisation efforts are not separated from efforts to carve out NPL from the banking system. In fact, Danamodal, the special purpose vehicle to recapitalise weak financial institutions, had conditioned its capital injection to transferring of NPLs to Danaharta if the NPLs ratio of receiving financial institutions was above 10%. In addition, Danamodal and Danaharta efforts were coordinated by a steering committee chaired by Bank Negara Malaysia. However, it was difficult to attribute the better performance of corporate sector in Malaysia to recapitalisation approach alone as recapitalisation only resolve financial distress in the banking sector and not the corporate sector and it did not solve the underlying weakness in both the banking and corporate sector. We see the recapitalisation efforts as a 'tool' to achieve the ultimate objective of restructuring. Financial institutions need to be recapitalised so that they could embark on real restructuring which require them to have the capacity to absorb losses from their NPLs. This would ensure that Danaharta could go ahead with its carving out of bad loans from the system without worrying about pushing financial institutions into insolvency.

4.2.3 Other Possible Explanation: Capital Controls

In Malaysia, the government introduced the much controversial capital control measures in September 1998. Could the corporate recovery be due to the introduction of capital control and not because of the establishment of Danaharta? While it has now

been clear that the pegging of Ringgit and the imposition of capital controls provided some certainty at the time of unprecedented financial turbulences, we think that the role of capital controls in Malaysian recovery should not be exaggerated, as aptly pointed out by Jomo (2005), capital controls should be viewed as "necessary means to other policy objectives, rather than ends in and of themselves".

The literature of capital controls in Malaysia does not provide a definite answer to whether the imposition of capital controls was vital for the speedy recovery of the Malaysian economy. Krugman (1998) affirms the stabilisation effect brought about by capital controls. His arguments are in tandem with Bhagwati (1998) and Rodrik's (2000) analyses that capital market liberalisation invites speculative attack. Similarly, Eichengreen and Leblang (2002) argue that controls are only useful in a period of financial instability where the insulating capacity of controls is valuable. Edison and Reinhart (2001) find that Malaysia enjoyed more policy autonomy as well as exchange rate and monetary stability with the imposition of capital controls. Doraisami (2004) argues that capital controls enabled expansionary policies without having to worry about capital flight. In addition, the predictability brought about by the pegging of ringgit and the low interest rate boosted the export and financial sector. Capital controls also facilitated the recovery with less political and economic dislodgment which has often been associated with market oriented reforms. Her findings are consistent with Authokorala's (2001), which concludes that capital controls enabled Malaysia to head for recovery with lesser social costs and economic disruption that often accompanied a market-based approach. The positive effects of capital controls were further supported by Kaplan and Rodrik's (2001) empirical evidence on the aggregate effects of the

Malaysian controls. By using time- shifted difference- in- differences model, they conclude that the controls have helped Malaysia to avert another crisis that had yet to hit Malaysia.

On the contrary, many argue that controls were imposed too late; after a big depreciation and after a large amount of capital had already left the country and hence limit the potential macroeconomic benefits. Dornbusch (2001) argues that capital controls were introduced at a time when market had already started to settle and interest rate was already falling as a result of US interest rate cut. Tamirisa (2001) also shares the same scepticism that the benefits of capital controls cannot be clearly established while Fane (2000) and Nambir (2003) argue that capital controls had done more harm than good to Malaysia. There is another group of academics and analysts who are doubtful of the effectiveness of capital controls because they tie controls to cronyism (Rajan and Zingales, 2003; Johnson and Mitton, 2001). A recent study by Johnson et al (2006) find that there is no evidence that capital controls were essential for economic recovery or structural reforms in Malaysia.

We argue that capital controls were important as they made pegging of Ringgit sustainable. These complementary measures provided stability and predictability which helped the authorities, banks and businesses to focus on the restructuring effort. However, these measures, by themselves would not have contributed to the better performance of the corporate sector. The main drive to better corporate performance is the ability to resolve financial distress in both the banking and corporate sectors. Without the carving out of NPLs and corporate debt workout, the recovery would be sluggish as assets and resources associated with NPLs were locked in the financial

system. As discussed earlier, Danaharta, Danamodal and CDRC were established to deal with these restructuring efforts. We would like to emphasise that the capital controls have helped to expedite the restructuring efforts because it forestall possible leakages that might have undermined the government-led restructuring efforts. For instance, international investors might not be comfortable with the great power granted to Danaharta and attacked on transparency issues, resulting in capital flight and upset the restructuring plan. Hence, without the capital controls, government-led restructuring efforts might be faced with baseless accusation which unnecessarily slowed down the restructuring efforts that are crucial for sustainable recovery. Another example of capital controls measures that had helped to reduce the disturbance to restructuring efforts is the closing down of over- the- counter offshore market in Singapore (the CLOB or central limit order book)[59]. This had prevented large sum of Ringgit from being taken abroad or any kind of manipulation that might stifle the restructuring efforts. The examples can go on; it is unambiguous that the Malaysian capital controls were effective as a tool to achieve the wider objective of facilitating bank and corporate restructuring, in an effort to revive the economy.

Theoretically, the imposition of capital controls allows the government greater autonomy over monetary policy.[60] The easing of interest rates benefits corporate sectors that were highly geared as it is now less expensive to service their debt. It is also advantageous for the banking sector with reduction in loan default with the more affordable interest rate. This means banks need to set aside lesser capital for NPL

[59] This had effectively ceased trading of Malaysian securities in CLOB.

[60] The impossible trinity suggests that it is impossible to have monetary independence, perfect capital mobility and exchange rate stability at the same time. With the imposition of capital controls and pegging of Ringgit, Malaysia could ease monetary policy based on domestic policy objectives.

provision and this is particular helpful when there is a widespread undercapitalisation problem in the banking sector. These direct and indirect effects help to reduce NPLs and capitalisation problems in the financial sectors while at the same time lessen the stress experienced in the corporate sectors. However, we find that Thailand, without having to impose capital controls, managed to ease interest rates almost at the same time as Malaysia (see figure 1 & 2); suggesting the overestimation of the monetary autonomy argument.

The above discussions suggest that Malaysia's better corporate performance was unlikely to be mainly due to the imposition of capital controls. In fact, it had never been the government's intention to employ capital controls as a tool to promote corporate recovery.[61] Therefore, we argue that our results do support our hypothesis that the establishment of a centralised asset management company promote corporate debt restructuring as well as the resumption of financial institutions' intermediation role which had led to better corporate performance post 1998.

[61]Official press release that accompanied the introduction of capital controls underscore the following objectives: 1) to limit the contagion effects of external development on the economy; 2) to preserves the recent gains made in terms of the policy measures to stabilise the domestic economy; 3) to ensure stability in domestic prices and the ringgit exchange rate and to create an environment that is conducive for a revival in investment and consumer confidence and facilitate economy recovery. (Bank Negara Press Release: Measures to Regain Monetary Independence, September 1, 1998)

Figure 1 Malaysia and Thailand: Lending Rates

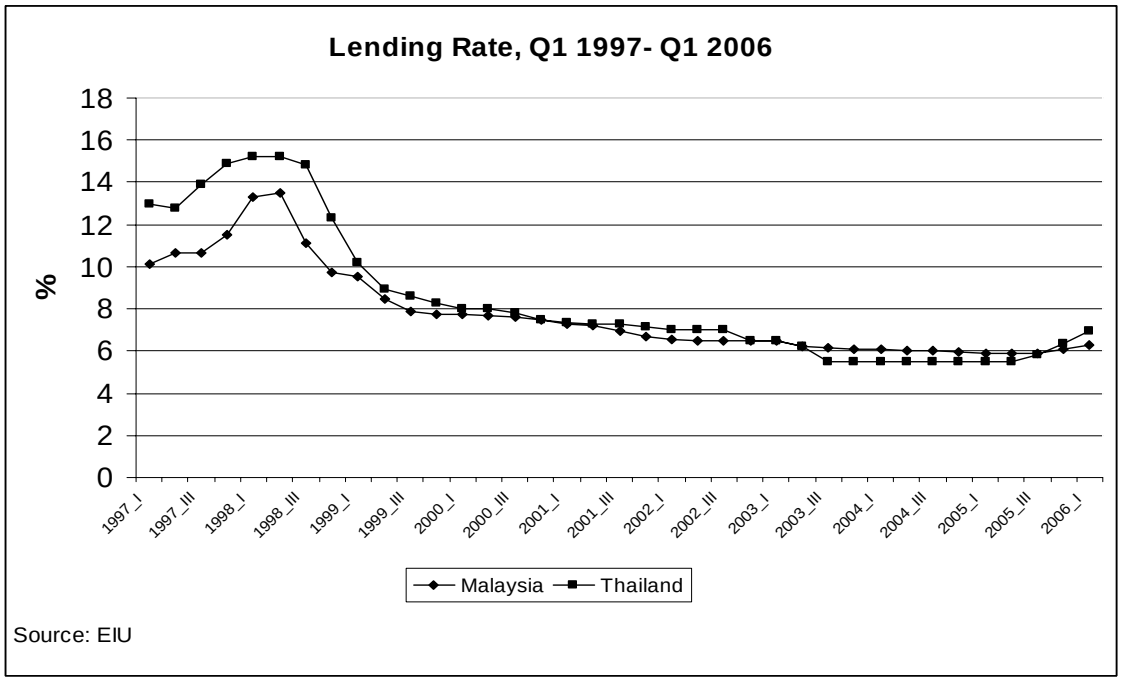
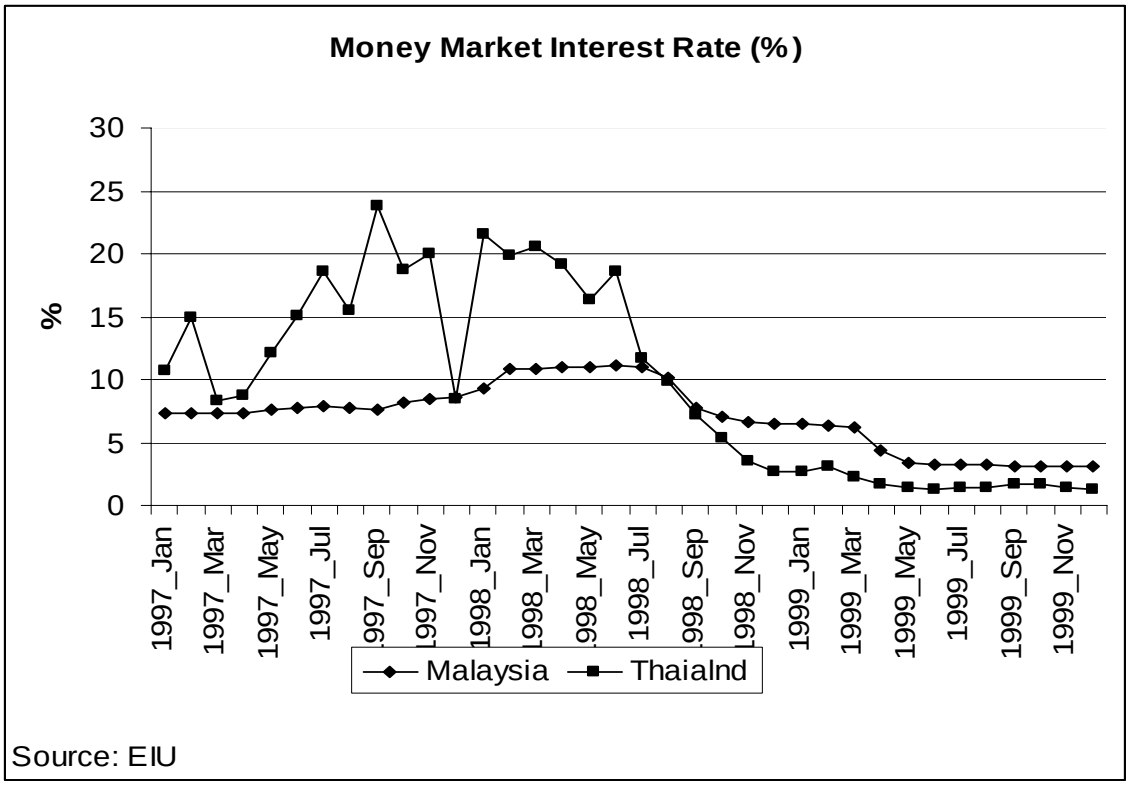


Figure 2: Malaysia and Thailand: Money Market Interest Rate (%)



5 Concluding Remarks

The widespread financial distress in the Asian region brought about by the Financial Crisis was unprecedented in size and magnitude. Many firms and financial institutions ran into financial distress because they were overexposed as a result of the preceding economic boom. It is important to note that the banking and corporate sectors' performances were interrelated. Firms' balance sheet problems had become financial sector's problem when they failed to fulfil their loan obligations. The ballooning NPLs, together with the collapse of financial and property value of collateral eroded the financial institutions' profits and capital bases. Consequently, financial institutions were forced to curtail credit, even to viable firms with profitable opportunity. This had in turn aggravated the conditions in the corporate sector as businesses could not obtain funds to finance their operations. The interdependence of the banking and corporate sectors suggests that financial distress, if left unchecked could send the economy spiralling down to deep recession. Therefore, the efficiency of asset resolution policy would determine, in large part, the extent of the impact of the crisis on the economy.

While all crisis- stricken countries eventually establish a NAMC to help resolve financial distress in their countries, there are sceptics who still doubt about the effectiveness of NAMC and argue that it is best to leave asset resolution to the market mechanism. They argue that the establishment of a NAMC is a form of government bail- out that creates moral hazard problem. In addition, they argue against too much power being granted to NAMC that may jeopardise the rights of the original stakeholders. The conflicting arguments arise from different beliefs regarding the role

that should be played by an NAMC in asset resolution. [62] For example, the advocates of NAMC believe that the preservation of viable firms is an important and independent goal of the establishment of a NAMC. NAMC serve as an important tool to rehabilitate firms and accelerate corporate restructuring. However, there are sceptics who believe that an NAMC could do no wonder; and the fate of a firm should be left to the market instead. In addition, the advocates of NAMC believe that the establishment of a NAMC has only modest effects on how creditors and others behave ex-ante while the sceptics think otherwise. The advocates also believe that NAMC should be given the necessary legal mandate to implement substantive asset resolution policies. They argue that without conferring special power to the NAMC, it would not be able to carry out its task effectively. NAMC without any legal mandate plays similar role as the corporate debt restructuring committee where they merely act as the facilitator of renegotiation, with limited ability to resolve bargaining frictions. The market advocator, on the other hand, thinks that the market participants should be allowed to determine their own destinies. Our paper attempts to add insight to this stand of literature by providing both theoretical underpinnings and empirical evidence on the effectiveness of a NAMC. Our results imply that not any NAMC could resolve financial distress successfully; only a well thought and well designed one could successfully reduce bargaining frictions, preserve asset value of firms and minimise political interference in the operation of the NAMC. It is important to point out that Danaharta's design could not simply be replicated and applied to other countries and hope for the same success as the case in Malaysia as different countries have different sets of legal and political constraints. To fully realised

[62] We draw analogy from Baird (1998)'s discussion on the two different axioms of bankruptcy laws.

NAMC's role in resolving systemic distress, the NAMC should be carefully designed such that it takes into consideration political, legal and economic factors so that it could achieve its mandate. Cross- countries studies of the effectiveness of NAMC mask the individualistic nature of each NAMC and thus do not provide conclusive results. Our case study approach could fill the gaps left by cross- countries studies and offer important insights on the recipe to resolve financial distress effectively.

The resolution options for an isolated failure are different from systemwide failure. During systemic crisis, the speed of asset resolution is of great importance in order to contain domino effects which could aggravate the already troubled economy. Thus, it is inefficient to rely on bankruptcy proceedings to resolve financial distress because bankruptcy procedure is time consuming. We argue that a NAMC with legal mandate could assume the same role as bankruptcy proceedings of mitigating bargaining frictions among stakeholders during renegotiation, without being subjected to the constraints that are present in bankruptcy proceedings. In addition, bankruptcy procedure does not directly address the problems in the banking sector while a NAMC could tackle financial distress problems in both the corporate and banking sector simultaneously and expedite bank and corporate restructuring.

Empirically, we find that there were larger improvement in real bank credit growth and NPL ratio in Malaysia than Thailand post 1998. Moreover, corporate sector performance in Malaysia improved significantly post 1998. However, we have to interpret our results carefully. It is important to note that the causality between policies and outcomes is difficult to establish empirically because countries adopt many policies at the same time and are otherwise differed in numerous ways. Furthermore, the overall

consistencies between various policies or measures are crucial in determining the likelihood of success of a policy; making it difficult to pin down specific policy instrument that is accountable for a better outcome. We overcome this accountability problem by adopting exclusion or elimination methodology. By contrasting Malaysia's and Thailand's policy choices and institutional differences, we identify and eliminate other possible explanations for the better post 1998 performance in Malaysia and find that it was the establishment of Danaharta that helped to avert prolonged distress in the banking and corporate sector by expediting restructuring efforts.

Let me just recapitulate on why we think the establishment of Danaharta is critical in resolving financial distress in Malaysia. Danaharta accelerated restructuring efforts by reducing the hold out problem. Decision over a distressed firm's future is thorny as different classes of claimholders have conflicting interest, depending on the seniority of their claims (Hart et al, 1997 and Aghion et al, 1992). In Malaysia and in East Asian countries in general, bank loans still constituted the largest external funding source for most countries. Hence, it was relatively easy for Danaharta to resolve conflicts of interest between claimholders as it could just buy the stakes of 'uncooperative' financial institutions and thus expedited the restructuring process by approving feasible restructuring plan which was previously not accepted by the uncooperative financial institutions. Furthermore, Danaharta acted in the interest of the overall economic recovery by proposing plans that maximised a firm's value, hence substantially reduced bargaining frictions, and expedited decision making process and lessen uncertainties. There was thus lesser incidence of premature liquidation of the distressed firms. At the same time, Danaharta expedited corporate sector restructurings

as there was credible threat of liquidating the collaterals of the distressed firms due to the power conferred by Danaharta Act. In addition, Danaharta eliminated liquidity constraints in the banking sector by carving out the NPLs from the system and allow the financial institutions to amortise the losses within five years. Note that it is especially vital to alleviate liquidity constraints of restructured firms. If banks were still saddled with NPLs and were unable to extend credit to these distressed firms for the continuation of operation, then rescheduled loans would default again as the firms would not be able to earn enough to pay back their debt due to a lack of working capital. The vicious cycle could result in an unduly high cost of asset resolution. Last but not least, Danaharta's lean structure and its outsourcing of the management of distressed assets to internationally renowned consulting and accounting firms ensured the distressed assets were managed by experienced and skilled professionals; with minimal local political interference.

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