CHINESE BANK'S CREDIT RISK ASSESSMENT

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Declaration

In accordance with the Regulations for Higher Degrees by Research, I hereby declare that the whole thesis now submitted for the candidature of Doctor of Philosophy is a result of my own research and independent work except there reference is made to published literature. I also hereby certify that the work embodied in this thesis has not ready been submitted in any substance of any degree and is not being concurrently submitted in candidature for any degree from any other institute of higher leaning. I am responsible for any errors and omissions present in the thesis.

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Abstract

This thesis studies the Chinese banks' credit risk assessment using the Post Keynesian approach. We argue that bank loans are the major financial sources in emerging economies and it is uncertainty, an unquantifiable risk, rather than asymmetric information about quantifiable risk, as held by the mainstream approach, which is most important for the risk attached to credit loans, and this uncertainty is particularly important in China. With the universal existence of uncertainty, borrowers and lenders have to make decisions based on convention and experience. With regard to the nature of decision-making, this implies the importance of qualitative methods rather than quantitative methods.

The current striking problem in Chinese banking is the large amount of Non-Performing Loans (NPLs) and this research aims to address the NPLs through improving credit risk management. Rather than the previous literature where Western models are introduced into China directly or with minor modification, this work advocates building on China's conventional domestic methods to deal with uncertainty. We briefly review the background of the Chinese banking history with an evolutionary view and examine Chinese conventions in the development of the credit market. Based on an overview of this history, it is argued that Soft Budget Constraints (SBC) and the underdeveloped risk-assessing mechanism contributed to the accumulation of NPLs. Informed by Western models and experience, we have made several suggestions about rebuilding the Chinese convention of credit risk assessment, based on an analysis of publications and interviews with Chinese bankers. We also suggest some further development of the Asset Management Companies (AMCs) which are used to dispose of the NPLs.

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List of Abbreviations

ABC	Agricultural Bank of China
ADBC	Agricultural Development Bank of China
AMC	Asset Management Company
BCO	Budget Constraint-Organization
BDR	Bad Debt Reserve
BOC	Bank of China
CABC	City A Commercial Bank
CAR	Capital Adequacy Ratio
CBC	Central Bank of China
CBRC	China Banking Regulatory Commission
CCB	China Construction Bank
CFSG	Colonial First State Group
CMS	Credit Management System
CPC	Communist Party of China
CSRC	Chinese Securities Regulatory Commission
FRC	Financial Reconstruction Commission
FYP	Five Year Plan
GYC	Gold Yuan Certificate
IBC	Imperial Bank of China
IPO	Initial Public Offering
ICBC	Industrial and Commercial Bank of China
JLDC	Joint Loan and Discount Committee
NPC	National People's Congress
NPL	Non-Performing Loans
OTC	Over-The-Counter
PBC	People's Bank of China
PCBC	People's Construction Bank of China
RCC	Resolution and Collection Corporation; Rural Credit Cooperative
RMB	Renminbi
RTC	Resolution Trust Company
SBC	Soft Budget Constraint
SCCC	State Capital Construction Commission
SCSC	State Council Securities Committee
SETC	State Economic and Trade Committee
SHSE	Shanghai Stock Exchange
SME	Small and Medium Enterprise
SOB	State-Owned Bank
SOE	State-Owned Enterprise
SPC	State Planning Commission
SZSE	Shenzhen Stock Exchange
TVE	Township and Village Enterprise
WTO	World Trade Organization

Chapter 1   Introduction

As a developing country undergoing a transition from a planned economy to a market economy, China has maintained a high economic growth rate in the last ten years. China's GDP was $898.2 billion in 1997, $1,100 billion in 2000 and $2,200 billion in 2005. The annual GDP growth rates were 8.8%, 8.4% and 9.9% respectively[1]. These remarkable numbers and the special transitional path it is following have attracted much international attention (see McMillan & Naughton, 1992; Goodhart & Xu, 1996; Huang & Yang, 1998; Lardy, 1998; Qian, 1999; Bhaumik & Estrin, 2007). Compared with the much more rapid economic transitions in Eastern Europe and the former Soviet Union in the early 1990s, China's transition process is moderate and smooth (McMillan & Naughton, 1992; Lin, 2004; Bhaumik & Estrin, 2007). The sharp decline in people's living conditions in other transition countries has not occurred in China through the gradual approaches adopted since the historic 11th Party Central Committee in 1978, which is widely recognized as the start of China's economic reform. The open-door policy has been continuously implemented by the central and local governments through the last 28 years.

The major function of the financial system is to mobilize capital, create credit and allocate them efficiently in the economy. In most emerging countries, banks play the dominant role in the financial market, while the capital market tends to develop later. However, in China, the development of the banking system has lagged behind the general economic achievements of the nation. Many

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[1] Source: Website of the World Bank Organization
（http://devdata.worldbank.org/external/CPProfile.asp?PTYPE=CP&CCODE=CHN, World Development Indicators database, April 2003）

problems have been found in the banking industry, such as an unbalanced market structure, highly concentrated risk, an unbalanced ownership structure, low profitability, inefficient management, loose regulation and imperfect statutes (Lardy, 1998; Xie, 1999; Park & Sehrt, 2001; Bhattasali, 2002). A direct consequence of these problems is the fragility of the banking system manifested by the large amount of Non-Performing Loans (NPLs), especially in the State-Owned Banks (SOBs). This is a threat to the healthy development of China's economy. Therefore, how to accurately assess credit risk in order to lower the proportion of NPLs in the Chinese banks has become a hot topic among Chinese and international scholars since the late 1990s (Lardy, 1998; Yabuki & Harner, 1999; Bonin & Huang, 2001; Fan, 2003).

The purpose of this thesis is to probe the issue of assessing credit risk in the Chinese banks. Unlike the previous approaches which argue that Western quantitative models should be introduced into China directly or with minor modification, this research consider banks' credit management through the discussion of Soft Budget Constraint (SBC) and uncertainty/risk in the Post Keynesian approach. We will try to suggest some effective mechanisms for the Chinese banks to improve their credit risk management.

The traditional method in mainstream economics relies heavily on the refinement of quantitative models to improve the assessment of credit risk, which originated from the theory of imperfect information in the New Keynesian approach where full information is assumed to be obtainable in principle. However, this fundamental assumption in the New Keynesian approach is debatable, because we live in a world of uncertainty and full information is in general unobtainable. This is the understanding in the Post Keynesian approach,

which underlies my argument and approach to examining credit risk assessment in this thesis. Because of such uncertainty, people tend to rely on convention and past experience to make decisions, especially about money and credit. That is why history is important for the banking sector. Before we proceed to the main focus on the Chinese banking, it is necessary to build up a conceptual framework for a discussion of money and credit. The argument to be developed is therefore as follows.

In Chapter 2, the analysis begins with a discussion of money's nature, banks' role and the consequence of credit to the economy in both the mainstream and Post Keynesian approach, through which the universality of uncertainty is justified. Considering the importance of history in the banking sector, Chick's (1992, 1993) seven-stage framework of banking evolution is introduced. Although Chick's model was abstracted from the evolution of the English banking system, it provides a framework for analysis which could be used for the discussion of any particular economy.

In Chapter 3, a review of the Chinese banking history before 1949 is given and the role of money and credit in Chinese banking is explored as well. During this period, Chinese banking was developing following a capitalist path similar to the Western mode. It is found that the pattern and working mechanism of the Chinese banking system established before 1949 and re-established in the 1980s had not been changed until the late 1990s.

Chapter 4 focuses on China's planned period and credit allocation within the planning system, under which money and credit are only used to facilitate centralized planning. Particular emphasis is placed on the discussion of SBC, which creates a moral hazard problem between State-Owned Enterprises (SOEs)

and the state. The SBC problem is commonly regarded as a main cause of the large amount of NPLs in the Chinese banking.

In Chapter 5, the need for reform is introduced and examined with reference to the Russian and Eastern European experience, where the advantages and disadvantages of China's dual-track system are explored. Special attention is also paid to the less developed capital market in China. It is argued that a financial system under the concept of universal banking should be the aim of future development.

In Chapter 6 and Chapter 7, the credit risk assessing techniques in Western banks and the Chinese banks are examined comparatively, concerning quantitative and qualitative methods. A Post Keynesian approach is applied to help assess credit risk within the Chinese context and some suggestions for current bank reform are given as well.

In Chapter 8 the well-discussed problem of NPL disposal in the Chinese banking is fleshed out with reference to other countries' experience, including the US, Japan and Hungary. The disposal method through AMCs is adopted in China. Instead of the temporary role of AMCs in the US mode, China's AMCs are permanent and their further development is suggested to be investment banks, integrated in the universal banking system.

A case study of Industrial and Commercial Bank of China (ICBC), the biggest commercial bank in China and a case study of the banking system in a medium size city in north China are given in Chapter 9. The purpose of the first case is to explore the current credit risk management in ICBC, from a vertical view, including policy making, policy execution, internal monitoring, and the practices in local branches of ICBC. The purpose of the second case is to focus on

a banking system in a medium size city (City A) in north China and comparatively analyze credit risk management in different banks, concerning the regional features.

The last chapter, Chapter 10, is the conclusion of the whole thesis which gives a summary of my main contributions in the thesis and some suggestions are given for further research.

Chapter 2 Money, Banking and Risk Assessment in Credit Market

As was outlined in the general introduction to this study, in order to establish an efficient mechanism for assessing credit risk, we need to find out the context of risk assessment in the form of the relationships between money, finance and banks. The purpose of this chapter is to find out why and how banks can help create finance before saving and the consequences it brings to the economy.

Since credit creation is usually used as a method to provide money, we are particularly interested in money supply and credit supply. The question of whether central banks can control the money supply will be raised and discussed in relation to money's endogeneity and exogeneity. The result leads to important policy implications.

On the other hand, the issue and repayment of credit do not happen simultaneously. There can be a time gap of many years, which exposes banks to the risk that borrowers may follow the contract at the beginning but default later. Therefore, it is necessary for banks to differentiate loan applicants' risk types before granting loans. Many theories have been made to discuss this kind of problem and we will elucidate some of them here. By following the Post Keynesian approach, we will find that convention plays an important role in the assessment process and history is very important for the banking sector.

In short, the chapter is organized as follows. In Section 2.1 we will review the literature concerning the relationship between financial development and economic growth, which suggests a very important influence of the former on the latter. In Section 2.2, we will examine what finance is and how it helps mobilize

resources, and justify the importance of the banking sector in the financial system through banks' unique function - credit creation. Considering this function, we cast doubt on the neutrality of money held by the mainstream approach, and investigate the nature of money with a Post Keynesian approach in Section 2.3, where we will find that money plays the central role in the economy due to uncertainty. The definition of 'uncertainty' and the difference between information and knowledge in the decision-making process will be examined in Section 2.4. In Section 2.5 we will examine money supply and credit supply and justify the endogenous nature of money supply through an analysis of credit creation process. In Section 2.6, we will investigate another approach usually adopted by the New Keynesians in mainstream economics, which is that credit rationing is regarded as an optimal choice for banks' strategy when they face asymmetric information. In Section 2.7 we will further explore the problem of credit creation through Minsky's model and show how uncertainty is dealt with by borrowers and lenders that determines credit creation, which is evidenced at different stages of banking evolution. These stages will be examined in Section 2.8 and we will see the different roles that banks play during different periods. In Section 2.9 we will carry on to find out how convention is formed in the banking evolution and why history is important in this process. An overview of the banking history of China and the development of Chinese bank's methods of credit risk management will be presented in the next three chapters.

2.1 Financial development and economic growth

When we look at the relatively successful economies in the Western world, we find a fully developed financial system consisting of a wide range of institutions, instruments, and markets. The financial system in most developing countries is much less developed, having a much narrower range of institutions and instruments and being smaller relative to the size of the economy.

Some argue that the link between financial development and economic growth is that a well-performing financial system could help to promote the efficiency of intermediation by reducing informational risk, transaction cost, monitoring cost etc, and this indirectly stimulates economic growth. Although this positive relationship is still criticized by many scholars, in the mid-1970s a consensus appeared to have been reached among the leading writers that financial development is important and helpful to economic development (Khatkhate, 1972; McKinnon, 1973; Shaw, 1973). The reverse direction of causality can be argued on priori grounds that economic growth stimulates the development of the financial sector and Gurley and Shaw (1967) argued for two-way causation. Among other writers Goldsmith (1973) appeared to take a neutral position that financial and economic development have gone hand in hand.

Financial liberalization is commonly regarded as helpful for growth and this liberal attitude to finance can be traced back at lease to the 17th century. Among the earlier writers who stressed the importance of sound money and free financial intermediation were John Locke (1695), Adam Smith (1776) and Jeremy Bentham (1787) (see critiques of these literature in Fry, 1995). The main intellectual basis for financial analysis and policy advice in the past two decades

lies in the work of Ronald McKinnon (1973) and Edward Shaw (1973). In 1973 the dominant theoretical position was forcefully challenged. McKinnnon and Shaw both developed models of economic development in which financial liberalization and development accelerate the rate of economic growth. Their central argument is that indiscriminate financial repression, and distortions of financial prices including interest rates and foreign-exchange rates, reduce the real rate of growth and the real size of the financial system relative to non-financial magnitudes. They argued that if interest rates were kept too low it would discourage financial development, but it could also be argued that low loan rates helped economic development. This was the main issue, that McKinnon and Shaw see saving as necessary for investment. Therefore, they encouraged developing countries to remove these distortions imposed on their financial sector and they advocate financial liberalization and development as growth-enhancing economic policies. Much of the empirical support for their policy recommendations is derived from the financial reforms in Taiwan (early 1950s) and Korea (mid-1960s).

The policy application of McKinnnon and Shaw's theories is focused on the liberalization of the banking system. Restriction and regulations, such as interest rate ceilings, high reserve requirements, directed credit loan plans etc., would jeopardize the development of the financial sector and indirectly undermine the performance of the whole economic growth. This argument coincides with endogenous growth theories that explain the origin of growth by building macroeconomic models out of microeconomic foundations (Kaldor & Mirrlees, 1962; Romer, 1986; Lucas, 1988). McKinnnon and Shaw's prediction has received considerable empirical support from cross-country studies (Roubini

& Sala-i-Martin, 1991; King & Levine, 1993). More recent evidence on the importance of the relationship between the financial system and economic development could be seen from Arestis and Demetriades (1999), Beck *et al.* (2000), Levine *et al.* (2000) and Calderon and Liu (2003). However, the causality between financial development and economic growth is still confused and the patterns vary across countries (Demetriades & Hussein, 1996; Al-Yousif, 2002; Christopoulos & Tsionas, 2004).

However, rapid financial liberalization as a means to promote financial development is a double-edged sword. It involves the national banking sectors into global financial system. As well as improving competitiveness, it also exposes the weak financial sectors in emerging countries to potential international speculative attacks and financial liberalization could become the source of crises (Arestis & Demetriades, 1999). During the early 1990s, financial liberalization was carried out in Southeast Asia. It helped integrate the Southeast Asian financial market into the global market, and it also constituted a major challenge for domestic banks and their systems of governance. After the mid-1990s a series of external shocks adversely affected export revenues and contributed to slowing economic activity and declining asset prices in a number of Asian economies. The Asian crisis abruptly ended financial liberalization with bank restructuring programmes beginning almost immediately in 1997 and not ending until the early 2000s (Williams & Nguyen, 2005). However, during the financial crisis, China, a transitional country adopting a gradual approach, was lucky to avoid a currency crisis and sustained relatively strong growth. This was largely attributable to its capital controls as well as a healthy and stable macroeconomic situation.

Through the analysis of financial liberalization in developing countries, Arestis and Demetriades (1999) argued that in theoretical terms the models should take into account institutional weaknesses and information related problems; and in practical terms, a cautious approach should be pursued with respect to financial liberalization, especially with alertness to external "hot money" which could hardly be thought of as capital in a productive sense.

Through the discussion based on the literature above, we have found a consensus that financial development is very helpful for economic growth and a well-performing economy needs a healthy financial system. Furthermore, a cautious and steady liberalization of financial market is crucial for emerging economies since a rapid liberalization might expose the vulnerable domestic financial sectors to international speculative attacks. This could lead to potential financial crisis. Next we will consider the important roles of banks and the capital market.

2.2   Finance: Banking vs. Capital market

Banking has stayed in the focus of economic literature for quite a long time. Walter Bagehot (1873) and Joseph A. Schumpeter (1912) emphasized the critical importance of the banking system in economic growth and highlight circumstances when banks can actively spur innovation and future growth by identifying and funding productive investments (Levine & Zervos, 1998). Influenced by the mainstream economics view that money is a veil which does not directly generate growth, banks stay with an ancillary role in the economy and the role of banking is emphasised in screening and monitoring firms. Banks

provide some important but ancillary services while the impetus for economic growth is generated in the real economy.

However, the influential work of Gerschenkron (1962) and Schumpeter (1939) placed banks at the centre of economic growth, acting as catalysts for industrialization and growth. The endegeneity and central role of money is the foundation of Post Keynesian theory (see Davidson, 1972, 1978; Dow & Earl, 1982; Wray, 1990; Fazzari, 1999). Chick's (1992, 1993) seven-stage framework of banking evolution is based on this proposition, which will be explored in detail in Section 2.8 and applied to the Chinese context in Chapters 3, 4 and 5.

It is known that investment is the key to generating economic growth, which is the focus of economists and politicians. There are three ways of funding investment: self-finance, which means there is no possibility of deficit units and funding is only possible from one's own previous savings; direct finance, savers lend directly to firms or households who want invest, but have no savings; there may or may not be an interest charge. This could take the form of informal loans within a family, or the purchase of shares, for example; and indirect finance, which does not need an exact match between depositors and investors (Dow, 2006, p.29).

Direct finance and the stock market

When we look at another financial channel, the stock market, we would find direct finance is applied there: listed firms are trying to obtain finance by using their equity rather than debt. Stock markets exist as another financial intermediary besides the banking system and Non-Bank Financial Institutions (NBFIs) to help

allocate funds to firms and liquidity to investors. Between 1982 and 1993, the world stock market capitalization grew from $2 trillion to $10 trillion, which implies an average annual growth rate of 15%. The emerging stock market composed a disproportionately large amount of this growth, rising from 3% to 14% of world stock market capitalization (Demirguc-Kunt & Levine, 1996a). The basic requirement of a stock market's good performance is that prices fairly accurately reflect supply and demand in the market.

Listed firms which have good expectations of future growth among investors will be able to raise equity capital, forcing banks to compete to supply the same finance. On the other hand the public issuance of shares can provide precious investment resources for the firms that do not have enough retained earnings or which are unable, or unwilling, to go to the banks. In addition, stock markets provide firms opportunities to diversify their risks and modify their financial structure, potentially insulating them from higher interest rates and a credit crunch.

From the household point of view, the stock market helps to facilitate long-term asset management. "As governments round the world withdraw from providing welfare, individuals must increasingly rely upon private insurance and pension funds to manage their own health and retirement needs over the long-term. A stock market is one crucial way for such assets to be effectively managed" (Green, 2003b, p.3).

Compared with the banking system the stock market involves many factors, such as market makers, investment banks, primary markets, financial consultants and a relevant legal framework etc. It also requires information acquisition, professional skills and financial expertise. Therefore, it makes it

difficult for ordinary households and small firms to obtain finance in the stock market.

Stock market development and long-run economic growth are closely linked together. Countries not only need a well-functioned banking sector but in addition also need a well-developed stock market. Demirguc-Kunt (1992) and Demirguc-Kunt and Maksimovic (1995) clearly show that equity and debt finance are complementary, and banks in emerging markets do not need to be fearful of stock market development. They find that improvements in the functioning of a developing stock market result in higher debt-equity ratios, and thus more business for banks. Stock markets and banks play different but complementary roles (Aggarwal, 1999). Demirguc-Kunt and Levine (1996) collected and compared many different indicators of stock market development using data on 41 countries from 1986 to 1993. They found the level of stock market development is highly correlated with the development of banks, NBFIs, insurance companies, and private pension funds. The existing empirical literature suggests that both banks and stock markets contribute to economic growth (Levine & Zervos, 1998; Beck & Levine, 2004).

The level of liquidity, to some extent, determines the stock market's contribution to economic growth. Levine (1991) and Bencivenga *et al.* (1996) derive models where more liquid stock markets, where it is less expensive to trade equities, reduce the disincentive to investing in long-duration projects because investors can easily sell their stake in the project if they need their savings before the project matures. Enhanced liquidity, therefore, facilitates investment in longer-run; higher return projects that boost productivity growth (Levine & Zervos, 1998).

The importance of banks

As major financial institutions, banks can provide indirect finance as financial intermediaries, collecting and dispersing capital as NBFIs do. Indirect finance is an intermediary attracts surpluses by issuing its own debt, which pays interest or a return in some other form, for lending to deficit units at a charge (Dow, 2006, p.29).

Why is an intermediary necessary? First, the presence of information costs makes it hard for potential lenders to find appropriate borrowers without intermediation. Besides the search costs, lenders must verify the accuracy of information provided by the borrowers before the money is lent out. After the lending out, it might be costly for lenders to enforce the contract. Second, borrowers and lenders have different liquidity preferences and either the borrowing or the lending parties may change their minds because of unexpected events. This makes it hard to match up in one "borrow-lend" pair. Being professional intermediary financial institutions, banks enjoy informational economies of scope, which allow them to pool different liquidity preferences and enable them to borrow short and lend long.

Furthermore, when we talk about the importance of banks, it is necessary to relate banks to their unique function of financing investment by credit creation. As widely discussed within the mainstream economics, the neutrality of money is partly based on the idea that investment is financed by one's own or others' previous savings. In the Post Keynesian approach, to some extent "Money matters" refers to banks' special function: credit creation. Different from pure financial intermediaries, banks can create credit to finance investment ahead of

savings. This distinct ability comes from the fact that banks' liability is used as a means of payment.

In the pre-banking time, money was confined to gold and silver coins, defined as commodity money. At this stage, it was impossible to finance investment ahead of savings. If we take banks' liability into account, banks could increase credit by a multiple of new deposits. This is based on the confidence that a proportion of the deposits created as a by-product of these loans will return as new deposits. Thus the money will keep circulating between current accounts. This continuous redeposit enables banks to create loans with less worry about how to satisfy unexpected withdrawals and the settled reserve rate. NBFIs are financial intermediaries but they cannot create credit because their liabilities are not accepted as means of payment and, therefore, they have a low redeposit ratio. As a result, the maturity of their assets and liabilities has to be much more closely matched than for banks.

The two signs of a "real bank" (not just a financial intermediary) are: whether cheques are widely used; whether banks have the right to issue their own notes; whether cash is routinely deposited in bank accounts. If checks are widely used as means of payment, it is assumed that people will not be concerned to withdraw cash when they accept them. Money will always be flowing between accounts in the banking system. Notes represent banks' liabilities. If a certain bank has the right to issue its own notes and the notes are widely used and received as means of payment, it could provide finance by printing bank notes. This trust among people enables banks to create credit. Furthermore, bank's ability of indirect finance is not represented by the two signs above. It depends on people's habit and convention. The central point is the redeposit ratio, as we can

see from the discussion above. In a certain society, if people get used to putting their spare cash in the bank whenever they get some, the bank is still able to create credit without checks and even its own notes, because redeposit constantly happens. This phenomenon could be seen in both the centralized and transitional period of China.

The fact that banks', not NBFI's, liabilities can be used as money is determined by the central bank's regulation. The regulation keeps banks from excessive credit creation. The central bank puts such regulations on commercial banks in order to enhance people's confidence in the whole system, based on which NBFIs carry out all their activities since they hold their reserves with banks. The central bank also supplies outside money as the reserves for the banking system in order to enhance depositors' confidence in it (see Figure 2.2.1).

Thus, the confidence in NBFIs depends on the confidence in the banks, which in turn depends on the confidence in the central bank. Behind the central bank stands the government, which gives support to the central bank.

Figure 2.2.1   The Financial Superstructure
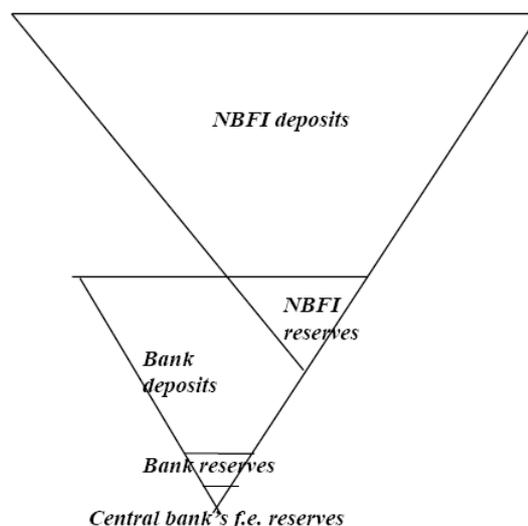
Source: Dow, 2006, p.38

In this section, we examined the three ways of finance and justify the importance of the banking sector through banks' unique function that banks can create credit to finance investment ahead of savings. This makes us doubt the neutrality of money in the mainstream approach and in the next section we will investigate the nature of money.

2.3   Money in the Post Keynesian View

In this section we will talk about money's origin and nature through the contradiction between the Post Keynesian approach and the mainstream approach. Although the discussion appearing in this section refers to a market economy, it provides a benchmark for further discussion in a planned economy and transitional economy. The modification to China's case will be seen in Chapter 4 and 5.

The Post Keynesian view of money is derived from their view of the nature of the economy. Rather than the mainstream analysis, introducing money into an economic model to see the effects on nominal variables, Post Keynesians regard money as an integral feature of the monetary economy and they focus on the process and consequence of credit creation. In contrast, orthodox quantity theory begins with a fixed quantity of money and focuses on the use of money as a medium of exchange. Whether money is a real variable or just a 'veil' is the focus of the debate.

At first we need to distinguish the definition of money from its function. Orthodoxy tends to confuse money's function as a medium of exchange with

money itself and emphasizes the former. In fact money consists of the terms in which debts are written. Considered historically, the very existence of money assets is associated with uncertainty. In a barter-like economy, money is defined as a medium of exchange which concentrates on the use of money and it is created to eliminate the necessity of double coincidence of needs. Actually barter has never been an important economic activity and it did not lead to the development of markets. In fact, money is created as positions are financed, money is the unit of account in which debts are calculated, and money is universally accepted as the form in which debts are repaid (Keynes, 1936, Chapter 17; Minsky, 1975; Wray, 1990, Chapter 1). We could find that money and interest were developed at the same time – not out of a barter economy, but when private property and future contracts were developed (Heinsohn & Steiger, 1984). Private property makes loans from individuals possible, and individual responsibility induces creditors to require interest for compensation. In a barter economy, the value of the goods which are exchanged, other than for immediate consumption, is uncertain. Money as a medium of exchange becomes important when workers are paid in a medium of exchange rather than in wage goods directly. Once capitalist production dominates the economy, money becomes universally important: money operates as a medium of exchange and money hoards provide a measure of security. The use of money as a medium of exchange, as well as making exchange more efficient, reduces, to some extent, the uncertainty attached to the exchange and to the value of the stock of wealth (Wray, 1990).

The role of money in the Post Keynesian analysis is determined by the context of historical time and uncertainty. Conversely, it is the absence of these features in the mainstream theory which makes it so difficult to incorporate

money and explain its presence (Davidson, 1972). In the *General Theory*, Keynes showed that it was the output level which equalized planned saving and investment. In the orthodox model, this function was performed by the interest rate. The interest rate in equilibrium should equate the marginal product of capital (MPC) and the marginal rate of time preference between saving and consumption. In the Post Keynesian approach, the interest rate is a monetary, rather than a real, variable and the financial activity of the private sector impedes the attainment of the optimal level and patterns of investment. The historical process of financial development is explained at a social rather than individual level, therefore, it would be misleading to over emphasise the microfoundations at the level of individuals. These methodological features made Keynes's monetary theory distinctive from the orthodoxy of that time (Davidson, 1972). There is no scope for a natural rate of interest, since any stability is vulnerable to change. But a nominal rate of interest will be held as a convention, as an anchor rate for decision-making, although the convention itself is vulnerable to surprises.

Subsequent Keynesian theorists have often taken the money supply to be endogenous, in the sense of being determined by demand rather than by the monetary authorities' active constraint of supply. In consequence, much Keynesian analysis, particularly within the neo-classical synthesis has been conducted in real terms; if the demand for money was always met, then money could play no independent part in the macro process.

The Keynesian notion of money supply endogeneity has been influenced considerably by the Radcliffe Report (1959). Endogeneity refers to the capacity for institutions to create new money instruments, or for new financial institutions to emerge, to satisfy excess demand for money. It is certainly widely recognized

that attempts by the monetary authorities to control the supply of money by one definition tend to be thwarted by such institutional responses. In the case of mainstream, general equilibrium analysis, that endogeneity robs any variable of explanatory power; the entire focus is on the exogenous variables and the equilibrium solution, rather than what has happened to the endogenous variables to bring about that solution. Within the Post Keynesian methodology, it can be argued that nothing is exogenous to the entire framework, although some variables will be exogenous to some partial analysis within that framework (Dow, 1985).

According to Keynes three conditions are required to qualify a certain asset to be accepted as money (see Keynes, 1936, Chapter 17; Davison, 1972, Chapter 9; Chick, 1983, Chapter 17): 1) A low degree of substitutability between the money asset and other assets; 2) Carrying costs must be low relative to liquidity, which enable transactions to be easier. 3) The supply elasticity of money must be low, which help to retain the value relative to goods.

The determination of a certain asset to be money is a historical process. Confidence attached and the conventional acknowledgment is formed during the process as well. As some neo-Austrians, such as Mises (1953) and Hayek (1929), argued money has worth in the sense that it is held with confidence in the basis of its history; although few currencies are still backed by gold, which has use value, there is confidence in the capacity of the government to maintain the exchange value of currency in the same way as when it was backed by gold. In terms of monetary theory, the low elasticity of supply of a particular money asset in the past generates confidence in it for the future which is thus exogenous. Financial crises might destroy confidence in that money asset, which will constitute an

exogenous fact for the future, requiring action to repair confidence, or to provide an alternative money asset, e.g. the change of money in China, 1949: before the collapse of the National government, people used silver coin and bullion to replace the quickly-depreciating currency issued by the central bank.

The trust inherent in the financial system which seems so unsatisfactory in the general equilibrium framework sits comfortably in a framework which studies institutions as being the product of history.

Within the context of historical time and uncertainty, money not only acts as a means of payment, but also as a store of value, and a unit of account. The latter function is important in the sense that if the governing motive of behaviour is accumulation, then, it is important how accumulation is measured. Money allows a measure of value which can be used to standardize the value of heterogeneous assets. This function is particularly important with respect to capital goods which have no identifiable real value independent of their monetary value. In the same way, contracts are denominated predominantly in money, as the most stable value reference point (see Davidson, 1972, for a full discussion of the importance of the prevalence of money contracts). Given this historical perspective, it is impossible to consider analysing an economy as if it were a barter economy, and then, maintaining the same structure, assess the effect of introducing money.

The systematic pattern in financial behaviour and its effect on output and employment can best be understood with reference to the business cycle, which will discussed in section 2.7 (also see Keynes, 1936, Chapter 22; Dow, 1983). This framework also serves to illustrate the endogenous and exogenous features of the supply of money under different economic conditions. The major

contribution on the interdependence of financial and production cycles has been made by Minsky (1975, 1982) and Dow and Earl (1982, Chapters 2-5, and 11). In summary, there is a systematic and interdependent pattern to the demand for and supply of money over the cycle.

In this section, we reviewed the origin of money with the mainstream approach and Post Keynesian approach, and find that a unit of account, rather than a medium of exchange, is the nature of money. Money supply is endogenous and cannot be controlled by the central bank. The theories in this section refer to a market economy. However, regarding China, a developing country during the transition to a market economy, stable assets are necessary to keep the financial system developing steadily, especially with the high uncertainty due to the structural changes. Uncertainty has significant meaning in the discussion of the efficiency of quantitative risk assessment models being advocated in China since it is difficult to accommodate uncertainty into the quantitative methods. In next section, we will examine the nature of uncertainty, its influence on people's financial behaviour and the consequence to the economy.

2.4 Uncertainty, information and knowledge

In this section we start from the definition of 'uncertainty' and the difference between information and knowledge, to analyze decision-making under an unpredictable situation. Then we proceed to the consequence of uncertainty for economic activities: liquidity preference and holding money. The existence of uncertainty has significant meaning for credit risk assessment.

Uncertainty and risk

The term 'uncertainty' in the mainstream approach is often used as interchangeable with the term 'risk'. In their methodology uncertainty and risk are synonymous and their differences are often confused. However, we find it is at least needed to distinguish the 'risk' which could be calculated on the basis of the repeatable events and the 'risk' which exists in unrepeatable events. These two kinds of 'risk' cannot be treated in the same way and this difference has profound meanings in reality. Fortunately, Post Keynesians elucidated this clearly in their methodology, that uncertainty means unquantifiable risk and quantifiable risk is limited to the repeatable events which allow frequency distributions from which probabilities can be calculated. They named the unquantifiable risk 'uncertainty' and reserved the term 'risk' particularly for quantifiable risk.

According to the past experience, only very limited social events are repeatable, or approximately the same, such that we can obtain a probability through frequency distributions. This kind of quantifiable risk is predictable, but it is impossible to form such a frequency distribution if we take unpredicted structural changes into account, such as innovation, technological development, entry of new variables, etc. It is also impossible to get a statistical probability without having a frequency distribution. Therefore, uncertainty is an absolute concept and risk only applies to a few cases.

Information and knowledge

In the mainstream approach, the asymmetric distribution of information is adopted to explain the inability to quantify risk (Stiglitz & Weiss, 1981). The term information in the mainstream approach refers to a data set, knowable in principle and it is assumed to be full information about past activities. Based on these assumptions the precision of prediction just depends on the quality of the data set. Post Keynesians are unhappy with the treatment of information/knowledge by the mainstream economists. Post Keynesians use the term "knowledge" to describe the data set (in the absence of full data) about past activities, and information on facts is a subset of knowledge. The knowledge-information distinction is parallel to the distinction between "knowing how" and "knowing that". "Knowing that" is never sufficient for "knowing how" and the former must be supplemented by the prior latter which is based on experience and cannot be precisely translated (Dow, 2004). Keynes argues that the passage of time continuously makes evidence from the past irrelevant to the formation of rational business expectations in the present (Winslow, 1995). The range of potential knowledge is not known in advance or even in retrospect. Therefore, it is absolutely impossible to form a frequency distribution to calculate the probability in order to obtain a relatively precise prediction. This could be understood in another way that the future is not like the past in ways which cannot possibly be predicted.

The failure of the mainstream economists to understand the economic activities under uncertainty kept them from understanding money and interest fully. In Keynes's view, uncertainty is both a cause and an effect of holding money, and the use of money in the economic process can only be understood as

an institution for coping with uncertainty (Fontana, 2000; Dequech, 2001). Post Keynesian methodology is founded upon the distinction between uncertainty and risk. In Keynes's *General Theory*, this distinction takes the specific forms of different degree of uncertainty. The short-term expectation is concerned with the daily production and decisions of firms. Firms' decision-making is continuously changing with the interaction between demand and supply in the market, and it takes a lower uncertainty in short-term. However, long-term expectation is different because at the time of decision-making it is impossible to evolve the decision with the changes of market. A higher degree of uncertainty is unavoidable. Capital investment represents sunk costs that are largely irretrievable (Fontana & Gerrard, 2002).

When we consider decision-making, we need to know what the situation is. If the real world is like what the mainstream economists said, that information is fully accessible, there must be an optimal choice for any decision. If things are always surprising us, we need to review our cogitation of the reality. Therefore, "bounded rationality" is a term embraced by some Post Keynesians in the discussion of decision-making. This idea was developed originally in the context of an argument about the cognitive limitation of humans, because the unapproachable "unbounded rationality" is meaningless in practice (Farmer, 1995).

Under the guidance of the mainstream economists, the fundamental premise of decision-making in a probabilistic world is that any agent can obtain reliable probabilistic information about the future at some cost by analyzing the past and the current market data. In the mainstream's centred subjective probability theory, making any investment is like placing bets. People always try to quantify

probabilities and risk in order to make decisions, even if they do not really have enough knowledge to assess risk properly. So, even if the conditions for quantifying risk are not present, in practice we make a best guess at quantifying risk in order to make decisions. But we have to admit uncertainty aversion is an unavoidable psychological phenomenon, that under uncertain circumstances people always prefer to hold and watch, such as in a volatile stock market or exchange market. This leads to the theory of liquidity preference.

In general, decisions cannot be left until all the evidence is in. In situations of uncertainty, liquid assets are likely to carry a premium over illiquid assets. The preference for liquid assets has traditionally been understood as the demand for a portfolio with a higher proportion of liquid assets, i.e. assets which are readily marketable at minimal risk of capital loss. Money is the perfectly liquid asset. So a major part of the theory of liquidity preference refers to the demand for money. In Tobin's (1958) '*Liquidity Preference as Behavior Towards Risk*' liquidity is synonymous with cash.

Liquidity preference

At first liquidity preference was introduced by Keynes in his *General Theory* as one of the three ultimate psychological factors in the determination of output and employment. Since the interest rate is 'the reward for parting with liquidity for a specified period', rather than 'a return to saving or waiting as such' (Keynes, 1936, p.167), it is a monetary phenomenon rather than a real phenomenon. Keynes's theory of liquidity preference can be summarized as transactions

demand, speculative demand, precautionary demand and finance motive. The finance motive was added later and is quite controversial.

The transactions demand relates to money's function as means of payment; the speculative demand is influenced by the rate of interest as a signal of the future direction of capital values; the precautionary demand concerns the situation when wealth-holders do not feel confident in predicting asset prices, money is the safest asset to hold until more knowledge emerges, since money's value is stable. Since the state of confidence may change rapidly, this component of demand is potentially highly unstable. The finance motive is a temporary demand for funds to hold until investment spending occurs. Even though it is a temporary demand, it can put upward pressure on interest rates in an expansion unless banks are willing to expand credit in line. This involves a break away from the loanable funds approach in that it requires banks to create credit in advance of saving. We shall see that money's special role arises from our need to have an asset whose value is relatively certain. Theory suggests, and history shows, that any society which doesn't have such an asset will generate one, or will look to other societies to provide one. Banks and other financial institutions have different liquidity preferences that they can pool to provide finance.

In summary, the uncertainty caused by the fully unknowable knowledge plays a central role in economic activities. Uncertainty is always the case, but within a centralized economy there is no uncertainty in the financial sector since the planning committee plans everything and the financial institutions just need to allocate capital to facilitate planning. The lack of uncertainty makes money not the real 'money' such that rather than playing the central role, money is just a medium to facilitate planning. In the following sections, we will focus on the

influences of uncertainty in money, banking and the risk assessment of credit step by step.

2.5   Money supply and credit supply

In the previous section, we have examined that the perception of uncertainty determines people's preference for money. As a result, uncertainty also plays an important role in the determination of money supply. The money supply is the total amount of money in an economy, in the form of coin, notes, and bank deposits. A change in the money stock of a closed economy can be generated in several different ways (see Arestis, 1985, p.79). There are two suppliers of money: the monetary authorities and the banking system. The banking system supply deposit money through credit creation. In this section we will draw attention to money supply and credit supply to elucidate some theories about this problem.

In *Monetarist view,* the money supply is taken to be exogenous, e.g. monetarism's leading exponent, Friedman's, helicopter model whereby high-powered money rains down on the economy from a helicopter (see Friedman, 1969, Chapter 1 and 1983). A change in the money supply directly affects price levels. However, its influence becomes manifest only over a long and often variable period of time. The Monetarists assume the central bank can control the money supply. In the context of the banking system the focus is on the liabilities side of the banks' balance sheet, since the money supply consists mostly of bank deposits; the bank multiplier is assumed to be stable. On the other hand the demand for money is understood to be a stable function of income.

The historic fact is the best critique to assess theories. Following two decades of attempts by many Western governments to control the money supply directly, a consensus has emerged that the money supply is not in fact controllable directly, i.e. the money supply is to some degree endogenous, responding to changes in demand (see various explanations in Chapter 4, Rousseas 1986).

In the Post Keynesian theory, the money supply is seen as an endogenous part of the economic process. We say a variable is endogenous to a system if it is determined within the system; a variable is exogenous to a system if it is set by the outside force, not determined within the system.

In Keynes' classic book, *General Theory*, the money supply was set exogenous in some context in order to explain other economic phenomena, but it doesn't mean Keynes agreed that money supply is exogenous. This device permits us to hold to the established partial method of analysing a change in only one variable at a time.

The Post Keynesian approach looks explicitly at both sides of the banks' balance sheet. On the liabilities side, the velocity of circulation of deposits can be highly variable; any shortage of money can be partially offset by changes in velocity. At the assets side, credit creation is the source of deposit liabilities; there are three views as to how the supply of credit is determined: full accommodation theory, credit rationing and considering more generally bank assessment of credit-worthiness. Next we will have a look at the full accommodation theory.

The full accommodation theory of money supply means that at a certain interest rate all the demand for credit would be met. The implication is that changes in the money supply cannot be seen as causing inflation since they are endogenous to the system within which inflation is created.

It has been accepted to some extent that when a central bank chooses to "peg" the level of interest rates at some predetermined level the money supply function becomes horizontal, and the supply of money will be endogenous, demand-determined and fully elastic. This is called Horizontalism. The endogenous money standard has been borne most notably by Kaldor (1986) and Moore (1988). Howells and Hussein (1998) tested for endogeneity of money supply in the G7 countries and suggested that broad money is endogenous.

As in Figure 2.5.1, at the present level of interest rate an increase of money demand from M^d to $M^{d'}$ is absorbed by an increase of money supply from M_0 to M_1.

Figure 2.5.1   An increase of money supply in Horizontalist view
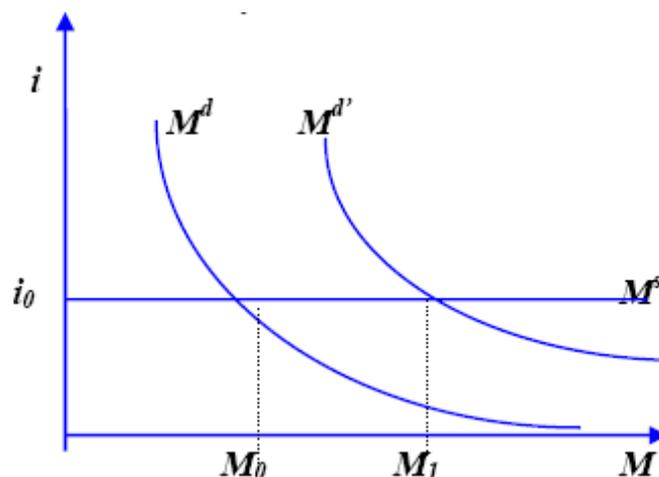
Kaldor argued that the endogeneity of money supply is necessary for the stability of the financial system. If the authorities did try to control credit, innovation in the financial sector would allow velocity to increase, both with a more efficient use of existing money assets, and with the introduction of new money assets. In other words, even if the authorities could control money by a particular definition, the increase in velocity would allow that controlled total to

generate a higher level of income, and at the same time other assets would come to act as money. This is consistent with Goodhart's Law: when the authorities try to control one monetary aggregate, that aggregate ceases to be the correct definition of money, because innovation allows other assets to act as money.

However, Kaldor warned against attempts to control any monetary aggregate by means of putting a limit on the availability of reserves. If the authorities were to try to remove the lender-of-last resort facility, then there would be a danger that banks would collapse and destroy the confidence in the banking system.

According to Kaldor, a credit loan is not like other commodities. It is unique in several respects. Banks create deposit money whenever they extend loans. They hold cash reserves to maintain the convertibility of deposit money into cash. This is how deposit money retains its acceptability as a means of payment and how the banking system retains its acceptability in people's economic life. The supply of deposit money responds endogenously to changes in the demand for bank credit, the supply of deposit money is governed by the amount of credit granted by banking institutions. Modern commercial banks are price setters and quantity takers in both their retail deposit and loan markets. As a result at every moment of time the money supply function should be viewed as horizontal. It follows that the total quantity of money is both credit-driven and demand-determined. The demand for nominal money balance is a function of some vector of interest rate, income, and wealth, as the conventional view maintains. But owing to the unique properties of money, the nominal quantity of credit loans outstanding is also determined by the nominal quantity of credit demanded and of credit money supplied.

Furthermore, the factors which may limit acceptance of loan requests are noted by Moore, that the loan officers of commercial bank must ensure that loan requests meet the bank's income and collateral requirements. They must in general satisfy themselves as to the credit-worthiness of the project and the character of the borrower."(Moore, 1988, p.24) The door has thus been opened for considering the possibility of credit-rationing which is a core part in the New Keynesian approach.

In this section we examined Horizontalist View on money supply and justified the endogenous nature of money supply through analysis of credit creation process. Modern commercial banks are price setters and quantity takers, so that the money supply function should be viewed as horizontal and the total quantity of money is both credit-driven and demand-determined. However, in the mainstream approach, represented by the New Keynesian approach, credit rationing is regarded as an optimal choice for banks' strategy when banks face asymmetric information. This will be investigated in the next section.

2.6 Credit rationing and the New Keynesian's approach

New Keynesians treat the credit market as a case of asymmetric information. In their approach credit-rationing is the optimal choice for banks.

In the previous sections we argued endogenous money supply theories are usually explained in terms of the credit market. The supply of money is seen as the outcome of the supply of credit. An important difference between the credit and money markets must be clarified that, while the money market is always

presumed to clear, this may not be the case for the credit market. Credit rationing is the situation where the credit market does not clear; i.e. there is excess demand at the going rate of interest. In normal markets such excess demand tends to raise the price (or interest rate), whereas the credit rationing literature isolates the factors that make loan markets different. Rather than raising interest rates to clear the market when the demand for credit rises, or when rising bank costs push the supply curve up, banks must be allowing some demand to be unsatisfied.

There are two types of rationing: Type I: Quantity rationing, which is the situation that an agent cannot borrow the amount she wants at an existing interest rate; Type II: Type rationing which is the situation that some borrowers from an observationally identical group are able to get a loan, while others are not.

Credit rationing is a core part in the New Keynesian analysis of the credit market where it is derived as a reasonable outcome of banks' utility maximization. Tracing the origin of the term "credit rationing", Radcliffe was the first to focus on this possibility, in the 1950s, as a disequilibrium phenomenon in the famous *Radcliffe Report* (1959). Credit rationing is understood in terms of the process of interaction between the central bank and the banks, such that the banks do not necessarily respond automatically to a rise in the official rate with a rise in their own rates. The commercial banks' response might be explained as a sticky price, or their judgement of central bank's movement as a temporary one. The implication is that the central bank discount rate could cause greater changes in credit totals (and thus deposit totals) than would be expected from a cleared credit market.

New Keynesian theory suggests that credit rationing may alternatively be a profit-maximizing strategy for the commercial banks and the market appears not

to clear. This explanation for credit rationing rests on the view that borrowers conceal from the banks their true risk, so that banks have to use rules of thumb by which to assess borrower risk. Two such rules are as follows: *Adverse selection*: if banks were to raise interest rates, lower-risk, lower-return borrowers would drop out of the market, leaving the banks with a higher-risk portfolio; and *Moral hazard*: borrowers may continue to borrow at higher rates, but switch activity from lower-risk, lower-return projects to higher-risk, higher-return projects.

Note the difference between adverse selection and moral hazard. In the first case, the asymmetry in information exists before you enter into the credit market. In the latter, however, the asymmetry in information arises after the loan contract is signed. This is why anther name for adverse selection is "hidden information" and another name for moral hazard is "hidden action".

Adverse selection is also called "Lemon problem" which refers to Akerlof's (1970) market for used cars with the conclusion that, even though there are sufficient demand and supply, the market can still break down with asymmetric information. In the credit market, adverse selection originates with the paper by Stiglitz and Weiss (1981), whose theory is based on two main assumptions: asymmetric distribution of the credit information, and loan contracts are subject to limited liability. Also their analysis is restricted to involuntary default, which means the borrowers would like to repay the loans when they have the ability to keep the contract. In the market composed of risk-neutral borrowers and lenders, the presence of limited liability of borrowers imparts a preference for risk among borrowers and a corresponding aversion to risk among lenders.

Moral Hazard is a different sort of problem, which arises for example when you, as the manager of a company, are trying to hire some salespeople. As

the job requires a door-to-door sales campaign, you cannot supervise them directly. And if the workers choose not to work very hard, they can always blame it on the mood of the customers. If you pay them a market clearing flat wage, they would not work hard. The situation is similar in the credit market that after the contract is signed borrowers may switch activity from lower-risk, lower-return projects to higher-risk, higher-return projects. Because the borrowers have such incentives, the bank has to monitor them in order to make sure that the money is spent as stated in the contract.

In the New Keynesian view, because the borrowers hide their risk types, banks have to ration credit to protect their loans. But do the borrowers exactly know their risk types? Are banks able to collect all the information if the borrowers do not hide? The answer given by Post Keynesians is "no". Minsky approached this problem using a Post Keynesian methodology, which is examined in the next section.

2.7   Minsky's model and the Post Keynesian approach

In this section, we will address Minsky's model and explore the Keynesian approach further in terms of risk assessment. Hyman Minsky sees himself as an expositor of "financial Keynesianism". At the core of his financial interpretation of Keynes's work is the theory of investment, and that fluctuations in macroeconomic activity primarily arise from fluctuations in investment.

Contrasted with the contemporary mainstream macroeconomic approach which implies a limited role for financial factors, Minsky's research focused on the central role of finance for the modern economies' performance. His

microeconomic analysis starts with the same behavioural postulate as the mainstream approach, that firms make investment projects to maximize their utility, represented by the present value of the expected cash flows that result from the investment. But beyond this point, Minsky discards the mainstream opinion that the expected cash flows are determined by technology and the market prices of plant and equipment. It is argued that a firm's financial structure is crucial to its investment. The availability and cost of external financing depends on the firm's liability structure (Fazzari, 1999).

In the 1980s, with Stiglitz and Weiss's (1981) application of Akerlof's (1970) "lemon market model" to the credit market, asymmetric information became a focus within the mainstream economics then. This research program spawned numerous theoretical and empirical studies that have received widespread attention in mainstream economics. The New Keynesian approach has put the focus on the credit-risk assessment by banks. The key assumption of this theory is that borrower risk is knowable, even if not known by the banks. The imperfection of the credit market is caused by the asymmetric distribution of information. There is neither room for uncertainty, nor room for the possibility that banks may have different types of knowledge than firms. As long as the risk can be objectively estimated or measured, there is no problem with this procedure. The problem stays only on the banks side, whether they can obtain the full information. If the banks cannot then they maybe prefer to ration the credit rather than raise the interest rate because the latter way means higher risk exposure.

However, if we take the view that there is uncertainty attached to risk assessment, we need to reconsider the problem in terms of a different benchmark. Uncertainty, which is the core of the Post Keynesian approach, is also noticed in

daily experience. Whenever we carry out an act with future consequences in practice, it is always the case that we have to carry it out without precise knowledge of these consequences. It is also impossible to forecast or estimate them accurately. Therefore, we can say that the lack of information (or knowledge) is one of the important sources of uncertainty and this makes it impossible for agents to have access to the probabilities themselves. In the case of great difficulty in getting information, Keynes attempted to deal with information more in terms of the concepts of uncertainty and convention than in terms of the precise probabilities. In history, convention becomes a kind of device created by human beings to cope with the precariousness of knowledge arising from uncertainty regarding the future (Mizuhara, 2002).

In the context of the credit market, risk assessment is subject to uncertainty and it is not objective, but subject to changing perceptions as to asset values. In the absence of full knowledge, banks rely on conventional judgements about the state of the economy, the performance of particular sectors and firms, etc, so that a reversal in the judgement of one bank is likely to be part of a general reversal in a conventional judgement. Thus borrowers which one day are judged credit-worthy may find themselves judged the next day by a range of banks as not credit-worthy.

Minsky's model as a core part of the Post Keynesian analysis of credit market enriches the discussion of uncertainty, the unquantifiable risk. Minsky uses a Keynesian approach to an analysis of the investment decision of the firm, and the issue of how to finance investment. Three key factors: cost of capital goods, profit expectations and risk perception, are combined in the discussion. It is Keynesian because it is important that the decision (by borrower and lender) is

taken against a background of uncertainty about the outcome of the investment project. The model is a simplified version of reality, in that the bank finance is the only form of external investment finance.

Minsky's exposition of his own theory is none too clear in his book published in 1975, being marred by misprints and unhelpful graph-labelling. Dow and Earl (1982) remedied these deficiencies and also showed how the theory can be adapted to cover banks in a way which helps make clear the layered nature of modern financial structures.

There are three important assumptions in Minsky model: 1) A firm prefers to be financed by retained earning than by bank loan; 2) The interest payment on the bank loan is equal to the opportunity cost of the retained earning. 3) No voluntary default. This means every borrower will definitely repay the loan as long as their investment is successful.

In the Figure 2.7.1, **QQ** is a rectangular hyperbola which represents retained earnings. The expected value of the project to be financed is shown on the vertical axis, with the financing cost (where P_k represents the expected value of the capital good and P_I represents the cost of the capital good). The amount of the investment is shown on the horizontal axis. Whenever P_k exceeds P_I, the project is expected to yield a profit, equal to the difference between the two values times the amount of investment.

Figure 2.7.1   Determinants of a firm's investment and external finance ratio
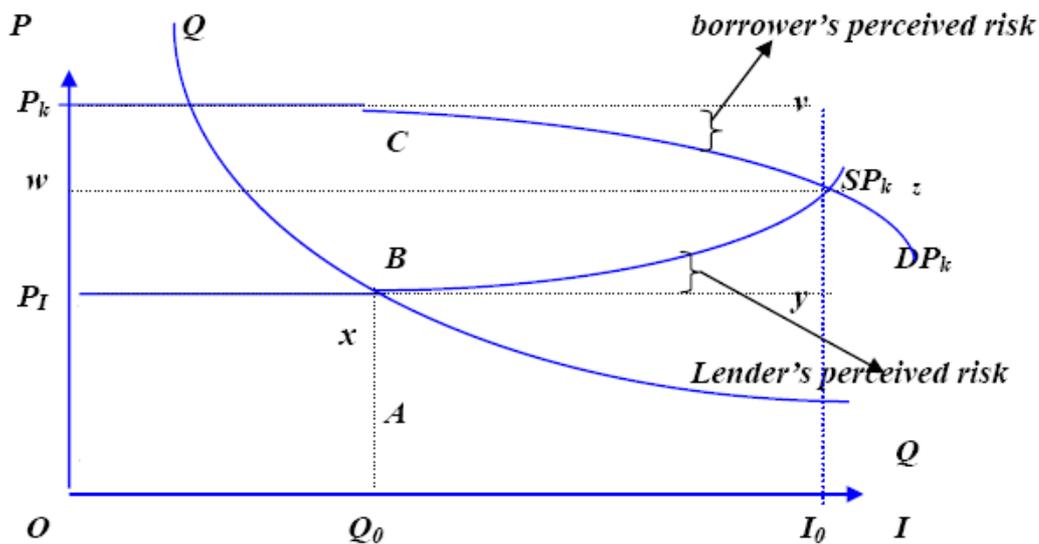
A: $OP_I yI_0$ Cost of purchasing capital equipment
B: $P_I vzy$ Interest payment
C: $wP_k vz$ Expected profit

Source: Dow (2006, p.70)

In the world of certainty, if P_k exceeds P_I, then there would be a number of investors who will apply for bank loans, driven by the expected profit, to finance the project. Meanwhile, the banks could earn more profits through raising the interest rate. The end of the process of the interaction between bank and borrowers is that the P_k should be normally at a level above P_I.

Minsky introduced uncertainty (unquantifiable risk) into the above model such that the borrowers have to face the fact that P_k might not be achieved as they expected. Therefore, the banks have to face the risk that the borrowers might default or not be able to completely follow the contract. This kind of uncertainty implies potential losses for both borrowers and bank. In Minsky's model the perceived borrower's risk is measured by the distance between the demand for credit and P_k at any level of investment and perceived lender's risk is measured

by the distance between the supply of credit and P_I at any level of investment (both risks are marked out in Figure 2.7.1). The perception of risk, and the level of credit at which it begins to be significant, depends on the confidence borrowers have in their estimation of P_k.

The borrowers' credit demand curve (DP_k) starts on the horizontal at P_k and it falls increasingly below P_k as the perception of borrowers' risk increases, as volume of credit increases. Similarly, the banks' credit supply curve (SP_k) is horizontal at P_I and then because of the perception of lenders' risk, it goes up. The starting point for the curve and the steepness of the curve depend on banks' confidence in their estimation of P_k.

We could see from Figure 2.7.1 that the level of external finance is determined by the intersection of the supply curve, SP_k and the demand curve, DP_k. The amount of investment is I_0, with $OP_I x Q_0$ financed internally, and $Q_0 xyI_0$ financed by bank borrowing. In addition to the cost of purchasing the capital equipment (OP_IyI_0), interest must be paid to the bank at the rate determined by the height of the point of intersection of DP_k and SP_k at I_0. This represents the bank's perceived risk for that level of borrowing and equals the firm's expected profit, less the amount of risk the firm is prepared to undertake. So the interest burden is represented by yz times the volume of investment, the area $P_I wzy$. The difference between these two costs and the actual value of the project (determined by what P_k actually turns out to be) is profit. Thus expected profit is $P_k vzw$. Further the level of investment and the degree to which it is bank-financed depend on the extent of retained earnings, QQ, and on the expected value of future investment projects.

The two diagrams, Figures 2.7.2 and 2.7.3, show the curves for a state of high confidence (Γ_h) and low confidence (Γ_l), where the latter also involves lower retained earnings and a lower expected return, i.e. a lower P_k.

Figure 2.7.2   Minsky's model with high level of confidence in expectations
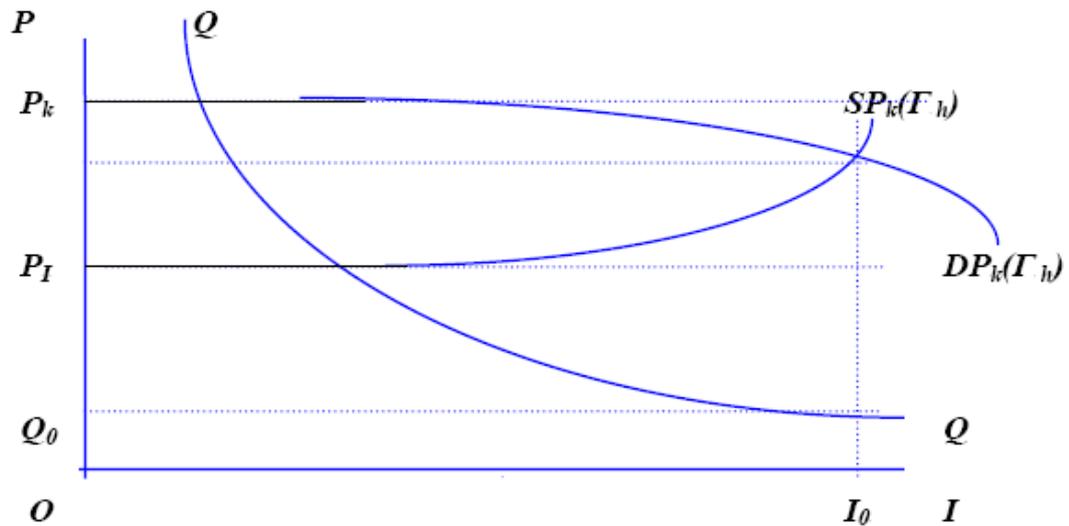
Source: Dow (2006, p.70)

When we compare Figure 2.7.2 with Figure 2.7.3, it can be found that in the relatively optimistic situation, as shown in Figure 2.7.2, the curves of DP_k and SP_k are much flatter and their intersection is farther to the right-hand side. Therefore, the volume of investment is much larger.

With optimistic expectations, the borrower would finance the project by bank loan and the bank also would like to apply a less severe credit examination. The foundation of their choices is the confidence about the economic situation. Investors' finance usually take the form of speculative finance, where current earnings may from time to time not meet interest payments, but the earnings stream is such that the firm is confident of being able to borrow short-term to make up the difference. In this situation, Ponzi finance may become possible as

well, if profit expectations become more confidence, where current earnings cannot possibly meet interest payments and P_k all comes from capital gain at the end of the project. The firm must borrow to meet interest payments, and can do so if the lender shares the optimism about capital gains. This is the form of finance which leaves the borrower most exposed to risk. The systemic risk of the financial system and the economy increases as well.

Taking Minsky's business cycle theory into account, these risky finance forms usually takes place in the upturn step of the cycle, where the expectations are strongly held that asset values will rise, and so perception of risk is low. Credit is easily available and investment increases, further fuelling the upturn. Firms are increasingly willing to engage in speculative, and eventually Ponzi, finance, given the ease of borrowing. The financial structure becomes increasingly fragile as firms become more highly leveraged and as their cash flow position becomes much more vulnerable to increases in interest rates and any limitations on credit availability.

This will not lead to a financial problem if both of borrower and bank's expectations do not turn out to be too diverged from the outcome. If they are found to be over-optimistic bankruptcy will take place and financial crisis might follow because of the fragile banking system.

Similar as the relatively optimistic situation, in the relatively pessimistic one, as shown in Figure 2.7.3, we could see that investors cannot rely on bank loans much to finance the project because of the bank's low confidence. Investors may also have to take the most conservative finance form, hedge finance, where current earnings (from past projects) are expected to exceed interest payments, so that no cash-flow problem is expected in meeting interest commitments.

Figure 2.7.3   Minsky's model with lower levels of confidence and low expected P_k
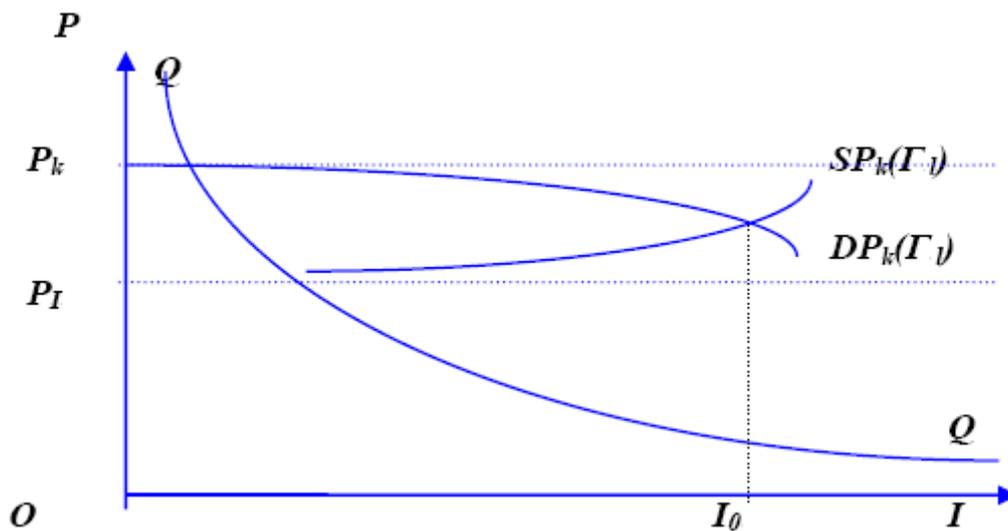
Source: Dow (2006, p.71)

Following a boom time, as the reasonable expectations about the returns to production reach a ceiling, the business cycle will proceed to a downturn, where, because the financial structure is fragile, it takes very little to puncture expectations of ever-rising asset prices, and for the process to go into reverse. As P_k falls and borrowers' and lenders' risk rises, credit availability falls. The demand for credit for new investment falls. But the demand for credit rises to cover interest commitments (and as working capital as earnings fall). The result is a rise in interest rates, which makes the cash-flow position even worse, and encourages price rises by firms with market power as an alternative way of covering interest payments. Unemployment is thus rising, and so are product prices, but asset prices are falling. Once firms with cash-flow problems go bankrupt, the demand for credit falls back, and interest rates fall. This downturn can only be reversed once firms become confident enough of high earnings on new investment to want to borrow. Low interest rates in themselves would not be enough

If the pessimistic situation keeps going, it will lead to the extreme case where P_k is lower than P_I, such that no investment occurs (see Figure 2.7.4).

Figure 2.7.4: Minsky's model with no investment
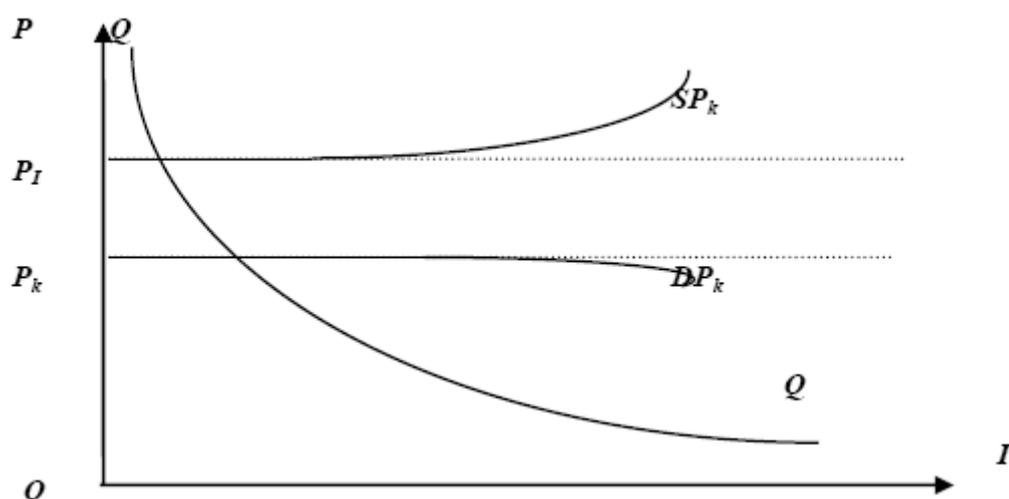
Source: Dow (2006, p.71)

Minsky's analysis gives us a demand for credit curve on the part of the firm and the firm's supply of credit curve from the bank. We have seen the forces behind the determination of the curves: the expected return on investment, the perception by borrower and lender of the risk attached to this expectation, the cost of capital and so on. We can think of the credit market in aggregate as being derived substantially from an aggregation of this micro-level behaviour. In the diagram of Minsky's model, uncertainty is represented by the degree of confidence in estimating P_k. However, if there is too much uncertainty in the economy, if might even be difficult to estimate the level of P_k.

Uncertainty is addressed by the banking system variously in different stages of the banking development. In the next section we will go through these stages to see the different roles that banks play during different periods. This helps to determine the stage at which Chinese banking is developing.

2.8   The evolution of banking and the credit market

Before we come to the particular Chinese case, let us start with the framework of banking evolution, which was formulated by Chick (1992, 1993). This stylized seven-stage framework was derived from the history of English banking. The framework's relevance to monetary theory and policy is that the causal process varies with stages of banking development, and accordingly so does the appropriate monetary theory, and the appropriate monetary policy. Although Chick's model refers to a market economy, it provides a benchmark for the research of banking evolution in other economies. The adaptation of Chick's model to the Chinese case will be seen in Chapters 3, 4 and 5.

In the first stage, money is deposited in the safe-keeper's place, like goldsmith, as a relatively safe way to save, but receipts or claims on the deposits are not widely used in transactions. "Banks" are pure intermediaries between depositors and borrowers. As experience developed, bankers were confident to lend out some of the physical money, with the expectation that less would be withdrawn at any time, and people realized the receipts could be used as replacement of physical money when the bankers commanded enough confidence. This transition from commodity money to fiat money not only facilitates trade but also allows "bankers" to create credit. When the receipts began to be used much

more widely as a means of payment, rather than as a vehicle for saving, banking came to the second stage. At this stage, holdings of bank liability represent money, which could be used to finance any expenditure within the local area. The redeposit ratio from bank lending would be fairly high.

The third stage is "inter-bank lending", which solves the problem caused by territorial differences and entry barriers. Individual banks would be undermined by reserve loss when their borrowers spend their loans in other communities, where the receipts are deposited with different bankers. Almost all the banks faced such problems. Therefore, besides competition, cooperation was needed as well to enhance their security and health by the mutually-supportive practice of inter-bank lending.

"Inter-bank lending" enables banks to keep lower reserves and this phenomenon is enhanced further by the appearance of the central bank. The central bank promises to provide lending of the last resort without waiting for a crisis to happen, but a charge will be put on this service. With the promise of help from the central bank, the confidence of the whole banking system is enhanced and this allows banks to expand credit without reserves constraint, instead of a price constraint. Bank failures would be reduced in a big scale in this sense.

In the fifth stage, the competitive NBFIs instigate struggles over market share. Banks have to actively supply credit and seek deposit in order to compete for market share with NBFIs. This situation is likely to lead to excessive lending. The amount of bad loans in the 1980s was a result of banks' credit expansion which diverged from real economic activity. In order to curtail the credit, CARs (Capital Adequacy Ratios) were imposed on the bank management that require banks to hold 8% of assets (weighted according to risk) in capital.

The banks' response to by-pass this restriction is to convert loans into securities, which can be bought and sold. This happens in stage six, Securitization. Securitization represents a return to banks' holding marketable assets and helps banks to keep liquidity and increase off-balance sheet activity. However, securitization is a double-edged sword, because it makes the value of banks asset fluctuate with the changing market. The price fluctuation would undermine banks' stable management and make them vulnerable to some extent, which is depending on the scope of fluctuation. As we will discuss in Chapter 5, currently the Chinese banking is in the transition from stage 5 to stage 6.

In the seventh stage, Market Structural Diffusion, there is a trend to diffuse retail and investment banking. The pressures of deregulation make it hard for authorities to keep segmentation in financial markets. It is more and more difficult for distinct financial institutions to operate in distinct markets. Although banks are still special because their liability is used as money, the status is undermined by the competition from other financial institutions. Questions have been raised about whether banks will disappear or lose their distinctive state in the future and whether there will be an eighth stage and what it would be like.

It could be seen that the special status and the distinct ability, credit creation, make banks outstanding in the financial market and drive banks themselves in a market economy, to evolve through the seven stages. Confidence, the essential requirement of banks' existence, determines the development of the banking system and particular banks. The changing confidence in banks is combined with the changing of people's knowledge about the uncertain future. The appearance and development of the central bank enhance people's confidence in commercial banks as well as the healthy operation of the whole banking system.

The appearance of the central bank is the result of the competition and cooperation among banks and it is needed to deal with the actual or potential problems in an existing banking system. The main functions of the central bank are to enhance people's confidence in the banking system and maintain the value of the currency, i.e. price stability. Furthermore, the unique nature of the banking business makes the central bank much more important. Banks hold redeemable deposits. For a separate bank it is quite likely to lead to a run-out of the reserve. To prevent a run the bank assets should be put in the market, but this is not possible before the sixth stage of the banking evolution. Thus, the central bank, the provider of the ultimate means of settlement, is essential for helping banks to maintain the stability of the financial system.

The core of the central bank functions is to act as the "lender of last resort", which could rescue particular individual banks and provide liquidity for the market as a whole. This removes the reserve constraint but is likely to cause the moral hazard problem that the commercial banks might be careless in making credit loans. Also with the development of inter-bank and other short-term money markets, central banks should not commit themselves to give unquantified support to the bank that has any liquidity problem, which is not caused by technical problems. Therefore, besides putting a costly charge on this service, the central bank needs to undertake plenty of regulation and supervision on the commercial banks before they provide lending of last resort. When the development of the banking system enters the sixth stage, the role of the central bank seems to become unimportant for the commercial banks in that the commercial banks could keep liquidity through the transaction of the securities in the financial market.

However, when banks face systemic problems due to financial fragility as analyzed by Minsky in Section 2.7, the role of central banks remain crucial.

Additionally, the tension between the function of stabilizing the value of currency and the function as bankers to the government always happens in history. All governments have an incentive to obtain cheap finance through their own banks, the central banks. Even the weakest government could finance the budget deficit through forcing the central bank to print notes. Therefore, a voice of keeping the central bank independent is popular among contemporary economists (see Mas 1995).

In this section we have explained the stages of banking development, which provides a benchmark for any national banking system. We will refer to these stages when we discuss particular Chinese banking in Chapters 3, 4 and 5. But we focus now on the particular evaluation of risk assessment by banks.

2.9 The importance of history in the bank assessment of credit-worthiness

In the previous section we reviewed Chick's (1992, 1993) seven stage model of the banking development, suggesting that in different stages we may need to apply different theory. In Section 2.7, we find convention as "rules of thumb" is one of the most effective methods for banks to assess credit risk when full information is not available. Therefore, in this section we'll carry on to find out how the convention is formed and why history is important in this process.

The fundamental basis of the banking system is the confidence held in it by the rest of the economy. This kind of confidence is built and evolved with the evolution of the banking system. The distinctive status of banks in the financial system is based on their peculiar ability of pooling different liquidity preferences. As we know agent's liquidity preference is depending on her knowledge about the current situation and the expectation of the future. The specialization of banks enables them to have more knowledge related to the credit market through the contracts with various customers. Additionally banks' liability is used as money. Because of this, banks could create credit to finance before saving. In the credit market banks have much more lending space than the NBFIs. On the other hand, through the business with the customers with different illiquid debt contract, banks gradually built up a comparative advantage in assessing the risk attached to these contracts. And with the inter-banking competition, the premium attached to the loans was adjusted and became more reasonable for both sides of any contract. Of course this premium needs to cover banks' funding cost, operation cost and the occasional default. During this process, banks gradually established a relatively stable customer group and also establish the confidence among the customers. On the whole in this market banks have obtained enough knowledge to develop convention for assessing risk. This is the natural and best way to obtain such knowledge.

The close relationship in this "classical" model of the credit market, which is also called "relationship banking", is not suitable for the present developed economy. With bank competition, borrowers might not stick on one bank. They would choose the bank that can provide the best contract to borrow for any transaction. The banks also need to explore the market to deal with the new

comers from other regions or countries. The original knowledge base faces challenges. Therefore, with the development of the banking system, a shift from relationship banking to transactional banking is an unavoidable tendency. For each loan contract, the bank and the borrower need to write all the issues in the contract, particularly relating to collateral and follow it. Now conventions would thus evolve as well. The foundation of mutual trust was replaced by a strict contract for every loan.

Rome wasn't built in a day. The changing of the composition in the credit market was a gradual process during which banks' conventions automatically evolved. There had to be a way to deal with change and this method would be adjusted by the following bankers. So in a relatively stable society, the convention could gradually modify itself to let credit managers know the risks in the market. When we focus on the Chinese case, we will find there is an obvious gap of convention. In the centralized period banks did not need to assess risk and the old convention was discarded or forgotten. I will elucidate this in Chapters 4 & 5.

Credit manager's experience is more helpful than any quantified methods. But this experience does not mean banks can have access to 'true' risk which is unattainable. Bank's managers are always needed to make judgement based on conventional judgement and intuition. The conventional judgement is inherited from the former manager and the intuition is hard to tell and transmit. Banks have comparative advantage of knowledge in the credit market and they have various confidence determined by the knowledge and convention. If the uncertainty attached to some borrower is too much, banks would feel little confidence in the business. Therefore, the premium can be estimated, by even rough estimation is hard to make. Then the bank has to reject the loan application.

In summary, conventional knowledge is crucial, yet convention cannot be generated overnight. That's how we can explain why any foreign bank will hire domestic staff from local banks when they enter a new market. On the other hand they need to form their own convention about the domestic market, although it cannot be done in a short time.

2.10 Conclusion

In this chapter we focused on the relationships between money, finance and banks. We have shown that financial development is very important for economic growth and the banking sector's role is crucial in the financial system because banks can provide finance ahead of savings through credit creation.

Because the issue and repayment of credits do not happen simultaneously, banks have to make a decision on loan applicants' risk types before granting loans to them. We have argued that the main problem raised by default is caused not by asymmetric information but by uncertainty. We followed the Post Keynesian approach and argued that uncertainty plays a central role in the credit market and banks always rely on convention in their decision-making. However, the formation of convention is a long and natural process, which cannot be copied or transmitted. It means banks need a long history to build people's confidence in them and form a convention in risk assessment. In the next chapter we will start to examine the Chinese banking history to see how modern banks emerged in China and how credit risk was managed by the various banks.

Chapter 3   History of Chinese Banking Before 1949

In Chapter 2 it is justified that money plays the central role in a market economy because of the universality of uncertainty. Different from NBFIs, banks can create credit since their liability is used as money, which enables them to finance before saving. Furthermore, it is also argued that the healthy operation of the banking system always relies on convention, especially in the decision-making of credit loans, and the formation of convention is a long process, where history helps build people's confidence in them and form a convention in risk management.

This chapter is focused on the history of the Chinese banking before 1949, during which period the evolution of modern banking followed a capitalist path similar to the Western case. After that, when the Communists came into power in 1949, they developed the whole economy, including banking, in the Russian centralized mode, which is a completely different path. The purpose of this chapter is to discuss, with Chick's (1992, 1993) seven-stage framework of banking evolution, how modern banks emerged and developed in competition with China's native banks. We are interested in this period since the previous experience of the banking evolution is quite important for current banking reform. Compared with the Western world's banking history, China's indigenous experience would be more practical and helpful.

Hence, the chapter is organized as follows. In Section 3.1 we will start from the period before the appearance of the Chinese modern banks. In Section 3.2 we will investigate the emergence of modern banks and the drive behind the banking evolution. The "golden age" of Modern Chinese Banks will be examined

in Section 3.3 and in Section 3.4 we will look at how the golden age was disrupted as well as the following financial crisis in China before the Communists took the power. Finally, in Section 3.5 we will summarize the main findings of the chapter.

3.1 "Three Kingdoms" in the financial market: Background of the appearance of China's modern banking

Before researching into modern banking in China, we need to have a brief review of the background and the seedbed of its appearance in the late Qing dynasty (1644-1911), where the financial market was dominated by three kinds of financial institutions: *piaohao*, *qianhzuang* and foreign banks.

Piaohao

Piaohao (or piaozhuang, huipiaozhuang) was also known as Shanxi piaohao, because the natives of Shanxi province owned most of the piaohao. The first piaohao originated from the Xiyuecheng Dye Company. Their managers transported money by drafts cashable in the local branch of the company (Cheng, 2003, p.11; Zhang, 1987, p.42). This way was adopted in the domestic remittance afterwards. "Dealing in remittance and exchange may be considered as the beginning of native banking activity in China" (Tamagna, 1942, p.17).

At that period, due to the undeveloped transport facility, long distances and unstable social circumstances, money transportation was quite a costly and unsafe business for medium and large companies, which had cross-provincial or

national-wide branches. The usual way for money (silver) transportation was armed convoy and the cost of this method was 2-3% of the value. The cost of piaohao's draft was only 0.3%, about one-tenth of the cost of armed convoy (Cheng, 2003, p.12). This advantage earned piaohao a good reputation and an increasing number of clients. In the middle of the 19th century, due to the national chaos caused by the *Taiping Rebellion*[2], the government started to collect and remit government tax (*jingxiang*), which used to be transported by armed convoy, through piaohao's drafts and cheques. These could be cashed at any of their branches or correspondents. Telegraphic transfers were also introduced in remittance as a form of original electronic banking when this technology became available. This business gave piaohao great profit and good opportunities for further development. Their close relationship with the government brought them more and more profitable semi-official business and they gradually became the government's financial agencies. Following the example of the government, high officials also preferred to let piaohao handle their own private wealth. Some scholars treated piaohao as "China's first state banks" (Cheng, 2003, p.13). Therefore, piaohao grew rapidly in the 1850s and they had branches in all the large and medium-sized cities in mainland China. Overseas, piaohao also had branches in Osaka, Kobe, Moscow, Singapore and Calcutta (Zhang, 1987, p.42).

The owners of piaohao carried unlimited liability, and most of them contributed additional working capital in the form of deposits as "protecting capital" (*huben*). Piaohao preferred to employ the people from Shanxi and the branch manager had to send his relative to head office as a hostage in order to avoid corruption or fraud. Like the modern commercial banks, piaohao's finance

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[2] The Taiping Rebellion (1851-1864) was one of the bloodiest conflicts in Chinese history, a clash between the forces of Imperial China and those inspired by a Hakka self proclaim mystic Hong Xiuquan, who was also a Christian convert.

was not constrained to its own paid-up capital, in that it also mobilized the temporarily idle funds of others to run their business. The term "capital power" (zili) was coined by Chinese economic historians to measure the size of a piaohao or other financial institutions (Cheng, 2003, p.14). A piaohao's capital power could be used as an indicator to show its ability to mobilize finance.

Qianzhuang

Apart from piaohao, there were also a large number of small native banks called *qianzhuang*. Tamagna's (1942) definition of qianzhuang is:

> "A financial firm established in the form of a single proprietorship or partnership by members of a family, a clan, or a closed circle of friends, for the purpose of handling deposits, lending, remittances, and exchange of money, with unlimited responsibility guaranteed by all resources of the proprietor or of the partners" (Tamagna, 1942, p.57).

While piaohao had a central head office and took high officials and big merchants as their main customers, qianzhuang were scattered all over the country and much closer to local citizens and small enterprises. Qianzhuang usually did not have nationwide branches. They "functioned as commercial banks by conducting local money exchange, issuing cash notes, exchanging bills and notes, and discounting for the local business community" (Cheng, 2003, p.15). Before China opened itself to foreign trade, qianzhuang dominated local financial business and their development relied on the dramatic expansion of China's

foreign and domestic trade. At that time, it was quite common for a qianzhuang to make loans several times of its capital.

Foreign banks

Foreign banks, the third power in the financial market, monopolized the international trade business of China. Before the 1840s, large Western trade firms in China performed their own banking transactions as a subsidiary business. The growth of imports and exports required more service than piaohao and qianzhuang could provide. The term *yin hang* was then introduced into Chinese, referring to modern Western banks at that time (Cheng, 2003, p.17). In this way, modern Western banks were differentiated from traditional Chinese financial institutions.

Native banks grew rapidly at the beginning of the 19th century, and by 1815 native bank notes were widely used in larger local transaction. With the open door policy implemented by the imperial court followed by the boom in international trade, foreign banks entered China in late 19th century. The opening of treaty ports to foreign trade following the end of the Opium War gave the sector a further boost, both by increasing the demand for convenient and reliable currency and by introducing 'modern' foreign banks. In the late 1800s, the history of the Chinese banking was dominated by the prosperous business of foreign banks. From 1845 to 1897, 15 foreign banks from Britain, France, Germany, Japan and Russia were opened and by the end of the 19th century, there were 9 foreign banks and 45 branches in China (Cheng, 2003, p.18; Zhang, 1987, p.35), including the famous HSBC which was established on 3 Mar, 1865 in Hong Kong,

and its branch in Shanghai was opened in April of the same year. HSBC was the first foreign bank which gave loans to the Qing government and this brought a lot of profit to HSBC and made it grow rapidly in the late 1800s. By the end of 1894, the proportion of HSBC's loans to the Qing government was 63% of the total loans (Zhang, 1987, p.36). At the same time HSBC also issued its notes in China.

Three Kingdoms

The situation of the "Three Kingdoms" appeared at the end of the 19th century and they almost had even proportions of market share: foreign banks (32%), piaohao (32%), and qianzhuang (36%) (Cheng, 2003, p.19). Taking account of Chick's (1992, 1993) seven-stage model of banking evolution, the Chinese financial market at that time was in a transition from the second stage "*bank deposits used as money*" to the third stage "inter-banking lending". Citizens had got used to using bank deposit as a means of payment and the cash flow between banks increased rapidly as well. The non-competitive ranges of business among piaohao, qianzhuang and foreign banks explained why they did not oppose the growth of each other. On the contrary, they helped each other's development by supplying the needed funds (Tamagna, 1942).

As discussed in Chapter 2, convention plays an important role in the banking sector. When foreign banks entered China, they met the difficulty of letting the Chinese people build the convention to use their bank and the convention involved a different language, different commercial tradition and different personal relationships. Therefore, foreign banks employed Chinese

bankers to help them and most of these bankers were from qianzhuang, and the business between foreign banks and qianzhuang increased dramatically.

A good example is the daily based "chop loan" from foreign banks to qianzhuang. With its management financed by this loan, qianzhuang enhanced economic prosperity and thus promoted international trade, which was monopolized by foreign banks. Such a reciprocal relationship boosted the development of both sides and was hence greatly welcomed.

The "Three Kingdoms" situation broke down with the collapse of the piaohao and the downfall of qianzhuang. Meanwhile modern banks appeared and grew with China's early industrialization.

3.2 The emergence of modern banks with the collapse of the "Three Kingdoms"

In this section, we proceed to the emergence of modern banks in the early 20th century. The background and the drive behind the evolution of banking will be explored.

Background

To look through the naissance of modern banking in China, we need to start from Li Hongzhang[3]'s *Self-Strengthening Movement (1861–1894),* which was a nationwide economic and political reform. Having experienced several defeats in the wars against foreign countries and the following unequal treaties, the Qing

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[3] Li Hongzhang (February 16, 1823 – 1901), was a general who ended several major rebellions, statesman and ambassador of the Chinese Qing Empire.

court and high officials realized the urgent need to strengthen China in a Western mode as Japan, China's powerful neighbor, did in the middle of the 19th century. Against this background, Western science and languages were introduced and studied, special schools were opened, and arsenals, factories, and shipyards were established according to Western models. Western diplomatic practices were adopted by the Qing court, and students were sent abroad by the government and on individual or community initiative in the hope that national regeneration could be achieved through the application of Western practical methods. From 1861 to 1894, scholar-administrators led by Li Hongzhang, were responsible for establishing modern institutions, developing basic industries, communications, and transportation, and modernizing the military. Although the Self-Strengthening movement was considered a dismal failure in that it did not allow China to become an advanced modern country as Japan did, the modernization in this period gave a tremendous boost to the native industry. The large scale of industrial development created new financial demands, which led to the appearance of modern banks and propelled the banking evolution.

Unlike the old handicraft manufacture, modern industry needed large numbers of long-term loans to finance business. This financial need was quite different from the old banking product which had been provided by the existing banking system. Cheng (2003) made a comparison of capital size between the handicraft and modern industry:

The total product value of all of China's more than 2 million handicraft workshops was only a little more than C$[4]4 billion, or C$2,000 yuan each, in 1912. …However the average capital of 104 modern factories founded in China between 1872 and 1896 was

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[4] C$=Chinese yuan

C\$2,882,663, and their total capital reached more than C\$29 million.…The 87.5 kilometres of the Jin-Hu Railroad (Tianjin to Dahu) cost C\$1.82 million in 1888. To build 106 kilometres of railway from Jilong to Xinzhu in Taiwan, the Qing government spent more than C\$1.8 million in 1891. The Jinghan Railway (Beijing to Hankou), completed in 1905, is 1 311 kilometres in length and cost more than C\$68 million (Cheng, 2003, p.21).

These new financial demands created by the development of modern industry and the cost of railway construction tremendously exceeded the amount of the previous financial demands. Where could they obtain funding for their projects? The old financial institutions did not have available resources. For native banks, piaohao or qianzhuang, the main problem was lack of capital. Because of the qianzhuang's financial nature, single proprietorship or partnerships, it was impossible to provide a large amount of capital to finance any long-term projects. Although piaohao had relatively abundant capital, their widely scattered branch system dispersed their capital. While enjoying the privilege and advantage in remittance and official business, the owners of piaohao did not pay much attention to the potential profitability of financing modern industry. They were happy to accept deposits from modern industrial enterprises, but were reluctant to make loans to them. This conservative behaviour limited their involvement in modern industry and restrained their own development, whereas the foreign banks kept their monopolistic status in the growing foreign trade and enjoyed these lucrative businesses. Compared with financing the long-term projects of modern industrial enterprises and the Qing government's costly railway construction, the business on international trade had a shorter capital-cycle period and was more stable and profitable. The unfamiliarity with Chinese convention as well as the

complicated relationships between Chinese enterprises and local governments also built a barrier for foreign banks' entry into the market. Furthermore, the unstable social circumstance and the imperfect legal system could not provide foreign banks with enough confidence to play an important role in The Chinese economy. They would never take the risk to enter an unfamiliar market.

Another drive for the creation of modern banks in China involves the government's political need. In order to pay the large amount of war indemnities, the Qing government had to raise foreign debts to keep the budget balance. Foreign debts were always issued with a political connotation. Therefore, the establishment of modern Chinese banks was seen as a method for protecting China from political exploitation and invasion by foreign powers. Li Hongzhang and his followers convinced the Qing court to establish a modern bank in order to finance government expenditure and facilitate modern industry, in which way foreign power could be resisted.

The first modern Chinese banks

It was under such circumstances that China's own modern banks appeared. On May 27th, 1897 (the 27th year of Emperor Guangxu's reign), the first modern Chinese bank, the China Tongshang Bank (*Zhong Guo Tong Shang Yin Hang*) or the Imperial Bank of China (IBC) [5], opened in Shanghai and within the same year its branches were established in Beijing, Tianjin, Hankou, Guangzhou, Yantai and Shantou (Zhang, 1987, p.73).

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[5] The name is translated as the Imperial Bank of China (IBC) in Cheng (2003).

IBC took its distinguishing features from other native banks. Taking advantage of the privileges given by the Qing government, IBC had the largest amount of capital a Chinese financial institution had ever possessed. It expanded its total assets to more than C$10 million and issued more than C$8 million in loans in 1899 (Cheng, 2003, p.25). IBC was a joint-stock firm for which shareholders assumed limited liability, while the owners of the piaohao and qianzhuang assumed unlimited liability. In order to get on the international track, IBC announced that it would not adopt the old Chinese convention in running its business. The Western management style enabled IBC to become the first Chinese member of the Shanghai Bank Association, which was organized by the foreign banks in Shanghai. IBC issued China's first banknote in 1898, and the total amount of its banknotes quickly increased to C$3,328,000 in 1907 from C$402,220 in 1898 (Cheng, 2003, p.26). Although the amount was much smaller than that issued by foreign banks, it paved the way for Chinese banknotes to replace foreign banknotes in most parts of the country (see Cheng, 2003, Chapter 5).

However, the establishment of IBC did little to change the credit market. IBC was a helpful institution for financing the Qing government's projects, but it excessively emphasized official business and ignored the collection of deposits from the public. This defect was caused by IBC's nature as a complete official bank, and this restrained IBC's development. Modern banking in China had not made substantial progress until the establishment of Daqing Bank and the private commercial banks following it.

The defects of IBC discouraged new investors from putting more capital into this bank. Realizing that IBC could not help the Qing court solve financial

problems, the government planned to establish a replacement, which was assumed to be more westernized. According to the experience of IBC, the Board of Households (*Hubu*) listed four obstacles that hindered the expansion of modern Chinese banks: a) there were no special training schools for financial experts; b) modern banks had not been accepted by common citizens, and few Chinese were aware of the potential profit from modern banking; c) Chinese people had so little trust in paper notes that a new bank would not receive much advantage through issuing banknotes. d) finally, the operation of modern banks impaired the corrupt officials and sordid merchants' vested interest (Cheng, 2003, p.30).

The Bank of the Board of Households (*Hubu Yinhang*) was established based on the above consideration in September, 1909 as a limited liability bank. Although it was similar to IBC in nature, that is, an official bank, the Qing government tried to establish it as a half official and half public bank. The capital of 4 million taels of silver (C$5.6 million) was divided into 40,000 shares. Half of them were held by the government and the rest were subscribed to the public, limited to Chinese citizens. The bank's capital was raised to 10 million taels in February, 1908 and it had its name changed to Daqing bank at the same time (Cheng, 2003, p.30)[6]. Daqing Bank was authorized by the Qing government to function as a central bank[7], issuing bank notes and running the state treasury, with exclusive privileges in both public and private business. It held a very satisfactory position and its tael notes were the only notes accepted by foreign banks. Daqing bank, unlike IBC, quickly assumed a large proportion of official business from other financial institutions, such as piaohao. The loss of market share in

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[6] The name of Daqing Bank changed to Bank of China in 1905 and used until now.
[7] Daqing did not provide "last resort facility" and Chinese banking did not proceed into fourth stage of banking evolution until 1935 (see Section 3.5).

remittance and the competition for official business directly led to collapse of the piaohao.

In December 1907 another official bank was chartered: the Bank of Communication. The authorized capital was fixed at 10 million taels (or 5 million taels in Zhang, 1987), two fifth of which was to be subscribed by the government and the remainder to be offered to the public (Tamagna, 1942, p.37). As well as the establishment of several official banks, some provincial banks were also established, with initial capital ranging from 1 million to 5 million taels, for the purpose of handling the local fiscal administration. The government also encouraged local officers to create or re-organize official silver shops as modern banks and encouraged people to create private banks. Three private banking firms appeared in the late Qing period: Xincheng Bank, established in Shanghai in 1906, the National Commercial Bank (Zhejiang Xingye Yinhang), organized in Hangzhou in 1907 and the Ningbo Commercial and Savings Bank (Siming Yinhang), established in 1908 (Tamagna, 1942, pp.37-38). All the three private banks were created by private entrepreneurs without any official or foreign funding. In all, within the 15 years between 1897 and the collapse of the Qing dynasty in 1911, around 20 banks were established in China and 12 of them remained until 1912 (Zhang, 1987, p.74). The year-end paid-up capital increased from C$3.5 million in 1898 to C$35 million by 1911, and the total capital power of modern Chinese banks had already reached C$192 million before Republic China was born (see Table 1.2 for details in Cheng, 2003, p.34).

The expansion of modern Chinese banks gradually exhibited their financial growth potential. At the turmoil of the financial market in the late Qing period, modern Chinese banks played a crucial role in alleviating potential fallout

and stabilizing the financial market, and helped the piaohao and qianzhuang survive several severe financial crises. A good example is given in Cheng (2003):

"In 1908 the death of Empress Dowager Cixi and Emperor Guangxu caused turmoil in the Shanghai and Beijing financial markets. People worried about the political situation and flocked to withdraw their deposits from qianzhuang and piaohao. In the mean time, operating under conditions of general panic, Shanghai's foreign banks abruptly reduced the number of chop loans to qianzhuang. Many qianzhuang and piaohao failed to weather the crisis and went bankrupt. To forestall massive financial disaster, the Daqing bank, the Bank of Communication, and the Ningbo Commercial and Savings Bank made 2,000,000 taels worth of loans to qianzhuang and piaohao. In addition, the Daqing Bank, as a guarantor, asked the Board of Revenue to appropriate 660,000 taels from central treasury funds for loans to qianzhuang and silver shops. These loans saved many financial institutions from bankruptcy" (Cheng, 2003, p.35).

The trust in modern Chinese banks increased with their development. The blind worship of foreign banks and the conservative reliance on local qianzhuang or piaohao gradually changed as well. The evolution of convention and the acceptance by common citizens created a good social circumstance for modern Chinese banks. The prosperity of modern Chinese banks could be seen from the appreciation of their stock shares. Two years after its establishment, the price of Daqing Bank's stock soared to 206 taels from its issuing price of 100 taels. "When the Daqing Bank issued 6 million taels worth of stock at 50 taels per share the next year, investors queued to purchase the new stock and pushed its price up to 150 taels a share" (Cheng, 2003, p.35).

Xinhai Revolution, a watershed of the Chinese banking

If the growth of modern banking was regarded as an experimental stage in the late Qing dynasty, the Xinhai Revolution[8] in 1911 could be treated as a watershed of banking evolution. The old banking pattern was smashed with the collapse of the Qing government and modern Chinese banking met a good opportunity for further development.

The decline of the piaohao, the first victim, started with the establishment of Daqing bank. After the Revolution, the piaohao totally lost one of its two main businesses, official business. Taking advantage of railways, steamships, and other modern communication methods, foreign and modern Chinese banks took over the market for long-distance remittances, which was another main market piaohao relied on. The owners of the piaohao were so conservative that they refused to adapt themselves to the changing environment. Their decline and disappearance was an embodiment of the nature of social development. Their close relationship to local business and common citizens enabled the qianzhuang to survive the various crises, and continue to develop after the revolution. However, their further expansion was restrained by the expansion of the modern Chinese banks. Their small capital size and old management made it impossible for them to rival modern banking institutions.

Unlike piaohao and qianzhuhang, modern banks gained great momentum after the Qing dynasty was overthrown, when the government of the Republic of China began to regard finance as the lifeblood of industry and take it as their

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[8] The Xinhai Revolution named for the Chinese year of Xinhai (1911), was the overthrow (October 10, 1911-February 12, 1912) of China's ruling Qing Dynasty and the establishment of the Republic of China. The revolution began with the armed Wuchang Uprising and the spread of republican insurrection through the southern provinces, and culminated in the abdication of the Xuantong Emperor after lengthy negotiations between rival Imperial and Republican regimes based in Beijing and Nanjing respectively.

obligation to promote modern banks. Additionally, the stimulation of the First World War led to the Western powers' economic retrenchment and increasing demand for Chinese products. Both the lesser pressure from the competition of foreign banks and the financial demand created in the economic boom after the world war constructed an ample space for the development of modern Chinese banks. At the beginning of the First World War (1914), there were 17 banks with a total capital of C$124 million. By 1918, this number had grown to 37 banks with a total capital of C$179 million, and in 1926 there were 102 banks with capital aggregating C$375 million, of which C$158 million was paid up (Tamagna, 1942, p.40).

As a "tradition", the government was always involved in the modern banks as the Qing government was before the revolution. Official patronage brought these banks many advantages in their competition with other institutions in the financial market. But along with official patronage came official control and abuse. During the Warlord period (1916-1927), local warlords excessively issued bank notes to finance their wars against each other for local control. Most provincial banks were saddled with paper money for which there was no metallic reserve. No one assumed responsibility for the redemption of this paper money when these banks went bankrupt. This experience made Chinese entrepreneurs reluctant to put their money in official banks, and instead they created their own private banks. There were 29 private banks founded between 1912 and 1915, in contrast to 23 official banks in the same period. 90% of the 205 new banks that appeared between 1916 and 1925 were organized by private business (Cheng, 2003, p.46).

Through the analysis of the appearance of the Chinese modern banks, it could be concluded that these banks were established with the support of the government to finance the huge credit demand during industrialization. This business mode kept going through the National period and this period is also regarded as the golden age of the modern Chinese banks in capitalism.

3.3 The "Golden Age" of Modern Chinese Banks (1927-1937)

A golden age is a period in a field of endeavour where great tasks are accomplished. The golden age of modern Chinese banks was the Nanjing decade, which began from the foundation of the National government in 1927 and lasted until the outbreak of the Sino-Japanese War in 1937. Meanwhile, this period was the golden decade of China's industrial modernization. The rapid, yet stable development of modern industry provided modern Chinese banks with a good opportunity to expand their market share.

The spread of modern Chinese banks' influence coincided with the National government's Northern Expedition[9] from Canton in July 1926. On August 15, 1924, the first Central Bank of China (CBC) opened its door in Canton. New branches of the bank were spread along with the Northern Expedition. After beating down the warlords, China was reunited under the National government. The political unification provided a stable social circumstance for modern industry. Between 1928 and 1936, 82 private banks opened doors and at the end of 1936, there were 135 private banks which had 611 branches. The total capital

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[9] The Northern Expedition was a military campaign lead by Chiang Kai-Shek in 1927 intended to unify China under the rule of the Nationalist Party and ending the rule of local warlords. It was largely successful at these objectives.

of private banks reached C$2.87 billion. As well as the profit, the private banks'

deposit and loans increased two and a half times (Zhang, 1987, p.92).

During the Nanjing Decade, the modern Chinese banks not only achieved

a quantitative expansion but also improved qualitatively. The tendency for

concentration and privatization continued through this period. The total paid-up

capital of the Chinese banks increased from C$167 million in 1927 to C$403

million in 1936.[10] There were 164 Chinese banks in operation in China at the end

of 1936, only four more than the number in 1927 (Cheng, 2003, p.68). The

average paid-up capital more than doubled during this period.

Table 3.3.1 Growth of Modern Chinese banks (1927-1936)

Year	Capital	Reserve fund	Various deposits	Notes in circulation	Total assets	Various loans
1927	166,738	48,021	1,090,404	301,338	1,691,054	1,067,022
1928	205,356	48,382	1,264,222	354,963	1,971,498	1,252,185
1929	212,286	47,904	1,466,652	402,570	2,241,486	1,424,375
1930	213,957	54,806	1,766,907	474,677	2,642,471	1,624,570
1031	221,916	54,621	2,012,758	452,147	2,885,728	1,815,530
1932	214,899	61,012	2,115,667	516,792	3,003,282	1,857,406
1933	250,835	77,437	2,594,129	578,546	3,657,737	2,327,087
1934	342,856	75,709	2,997,762	747,734	4,322,366	2,623,932
1935	369,619	79,356	3,789,378	1,032,571	5,441,185	3,195,599
1936	402,696	123,467	4,551,269	1,946,700	7,275,890	3 466,120

Note: Unit C$1,000

Sources: Appendix 2 in Cheng (2003, p.252)

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[10] Cited from Cheng, 2003, Appendix 1. Refer to Bank of China, ed., *National Banking Yearbook*, Shanghai: Bank of China, 1937, p.A42.

Table 3.3.1 shows that modern Chinese banks doubled their capital and reserve funds, tripled their loans and total assets and quadrupled their deposits from 1927 to 1936. The banknotes that they issued were quintupled. This growth was accompanied by industrial modernization. The annual growth rate of modern Chinese industry during Nanjing decade was 8.1% (Cheng, 2003, p.71). Among all the social sectors, modern banking exhibited the highest pace in its expansion. Within the 25 years between 1911 and 1936, the capital of modern Chinese banks grew more than 10% and their capital power and total assets increased more than 15% every year on average. The combined capital of modern Chinese banks increased more than 10 times, and both their capital power and total assets jumped 35 times (also see Table 3.3 in Cheng, 2003, p.71).

In the credit market, modern Chinese banks gradually expanded their market share from the competition with the piaohao, qianzhuang and their most powerful rivals, the foreign banks. Through the late Qing dynasty, the Warlord period and the early National period, foreign banks always enjoyed the privilege from the government and monopolized the foreign trade market. This won foreign banks a good reputation as well as the confidence from depositors. Foreign banks could offer their depositors security against the Chinese government's inquiry into their accounts. Therefore, foreign banks attracted many deposits from rich Chinese people. Especially during the late Qing dynasty and the Warlord period, it became the common behaviour of Chinese high officials and rich merchants to put their private savings in foreign banks, because foreign banks were assumed to be immune from the disturbing influences of Chinese politics. In that period, depositors used bank saving merely as a protection of their wealth without thinking anything about investment. When depositors chose the banks where they

wanted to put their money, they did not care much about interest rates and the foreign banks could collect deposits with extremely low interest rates, sometimes no interest at all. For instance, the Beijing branch of Citibank paid only 1/10 to 1/5 of the annual interest to fixed one-year deposits that Beijing's Chinese banks paid to the same kind of deposits. But Citibank did not find any difficulty in absorbing enough deposits (Cheng, 2003, p.72).

In the relatively peaceful Nanjing decade, however, things began to change. Firstly, the close relationship between the qianzhuang and the foreign banks was replaced by cooperation between modern Chinese banks and qianzhuang. With its old management system, the qianzhuang took chop loans from foreign banks as their main channels to finance management. But many qianzhuang defaulted on their obligations during the crisis period in the late Qing dynasty. This unpleasant experience made foreign banks reluctant to expand chop loans and, as a result, the amount shrank every year. Fortunately, modern Chinese banks took this opportunity and gradually became the main creditors of qianzhuang. The financial relationship between the qianzhuang and the foreign banks reversed in the Nanjing decade and the qianzhuang sometimes provided loans for some foreign banks.

Secondly, the Chinese people's confidence in foreign banks diminished to some extent after the First World War. The National government revoked the right of foreign banks to be the custodians of the customs and salt revenue.[11] Loss of this huge source of funding undoubtedly weakened the foreign banks' financial power. These factors as well as the challenge from modern Chinese banks, which were supported by the National government, undermined the foreign banks'

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[11] This right was entitled by the Qing dynasty for foreign loans to finance the war indemnity.

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market share. Furthermore, deposits in modern banks increased much faster than those in the qianzhuang and foreign banks. From 1912 to 1936, qianzhuang deposits increased from C$62.9 million to C$874 million and foreign bank deposits from C$226.5 to C$511 million. During the same period, however, deposits in modern Chinese banks jumped to C$4.55 billion, and the bank notes they issued reached C$1.95 billion, making up 87% of the total (see Table 3.4 in Cheng, 2003, p.78).

Thirdly, rapid industrial development in the Nanjing decade created a large amount of credit demand. As the only possible suppliers, modern Chinese banks obtained great profits through such industrial loans. After the middle of the 1920s, more and more Chinese bankers realised the fact that their businesses could not quickly develop without a strong industrial base. Their industrial loans increased considerably with the expansion of modern industry. The Bank of China, Jincheng Bank, and the National Commercial Bank increased their industrial loans 250% to 350% between 1926 and 1934. The Shanghai Bank's industrial loans jumped nearly ten times in the same period. The total industrial loans of these four banks exceeded C$170 million in 1934, more than 4.5 times those of 1926. In 1936, Shanghai's 13 commercial banks issued C$142 million in industrial loan (Cheng, 2003, p.85). Most modern Chinese banks' loans concentrated on textiles, flour, and a few other major sectors.

Fourthly, modern Chinese banks actively sought to attract savings from the public. Chinese people used to keep money by burying metallic money in the garden and putting notes and gold in drawers or under pillows. The managers of modern banks made great efforts to convince citizens of the profitability of deposit. Advertisements could be seen from newspapers, magazines, posters and

so on. The resulting changes in convention helped modern Chinese banks collect deposits and also paved the way for their further development.

On the whole, the major banks were quite successful in attracting deposits by carrying out new approaches and new methods. In the 15 years from 1921 to 1936, total deposits in the nine major banks[12] increased 5 times. Considering the scarcity of capital in contemporary China, it was a great success to provide large funding for these banks' loan business (see Table 5.2 in Cheng, 2003, p.145).

During that period, deposits were major funding sources for most banks and a bank's profit usually came from the margin between the interest paid on the deposits and the interest charged on the loans. For old financial institutions such as the piaohao and qianzhuang, loans were made on the basis of mutual trust. A merchant with good reputation could obtain loans without any material guaranty. With the further development of business, it was hard to keep the old style. The complexity of business made it impossible for lenders to judge the security of loans only based on their clients' reputation. Modern Chinese banks discarded the old management style and made great efforts to change the basis of their loans from personal credit to material collateral. Like other reforms, the reform in convention could not be an easy one. It was extremely difficult to introduce new practices to China's business environment. Although this put modern Chinese banks at a disadvantage in the competition with other financial institutions, the relatively secure operation method helped modern Chinese banks develop in a stable and healthy way.

In short, during the 10-year golden age Chinese banking developed not only in quantity but also in quality.

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[12] Nine major banks: Bank of China, BOCO, Shanghai Bank, Jincheng Bank, National Commercial, Zhejiang Industrial, Yien Yieh Bank, South & China Sea and Continental Bank.

3.4   Modern Chinese Banks in War Period (1937-1949)

The golden age of Modern Chinese banking was stopped by the outbreak of the Sino-Japanese War in 1937. The following twelve years could be summarized as a national wide war period. Different from the Warlord period (1912-1927), the National government had to face two powerful enemies, the Japanese invading army and Mao's communist army. In the first eight-year Sino-Japanese War period, China was divided into two parts, the free territory which was under the control of the National government, and the occupied territory controlled by Japanese army. The banking in both zones could not be independent from the politic initiative and followed parallel courses of State capitalism.

The reorganization of the central bank

As discussed in Section 3.3, Daqing Bank was authorised by the Qing government as a central bank. At that time, Daqing Bank only functioned to issue notes and manage the state treasury. The proper central bank with complete functions did not appear in China until the late 1930s.

As early as 1935, Dr. H.H. Kung, the head of the Ministry of Finance (MOF), initiated the reorganization of the CBC to make it the only central institution to hold the reserves of the banking system and act as a depository of all public funds and provide centralized rediscount facilities (Tamagna, 1942, p.122). Considering Chick's (1992, 1993) seven-stage model of banking evolution, the Chinese banking was proceeding into the fourth stage such that the central bank

appeared as the "lender of last sort facility". Unfortunately, the reorganization of the central bank was postponed by the outbreak of the Sino-Japanese War in 1937.

When the war extended to Shanghai in August, 1937, the National government had to move the modern factories in Shanghai to the interior area. This unexpected move required a large amount of funds and this was unaffordable for the factories. Under the threat of the Japanese army, private banks were reluctant to risk their capital. In order to finance the moving of these factories, the National government organized a Joint Loan and Discount Committee (JLDC) based on the four government banks (the Central Bank of China, the Bank of China, the Bank of Communications and the Farmers Bank of China). Subsequently JLDC took part of the central bank' functions, especially for regulating credit and stabilizing money market conditions (Tamagna, 1942, p.261). Although Dr. Kung's effort was undermined by the outbreak of the Sino-Japanese War, the JLDC was acting as the central bank. It not only controlled the financial system but also the development of the economy. All the enterprises including factories, mines, farms etc, could not get any bank finance unless they got permission from the committee. The establishment of the committee was a step towards setting up a central organ for the direction and management of central banking credit and it considerably speeded up financial and economic development. The JDLC was firmly controlled by the National government and Chiang Kai-shek was the head of the committee until the JDLC was dismissed in 1948. In Chiang Kai-shek's mind, the army and the bank were the two most important powers to control the country (Zhang, 1987, p.140).

In June, 1942, JLDC restructured the distribution of bank business among the four government banks. The CBC was required to play the central bank role

including issuing currency, managing the state treasury, organizing military finance and monitoring the financial market; the Bank of China was required to concentrate on foreign exchange, international trade, and domestic deposit; the Bank of Communication's business focused on finance for factories and mines, transport, and domestic deposit; and the Farmers Bank of China's main task was to finance agriculture, land investment, and domestic deposit (Zhang, 1987, p.142).

As soon as the currency issue was centralized in the hands of the CBC, the notes issued by other banks were withdrawn from circulation. After it controlled the currency and foreign exchange, the CBC could regulate the banking system properly. However, the CBC could not be independent from the National government and was required by the National government to finance the Sino-Japanese War and following the civil war against the Communists. The central bank had to issue more notes to finance the huge deficit of the government. As a consequence, hyperinflation started to take place.

Hyperinflation

From 1937 to 1949, China experienced hyperinflation, which finally led to the collapse of the financial system. This process roughly could be divided into three periods.

The first period is before the end of 1939, when the Sino-Japanese War was kept in the north China and near the coastal area. The National government could manage a low inflation with a slow increase of price and the output kept growing.

The second period is from 1940, when the Japanese army invaded the central China, to 1945, when the Sino-Japanese War finished. During this period China lost 92% of industry, 40% of agriculture, 63% of tax revenue, and all the foreign exchange reserve (Zhang, 1987, p.137). The huge military expenditure and bureaucratic corruption seriously damaged people's confidence in the National government. Under the pressure of the war, the National government applied a centralized national monopoly in finance and economy. The space of private banks was greatly squeezed. Hyperinflation took place under this situation. From 1940, the price index growth exceeded the currency growth and the situation kept going in the following years (see Table 3.4.1). The central bank started to issue notes with large face value, C$50 notes in 1940, C$100 notes in 1942 and C$1,000 notes in 1945. The central bank also encouraged people to use the large face value notes as means of payment.

Table 3.4.1   Price and inflation from 1937 to 1945

Year	Chongqing Price Index	Currency growth Index	Currency Issued
	Jan-Jun, 1937 = 1	Jun, 1937 = 1	C$bn
Dec, 1937	0.98	1.16	1.64
Dec, 1938	1.04	1.64	2.31
Dec, 1939	1.77	3.04	4.29
Dec, 1940	10.94	5.58	7.87
Dec, 1941	28.48	10.71	15.1
Dec, 1942	57.41	24.40	34.4
Dec, 1943	200.33	53.46	75.4
Dec, 1944	548.60	134.36	189.5
Aug, 1945	1,795.00	394.84	556.9

Source: Zhang (1987, p.147)

The third period is from 1945 to 1949 when the National government was defeated by the communist army and the Nationalists had to move to Taiwan. After the Sino-Japanese War, the hyperinflation had been slowed, but the outbreak of civil war made the situation worse and hyperinflation was totally out of control. From 1945 to 1948, the currency index grew 470 thousand times and the price index grew 5.71 ml times (see Table 3.4.2) (Zhang, 1987, p.150). The private banks were desperately struggling in the late 1940s.

Table 3.4.2   Inflation from 1945 to 1948

Year	C$ Issued (yuan bl)	Currency Growth Index (Jun, 1937 = 1)
Dec, 1945	1.0319	731.62
Jun, 1946	2.1125	1,499.76
Dec, 1946	3.7261	2,641.80
Jun, 1947	9.9351	7,096.53
Dec, 1947	33.1885	23,537.04
Jun, 1948	196.5203	139,376.09
Jul, 1948	374.7622	265,788.79
21 Aug, 1948	663.6946	470,705.39

Source: Zhang, 1987, p.149

Under this hyperinflation, the National government issued "Gold Yuan Certificates (GYC) (Jin Yuan Paper)" on 21 Aug, 1948 and the exchange rate between GYC and C$ was such that C$3 mn= 1 yuan of GYC. The face value of GYC was 1, 5, 10, 50, and 100 yuan. A hundred yuan of GYC is equal to C$300 million. However, the rich people preferred to use foreign currency to keep the value of their wealth. Without the people's confidence in GYC, 40 days later the new currency system began to collapse and in November, 1948, the National government devalued 80% of GYC and raise the price of bullion 4 times. People totally discarded the GYC and used commodity and silver coins as a means of payment.

Under the hyperinflation, the bank's role was weakened and the size of the credit market shrank a lot.

Credit market in the war period

During the Sino-Japanese War period (1937-1945), the credit market was controlled by the government.

Before the war, China's industry and commerce concentrated on Shanghai, Tianjin, Guangzhou and Wuhan, and Chinese banking also developed quickly in these big cities. With the outbreak of the war, most of the banks moved to southwest China centred on Chongqing, the National government's capital after Nanjing was occupied by the Japanese army. At the beginning of the war time, the inflation rate was not too high. In interior China the banks invested a lot in heavy industry, semi-military industry and military industry to help develop the economy to resist invasion. Afterwards, the hyperinflation made it not worthwhile for banks to issue loans, whether long-time or short-term. Banks began to invest in foreign exchange for speculation. According to a survey in Zhang (1987), the proportion of the loans to commerce was 96% in 1940, 89% in 1941 and 80% in 1942 (Zhang, 1987, p.160). Corporate finance from private banks was 40% of the total in 1941 and 20% of the total in 1944 (Zhang, 1987, p.155).

During the civil war period (1946-1949), the military defeats and the hyperinflation puzzled the National government.

3.5   Conclusion

In this chapter, we briefly reviewed the history of the Chinese banking before the Communists came into power in 1949. The modern banks appeared in the late 1890s when the native banks had developed to the third stage of banking

evolution, "inter-bank lending". The credit creation was still constrained by banks' reserves, but the risk of reserve loss was offset to some extent by inter-bank lending. The multiplier process works more quickly and the multiplier is larger because banks hold lower reserves.

The National government reorganized the CBC as the proper central bank and allocated business among the commercial banks during the war time. Therefore, the Chinese banking proceeded into the fourth stage of "lender of last resort facility". We also found that credit demand drove the evolution of banking. During the "three kingdom" period credit risk assessment was based on borrower's reputation. However, when modern banks appeared, they required borrowers to provide collateral, which was a very helpful method for securing the banking system during the war time. After the Communists took over the power, China was transformed into a planned economy in the 1950s. Banking and credit market during the planned period will be examined in the next chapter.

Chapter 4   Banking and Credit Market in the Planned Economy

Having reviewed the history of modern Chinese banking before 1949, we now proceed to the planned period under the control of the Communists. The purpose of this chapter is to examine how Chinese banks worked, how credit was allocated and how resources were mobilized within the planning system during that period.

Firstly, a summary of the features of the planned economy and China's socialist transformation after 1949 will be given besides the discussion of the planning mechanism. The methodological analysis will start from the problem of the Soft Budge Constraint (SBC). Informed by relevant theories, we will illuminate the consequences of SBC for the economy and the distortion of decision-making, particularly focusing on the credit market. This chapter aims to draw a picture of the Chinese banking system in the planned economy, and examine the inefficiency of capital allocation caused by SBC.

The chapter is organized as follows. In Section 4.1 we will examine the features of the planned economy and China's socialist transformation in the 1950s. In Section 4.2 we will probe the working mechanism of China's planning system and particular attention will be paid to money and the payment system in Section 4.3. In Section 4.4 we will focus on the centralized banking system, and examine the credit allocation and resources mobilization. The concept of Kornai's Soft Budget Constraint will be explored in relation to relevant theories in Section 4.5. Finally, in Section 4.6 we will summarize the main findings of the chapter.

4.1 The features of the planned economy and China's socialist transformation

Different from the market economy, centralized planning of economic activities and the public ownership of the means of production are the two important features of the socialist economy. The classical argument about socialist economy was made by Ludwig von Mises (1953) that in a socialist economy the situation of rational resource allocation can never be reached in that the price there is determined by forces outside the market, which cannot reflect the relationship between demand and supply. He does not believe the hand of the central planning authority can work as well as Adam Smith's "invisible hand". However, on the basis of works by Pareto and Barone, others subsequently argued that "market-determined prices were not necessary for the attainment of an optimal allocation of resources, but would be replaced by a system of planners' preferences" (Lardy, 1978, p.7). The planner, who controls the whole economy and is assumed to have full information about demand and supply, might be able to maximize social welfare by solving a set of simultaneous equations.

Von Hayek (1933), like Post Keynesians, suspects the assumption of full information. He argued that in practice central planners could never gather all the information necessary to arrive at an efficient allocation of resources, because full information is unattainable in principle. Therefore, the equation set would never be established. He argued that, even if this information could be gathered successfully, the corresponding rational plan needed a long time to be completed and this time-lag made the plan meaningless.

Oscar Lange's model (1964) was trying to solve this informational problem. Instead of allocating all inputs and planning all outputs in physical terms, the central planner would prefer to set accounting prices for primary and intermediate goods and establish behavioural rules for enterprise managers. Managers could select among all methods of production and factor combinations. His solution avoids the high cost of transferring dispersed information to a single planning committee, and the burden of information collection and processing borne by central planner would be substantially reduced. Based on Lange's model, the informational characteristics of decentralized models of resource allocation have been analysed more rigorously in the models developed by Leonid Hurwicz and Thomas Marschak (Lardy, 1978). Despite von Hayek's objections, most writers agree that the theoretical model of market socialism can achieve an allocation of resources that has all the efficiency characteristics of the competitive free-market system. However, actual socialist practices as well as market systems deviate widely from their respective pure models.

Under the instruction of socialist ideology, centralized planning was introduced to China by the Communists. The economic goal of the Communist Party of China (CPC) has been to build China as rapidly as possible into a great industrial and military power with a high degree of autarky. This request for rapid growth was caused by historical, political and diplomatic reasons.

In 1949 China was a poor and backward country. The modern industrial sector was small and predominantly foreign-owned. Most manufactured consumer goods were still made by traditional methods. About four-fifths of the population was employed in agriculture, which provided the bulk of the national income, and most were poor peasants.

When the Communists gained power, one of their first steps was to take over the major undertakings that had been operated by the National government. Large factories, railways and highway facilities, airlines, and a number of banking and commercial institutions, were all nationalized by the new regime; they became the backbone of its state enterprise system. According to Communist statistics, state enterprises in 1949 already accounted for 41% of the gross value product of modern industry, 68% of coal output, 92% of pig iron output, 97% of steel output, 68% of cement output, and 53% of cotton-yarn output (Sun, 1999). At the same time, the new regime began to impose restrictions on the activities of foreign enterprises. After the Korean War (1951-1953) most foreign firms had to leave China and parts of the foreign assets were transferred to the government without compensation.

As well as taking over the Nationalist state enterprises, the Communist government was trying to absorb private enterprises into the state sector, not by outright nationalization, but through a process of gradual penetration. Private enterprises developed rapidly during the Korean War, due to a substantial increase in state orders. However, in the following "Five Antis Campaign (1952)[13]" many private firms were nationalized by confiscation. The next step taken by the government was to transform private enterprises into join state-private operations, in which the government made an investment and appointed personnel to share managerial responsibilities with the private owner.

In the recovery and rehabilitation stage (1949-1952) the Communists took control of the monetary, fiscal, and trade systems, and implemented a land reform which was begun before 1949 in the communist occupied areas and was

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[13] Five Antis Campaign: this was against bribery, non-payment of taxes, fraud, taking government property and spying. Those found guilty of these were usually sent to prison rather than be shot.

completed by 1952. The policies adopted during this three-year rehabilitation period were remarkably successful. By 1952 all sectors of the economy had reached the pre-1949 production levels, and some had surpassed them (Wheelwright & McFarlane, 1970, p.34). In late 1952 the Chinese adopted Soviet policies towards both the pattern of economic growth at which they were aiming, and the type of institutions that they would create to achieve this. The whole strategy was summed up in the *First Five Year Plan (1953-1957)* [14].

After the socialist transformation State-Owned Enterprises (SOEs) began to play the main role in the Chinese industrial sector. By 1958, the state sector accounted for 89.17% of the industrial output, up from 32.69% in 1949. On the eve of the economic reform in 1978, the SOEs accounted for 77.63% of industrial output (Sun, 1999). Nationalization changed not only the ownership of the enterprises but also the nature of their operations. They could obtain most of their inputs through allocation of the planning committee. As a subsidiary method, they could also purchase some of the inputs in the market at the prices set by the government which were lower than market-clearing prices. They sold their output to government agencies without worrying about the demand side. Workers' wage rates were determined by a rigid government wage code, based on their education and tenure. They also depended on a particular industrial sector or geographic location. If the retained earnings were not enough to finance production, the managers were required to submit applications to the local supervizing government, who would then forward the applications to higher government agencies until they reached the State Planning Committee (SPC). When the

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[14] First Five Year Plan for Development of the National Economy of the People's Republic of China in 1953-1957

application was approved, the enterprises would receive the funds as grants with no repayment obligations (Sun, 1999).

The centralized planning system enabled government to increase the investment ratio, and one of the major purposes of the reorganization of the economy was to facilitate the mobilization of savings for fuelling the development process.

Table 4.1.1 Pre-war and Post-war rates of investment in China (1931-1959)

Period	Gross capital formation (billion 1952 yuan)	Gross domestic product (billion 1952 yuan)	Ratio of investment to GDP (%)
1931-36	4.77	63.50	7.5
1952-57	20.82	86.94	24.0
1958 [a]	26.94	117.71	22.9 [a]
1959 [a]	32.00	127.98	25.0 [a]

Source: Chen and Galenson (1969, p.154)

In the Table 4.1.1 we can see that, during the years 1931-36, a relatively peaceful period under the control of National government, the gross investment ratio was 7.5%. During the First FYP, the investment rate rose to 24%. In the years of the Great Leap Forward, the ratio of state fixed investment to gross domestic product was 23-25%. If a scheme of forced savings had not been imposed, the rates of savings in the Communist period would probably not have been much higher than those of the pre-war years, since per capita income had not increased substantially. Since the available external sources for financing were negligible, the high investment rates in the post-war period were made possible

primarily through the mobilization of domestic savings and their conversion into capital investment.

To carry out the purposes of the Party required, first, the establishment of a system of state or collective ownership of the means of production and, second, centralized control of major economic activities. The elimination of private ownership of the means of production, which was itself a part of the national goal, was an important step in facilitating the implementation of central economic controls. Financing rapid economic growth required a high rate of capital accumulation which could not be obtained by voluntary saving. With the lack of foreign capital inflow caused by the Communist ideology, forced saving was the only way to finance them. Under this unbalanced relationship between consumption and investment, state planning in the form of rationing of consumer goods and special taxes was also required to bring demand back into line with supply. In summary, the planning and management of the Chinese economy can be discussed through four points: first, reorganization of the economy with the aim of nationalization or collectivization of the means of production; second mobilization of savings to finance industrial development; third, formulation and implementation of national economic planning; and finally, the uses of market and prices as a complementary tool in resource allocation.

Due to the underdeveloped state of the Chinese economy and lack of experience on the part of the Beijing regime, Soviet-planning techniques were applied rather indiscriminately. These techniques were in many cases not suitable to Chinese conditions and the three-year crisis during 1959 to 1961 was a consequence of such inappropriate policies.

In summary, centralized planning and the public ownership are the two most important features of the planned economy, which was introduced into China when the Communists took the power in 1949. The Communist government not only took over the Nationalist state enterprises but also absorbed private enterprises through a process of gradual penetration. Consequently, a centralized economy dominated by SOEs was established and this system enabled government to increase the investment ratio. In the next two sections, we will examine this centralized economy and the payment system within the planning system.

4.2   Planning system in China

As discussed in the last section the two important features of the Chinese economy during the centralized period are public ownership and widespread political control. Public ownership makes an enterprise's ownership absent which means "no essential owner". Because of this a typical principle-agent problem appears between this public ownership and the deputy manager. Intensive political control keeps the management of enterprises away from the profit-oriented foundation, and the process of making economic plans has always involved too much political consideration.

Economic plans are made and monitored by relative institutions at various levels from the central government to rural areas. At the top of the Communist power system is the National People's Congress (NPC) which is supposed to function as the parliament in Britain. The NPC members meet annually and a new NPC is supposed to be elected every four years. The State Council is the body,

immediately below, to draft and implement national economic plans and exercise leadership over the Ministries, Commissions, and local state bodies. Below the State Council is a group of organizations engaged in economic work. The most important of these are the State Planning Commission (SPC), the State Capital Construction Commission (SCCC), and the People's Bank of China (PBC), which is the central bank. During the Cultural Revolution the NPC and the State Council are paralleled by People's Congresses and Revolutionary Committees.

At the firm level the nature of control varies according to the characteristics of the enterprises. The large enterprises, whose outputs are centrally allocated, are subject to powerful central authority. Major policy decisions come down through central and local government to enterprises, and major technical and management decisions are transmitted from the Ministry through special agencies at the provincial and area levels to the chief engineer in the enterprise. The small enterprises, whose outputs are consumed locally and not centrally allocated, are controlled through different networks in which the main authority lies at sub-central levels (Howe, 1978).

In the industrial sector the planners are responsible for everything ranging from small cooperatively organized groups engaged in production and distribution, to large state-owned production and trading enterprises. Despite the differences in size and function, they are all basic unit of accounting and they have a legal identity, and patterns of internal authority and responsibility that are fairly similar. The goals could be roughly divided into two kinds: quantitative targets such as output rations, total wage bill, trial production of new commodities etc. and qualitative indications of the spirit in which enterprise work is done (see Howe, 1978, p.42 for details). However, poor information collection and processing,

unexpected fluctuations and inconsistent equipment situations make it impossible to specify standards to the whole sector.

On the political side the influence and authority of the CPC permeates economic activity at all levels. The Party is reported to have had 28 million members in 1973 (Howe, 1978, p.38). The CPC central structure consists of the Central Committee, the Politburo, and the Standing Committee of the Politburo. Beneath the Central Party Committee is a network of local Committees and cells. They operate in all the basic organizations in China, such as hospitals, schools, industrial enterprises, People's Communes (collective owned farms), and even in component parts of these. In general, Party organization runs parallel to the entire administrative structure to make sure all the production resources are controlled by the CPC.

The most powerful people in an enterprise are the Party Secretary, the director and the chief engineer. This system is copied from the features of Soviet industrial management in the 1950s. It relies on the authority of individuals while the Chinese people have a preference for decision-making by groups. It fostered bureaucracies which became progressively diverged from practical needs, and its rigidities were costly in an economy where fluctuations were common and differences between enterprises and regions were very great.

The fragility of enterprise organization and the frequent factionalism jeopardize enterprise management. Factionalism is a legacy of the Cultural Revolution during which workers in one faction would not speak or cooperate with the workers in another faction. Factionalism was not diminished until the start of reform in 1978.

On the finance side, the bulk of an enterprise's revenue consists of payments received for goods and services they supplied. Enterprises also could obtain fixed and working capital of various kinds. Most of this capital is provided by national and provincial budgets and channelled in many cases through local government and industrial corporations. Capital funds are also provided by the China Construction Bank (CCB). The CCB is concerned with both non-repayable grants directed by government and short-term loans repayable with interest. Strictly seasonal and emergent finance could also be provided by the People's Bank of China with the permission from local government or higher bank officials. An enterprise needs to pay for raw materials from other enterprises, wage bills, and the payments to banks. It is not required to repay fixed capital. Instead, the State appropriates the net income of enterprises in the form of sales taxes and profit levies.

The purpose of the whole banking sector is to make sure that a pre-set plan for the output of the economy is fulfilled. The banks receive deposits from state enterprises and other organizations, all of which are required to hold their balances and do monetary transactions through it. Private individuals also have accounts. These are interest bearing and may be transmitted to heirs. Banks provide the credit needed to meet seasonal or temporary cash problems while the normal working capital is allocated directly by the state. Since bank loans are given to facilitate plans, the verification of proper use requires banks to become intimately acquainted with the activities of borrowers. This had given bank an important role in the control of the economy. On the deposit side the scarcity of capital requires the state to use every means to draw in resources for investment, and in the 1950s there were schemes for compulsory private savings.

4.3   Money and payment system (1950-1978)

State investment in China is financed through a budget which is national in scope, covering both the central and local governments. Since budgetary revenues from all resources are used to finance total budgetary expenditures, including investment, it is impossible to show from which specific revenues state investment came.

However, since investment accounted for a large proportion of total budgetary expenditures, an examination of the major sources of budgetary revenues helps explain how state investment is financed (Chen & Galenson, 1969, p.155). Total revenue rose by more than eight times in the 1950s. Budgetary revenue increased from 10% of GNP in 1950 to over 30% in 1958 and even higher in the following year. Taxes accounted for more than half the total revenue until 1957, when non-tax revenue began to exceed tax revenue. The most important items of tax revenue were industrial and commercial taxes. They constituted 48.2% of total tax revenue in 1950 and 76.7% in 1959. The agricultural tax provided 39% of total tax revenue in 1950 and the share declined to 16% in 1959 (Chen & Galenson, 1969, p.156).

Apart from profits from state enterprises, the category "depreciation reserves and other income from state enterprises" was the most important of the non-tax revenues. Other categories of non-tax receipts were domestic and foreign loans. Domestic loans took the form of government bonds and the foreign loans came solely from Soviet Union. In the next section, we will examine the credit allocation within the centralized system in detail.

4.4   Centralized banking system and the credit allocation

Referring back to the discussion in Chapter 2, theoretically, banks are institutions for creating credit and mobilizing capital according to the demand and supply in the market. However, banks in a planned economy are nothing more than branches of the MOF, under the control of government.

Different from a market economy, centralized planning of economic activities and the public ownership of the means of production are the two important features of a socialist economy. Under the socialist mechanism, banks just needed to collect deposit from depositors and dispense them according to government's mandates. They were not bothered by bad debts, which would be regarded as subsidies if the borrowers could not repay. At the same time, it was compulsory for the SOEs to provide the social support, such as accommodation, medical services, pension etc, which are supposed to be provided by the government in Western countries.

Theoretically, this method of allocating capital could be highly efficient if the government could manage the information collection and procession, and make a plan which is exactly appropriate to the economy. But in reality it is impossible as we discussed in Section 4.1.

Prior to 1979, China practiced a mono-banking system and the institutional structure was highly centralized and controlled by a single organization, the all-encompassing state bank - the People's Bank of China (PBC), which apart from being responsible for monetary control as a central bank, handled almost all the lending business, including industrial, commercial and rural credits. Some specialized banks did exist, only acting as either 'agents for

budgetary grants handed down by the MOF or business branches of the PBC. The role of the PBC was passive and it existed only to accommodate the central planning mechanism. In short it was merely a cashier of the government. On the one hand, the rates charged by the banks on their short-term loans to enterprises were too low to be effective instruments for the rational allocation of capital funds. The government would intervene with additional funding and loan rate subsidies. On the other hand, there were few instruments available with which the banks could effectively carry out their supervisory functions, especially for the credit granted directly through the state budget. In addition, the government often went to the PBC for an overdraft to offset any budget deficit. Technically, a bank is a kind of enterprise in that it should be responsible for its own profit and loss. However, under the circumstances above, the profit results were not stressed and banks were operated in effect as a government body.

With the analysis of the financial system and credit application in the planning system, it is found that the SOEs consumed most of the bank loans and their inefficient management accumulated a large amount of NPLs. The jargon "Soft Budget Constraint" forged by Kornai was introduced to explain the low efficiency of the planned economy and this will be elucidated in the next section.

4.5 Soft budget constraint: definition, origin and theories

The common feature of all planned economies is the dominant role of government. The close relationship between state and enterprises induces the problem of Soft Budget Constraint (SBC) which causes low efficiency in the economy.

The concept of the budget constraint applied mainly to household decisions in mainstream economics. This concept was adapted to enterprises by Kornai (1979). The current research on SBC originates from the famous debate in the late 1930s and early 1940s about market socialism (Maskin & Xu, 2001). It is concerned with why some economic institutions work well while others do not. The term "Soft Budget Constraint" (SBC) was introduced by Kornai (1979, 1980) to illuminate economic behaviours in socialist economies marked by shortages after he observed the Hungarian economy in the 1970s. At that time Hungary was undergoing a socialist economic reform with the introduction of the market mechanism. Kornai found that some SOEs were not allowed to go bankrupt while they kept suffering losses. They were always bailed out with financial subsidies or other instruments. From then on, the SBC problem was well accepted as one of the main causes of the low efficiency in socialist economies. Plenty of literatures on SBC have been developed and most of them were evolved from Dewatripont and Maskin (1995), who focused on asymmetric information in the study of credit market.

According to Kornai (1979), a budget constraint is hard if the firm can only spend as much money as it has. The bank grants credit only under proper standards and conditions. The budget constraint is soft, if the paternalistic state guarantees automatically the survival of the firm, or helps the firm to grow with direct or indirect financial aids. Kornai's (1998) work on SBC focuses on the vertical relationship between the government and enterprises. SBC analysis is a theory of exit, or more precisely, of the demise of organizations. Moreover, the syndrome cannot be treated as a special case of the theory of regulation because not all price regulation softens the budget constraint. The SBC can emerge in

nonregulated spheres, especially when financial interactions take place in vertical relationships between superiors and subordinates rather than in horizontal market conditions (Kornai, 1998).

Kornai (1979) focused his attention on the problem of shortage. Shortage is a persistent feature of socialist economies. Due to shortages, the government always fixed the price at a lower level than the market-clearing price. It is assumed that lower prices with rationing could ensure a more fair distribution of goods, especially the basic-need good, though some people argue that shortage benefits the middle and lower-level state bureaucrats/managers by allowing them to maintain their power, to seek rents, and to have control over those who are rationed (Qian, 1994). In Qian's model, shortage could reduce the incentives of managers with bad projects to apply for credit in that it is hard for them to obtain inputs in a shortage situation even if they can afford a higher price. If we release the price, the SBC problem will be worse. With the relaxation of price, the rationing system will collapse automatically. The firm's manager could easily obtain the input needed at a higher price. If they know they can get more financial subsidies, the high price does not constrain them. This has been observed during China's reform in the early 1980s (Qian, 1994). Excessive investment causes further shortages, thus forming a vicious cycle.

Researches into SBC are always focused on socialist economies. However, it does not mean that the problem of SBC is absent from market economies. The recent examples include the US government's bailouts in the Savings and Loans and the Long-term Capital Management crisis. Huang and Xu (1999) argued that the Asian economic crisis could indeed be traced to the SBC problem.

Next we will go to the particular Chinese context. In the centralized period there were various public enterprises, depending on the controlling body. These public enterprises generally could be divided into two categories: State-Owned Enterprises (SOEs) and Township and Village Enterprises (TVEs). Each SOE was subordinate to the central or local government and each TVE was controlled by a lower level of government in the township or village. In the state sector, the hierarchy of control ran from the state to the industrial bureaus at the different levels of governments and then to the SOEs. In this mechanism, the bureaucrats working in the industrial sector selected and assigned people to managerial positions. They supervised and provided incentives for the managers on behalf of the state. The tax from the public enterprises became an important source of the government's revenue. "On the eve of reform, the SOE sector produced more than three quarters of industrial output, employed more than two thirds of all industrial employees, and contributed nearly 90% of national fiscal revenue"(Dong & Putterman, 2003, p.112). Up until the late 1990s, the managers of SOEs could not dismiss surplus workers in their own right; therefore it was impossible for them to adjust their labour forces in response to changes in demand and technology. SOEs were also obliged to provide a broad range of services such as pensions and medical services, while these services were always financed from the government budget in other countries. With these restrictions and obligations, SOEs could not operate in a profit-based mechanism and this led to inefficient management. The SOEs' managers tried to seek governmental support, hoping to be protected from the consequences of inefficiency. The managers of large SOEs also had the expectation of "too big to fail" which had a social implication of expensive cost of

layoffs. As SOEs were typically larger in scale than TVEs, it was a common phenomenon that the budget constraint of SOE was always softer.

On the other hand, the governments at both central and provincial levels have strong power in exerting enormous political influence on lending decisions of the banks and their branches. This enables them to have easy access to the financial system. In this framework, it is quite understandable why government could give SOEs financial subsidies through further bank loans or exemption from taxes. The direct fiscal transfer from higher levels of government and the access to credit from banks compose the usual means of refinance for the SOEs.

After reviewing the experience in China and other cases in Eastern Europe, we find two features that are attached to the SBC – ex post renegotiation of firms' financial plans and a close administrative relationship between firms and the state.

In order to illuminate these two features we establish a model consisting of Budget Constraint-Organization (BCO) and Supporting-Organization (SO). A BCO must cover its expenditures with its endowment and revenues. The SBC problem will arise if one or more SOs are ready to give financial aid to the BCO when its expenditure exceeds the budget. The petition for subsidy of BCO is obvious that it can help them to survive the deficits and keep them from bankruptcy. But why would the SO like to pay the bills? Besides the direct aid there are some indirect instruments, such as exemption from taxes and repayment of bank loans. In some situations the tax authority and bank are willing to tolerate the loss because they wish to help the BCO to survive even though the latter is still suffering losses. This way happen especially in some large groups within which, if one of the separate accounting units is going bankrupt, earning from the

profitable units is often reallocated to bail it out, in that the reputation damage might spill over to the whole group or sector.

It is understandable and reasonable if this kind of bailout is confined to the ex post cases. Unfortunately, if the manager has the expectation that her firm will be bailed out in a crisis, there would be a distortion on her ex ante decision-making. "We normally say that the syndrome is truly at work only if organizations can expect to be rescued from trouble, and those expectations in turn affect their behaviour" (Kornai *et al.*, 2003, p.1106). In order to revise managers' expectations, the authority of SOs repeatedly announces that they will break with the past bailout and try to harden firms' budget constraints. However, these kinds of announcement have little influence on the SBC mentality unless they are combined with some institutional changes which could lend credibility to the promises.

The manager's expectation is not formed through any single event and it is not confined to her own experience either. The expectation is a generalization of the sector or the economy through long-term observation. If few firms in the sector have ever been bailed out, the manager will not expect a bailout in emergency and her budget is supposed to be hard. In contrast, if the bailouts take place regularly, her expectation will change. She might make excessive investment with little care of the budget constraint or convert the investment to the projects with high risk. In Majumdar's (1998) research about SOEs in India, it is revealed that there is significant slack in resource utilization in Indian state-owned firms resulting from soft-budget constraints.

SBC also leads to poor innovation (Qian & Xu, 1998). In a market economy, good projects could be differentiated from bad ones through the market

mechanism. However, centralized economies do not have ex post selection because of SBC, in that bad projects are being refinanced and their qualities cannot be publicly observed. Therefore, the screening of projects has to rely on ex ante bureaucratic judgement, which is efficient only when the prior knowledge is good, otherwise the bureaucratic screening works badly. In a decentralized economy, there will be multiple investors, either because of asymmetric information or hold-up problems. This multiplicity of investors makes bad projects impossible to be refinanced: once investors realise that they are dealing with bad projects, they will stop financing them, which also keeps other investors from investing in them.

To explain the causes of SBC, plenty of literature could be found concerning political and economic meanings. One possible reason for SBC is the socialist ideology that socialist economies should be fully employed and egalitarian. Under such a belief, it is hard to let any enterprise fail for the sake of employment and the social welfare.

Besides ideological reasons the SO might provide subsidy by its own business interest. Between a pair of BCO and SO with frequent transitions, the BCO might have obtained loans previously from the SO. If the BCO goes bankrupt, the SO cannot recover the loan any more. Although running the risk of further loss, the SO is still willing to help the BCO with the expectation that the BCO's investment turns to be successful.

Another explanation of SBC might be the Segal's (1993) monopolistic production approach in which a monopolistic producer has the option of making an investment to reduce its marginal cost. The producer might find that her optimal choice is not to make the investment, while the government might wish

her to make the investment in order to maximize the social surplus. Therefore, the government has to provide a subsidy in order to encourage the producer to invest. In that case the resource input in the monopoly's unprofitable project is a loss and the subsidy financed by tax or inflation is another inefficiency caused by governmental intervention.

In Li's (1992) approach, public ownership is treated as the fourth explanation. He showed that public ownership of capital is a sufficient condition for the soft budget constraint through a comparative analysis between a socialist system and a market system. The only way to discourage the firm from proposing bad projects is by threatening to incur losses to the human capital when the project indeed is bad. Because of the public ownership of capital, the manager takes little care of the human capital loss that the demand for investment would be excessive (relative to the socially optimal) in socialist economies.

At the firm level Li (1998) and Li and Liang (1998) tell that the insider control of a firm is a cause of the soft budget constraint and it has many welfare consequences. Although in the catching-up stage of economic development, an insider control may be more efficient than an outsider control system, in the later stages an insider control is inefficient. Everaert and Hildebrandt (2003) gave an empirical test of the theories concerning SBC, using a panel data set which consists of company account data for Bulgarian and Romanian manufacturing firms, covering the period 1995-1999. Their results largely confirm the hypotheses that competition, privatization, and firm size matter in explaining soft budget constraints.

Creditor's lack of information and commitment is another important cause of SBC, which will be illuminated in detail in the next Chapter.

4.6   Conclusion

In this chapter, we reviewed how the planning system was established in China and explored the working mechanism of the planning system together with the consequences it brings to the economy. In a planning system, money and the payment system are used to facilitate planning and money does not play the central role as it does in a market economy, which we discussed in Chapter 2. Credit and resources are also mobilized following the order from the central planning committee.

The concept of Soft Budget Constraint is introduced, which is used to explain the incentive problem within the planning system. Due to the Soft Budget Constraint, banks had bad loans on their books as they sought to develop in the transition from planned economy to market economy. The problems caused by the SBC in the Chinese context will be discussed in the following chapters.

Chapter 5   Banking in Transition and Bank Reform

After the examination of Chinese banking during the centralized period we proceed to the transitional period starting from 1979. As we have discussed, the problem of SBC is an essential cause of the inefficiency in a planned economy. Therefore, the main target of the reform should be dealing with the SBC problem and establishing a market economy that allows competition. The purpose of this chapter is to find out how the transition was originated and what the extraordinary features of China's transition are. Besides a particular interest in the banking system during the transition process, we also pay attention to the original capital market and the relationship between the banking system and the capital market. The future development of the financial system is probed in this chapter as well.

Hence, the chapter is organized as follows. In Section 5.1, our analysis of the Chinese banking in transition will start with a discussion of the origination of political reform. The dual-track system, a general characteristic of China's transitional approach, and the bank reform within the dual-track system will be examined in Section 5.2. Besides bank reform, a brief history of China' capital market will also be examined in Section 5.3 and the relevant problems that appeared in the capital market will be probed in Section 5.4. Finally, Section 5.5 will be a summary of the main findings of this chapter.

5.1 Political reform in late 1970s.

"*Transition*" implies a passage from one point to another, and in the context of former socialist countries of Central and Eastern Europe, this is broadly accepted to mean moving from a socialist organization of the economy to a capitalist system centred on private property with a high degree of decentralization in decision-making (Anderson & Kegels, 1998). In the context of China, the term transition is reserved to mean moving from a planned economy based on centralized planning to a market economy based on the movements of counterparties in the market. This transformation involves a wide range of changes to the economic and social system that is grouped by Anderson and Kegels (1998) into stabilization, liberalization and deep institutional restructuring.

Concerning the political structure in China, government administration is still under the control of the CPC and the Party plays the top role in important decision-making. China's economic reform originated with the change in political power. The year 1976 is regarded as the end of China's disastrous Cultural Revolution, and in this year several powerful Chinese leaders died headed by "the Great Helmsman" Mao Zedong and long-time premier Zhou Enlai. Mao's powerful widow, Jiang Qing and the other three close associates, the "Gang of Four[15]", were arrested quite soon after Mao's death. In the same year Deng Xiaoping, the later designer of China's reform and opening up, was dismissed from all posts both inside and outside the Party, and he only kept his Party membership; while Hua Guofeng, a relatively little-known person, who was the

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[15] Gang of Four: usually means Jiang Qing, Zhang Chunqiao, Yao Wenyuan, and Wang Hongwen. Kang Sheng, Xie Fuzhi, and Chen Boda were considered as having been part of the "Gang".

minister of public security was appointed as the premier of the government and the first vice-chairman of the CPC Central Committee in April 1976.

In the late 1970s, Mao's ideas and policies during his last years had been strongly criticised. The turning point of China's political and economic strategy was the Third Plenum of the Eleventh Central Committee of the CPC in December 1978 when the slogan of "Take class struggle as the key link" was discarded while "four modernizations" concerning industry, agriculture, national defence, and science and technology were made the focus of the socialist project. For the moment Deng Xiaoping and the ideas represented by him had regained power and Hua Guofeng faded away from the top leadership. Furthermore, in order to facilitate structural reform, the change of leaders went through from the top to the lower levels of management.

Different from the radical transition of Central and Eastern Europe in the 1990s, China adopted a gradual reform, starting with a dual-track system from the late 1970s. In the next section, the origin and development of China's dual-track system are reviewed and discussed.

5.2 The dual-track system and the banking reform in China's transition

China was a war-torn agrarian country at the founding of the Communist government in 1949. At that time 89.4% of the Chinese people resided in rural areas and the proportion of the industrial sector in national income was only 12.6% (Lin, 2004). Capital and foreign exchange were very limited in that when

the Nationalists left for Taiwan they took away most of the bullion and foreign exchange reserve as well as destroying many factories and mines. People could not expect their primary and scattered agriculture to fuel the development by export either. In short China's economic construction started at a very low point.

Heavy industry developed as the priority

Although China's comparative advantage is concentrated on agriculture and light industry, under the imagination of building New China[16] to a powerful industrial country as soon as possible, the government determined to make capital-intensive heavy industry the priority. At that time a developed heavy-industry sector was the symbol of the country's power and foundation of national defence, especially when the USSR outperformed the US, Europe and Japan from the 1930s to the 1950s. In contrast to the Great Depression in the Western world, the success of the centralized planning system in the USSR gave Chinese Communists great confidence to follow their comrade and big brother's mode, and try to obtain economies of scale through farm coalition and putting major productive resources under the State's control. On the other hand after China's involvement in the Korean War in 1950, with its resulting embargo and isolation from the Western world, catching up to the industrialized countries further became a necessity for national security (Lin, 2004). Therefore, after recovery from wartime destruction in 1953, the Chinese government set the development of heavy industry as the prior task.

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[16] New China: In the literature published in China mainland, "New China" is used to name the China under the communists control while "Old China" is used to name the China under the Nationalists control.

However, heavy industry is capital-intensive while China was a capital-scarce, low-income, agrarian economy in the 1950s. The construction of a heavy-industry project in a developing country usually requires a long gestation[17], and because of the Nationalists' destruction most equipments and facilities needed to be imported from more advanced countries. The requirement of many lumpy investments made the government adopt a series of distorted macro-polices to finance industrial construction. The most important element was price control.

Price control

In the recovery period (1949-1953) price control was mainly aimed at stopping the hyperinflation caused by the collapse of the National government. At the beginning of the first Five-Year-Plan (FYP), the government instituted a policy of low interest rates and over-valued exchange rates to reduce both the costs of interest payments and of importing equipment[18] (Lin, 2004). Meanwhile, in order to secure enough funds for industrial expansion, a policy of low input prices, including nominal wage rates for workers and prices for raw materials, energy and transportation, evolved alongside the adaptation of this development strategy. The planners' aim was to squeeze input prices in order to enable enterprises to create enough profits to repay loans and expand more quickly.

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[17] The construction of a light-industry project, such as a small textile factory, takes one or two years to complete. The construction of a large heavy-industry project, in general, takes a much longer time. For example, in China the average construction time for a metallurgy plant is 7 years, for a chemical plant is 5-6 year, and for a machine-build plant is 3-4 year (Li and Zheng, 1989, p.170)

[18] For example, the interest rate on bank loans was officially reduced from 30% per year to about 5% per year. For a one dollar fund borrowed at the beginning of a 7 year project, the principle and interest payment at the time that the project was completed would reduce from 6.27 dollar to 1.41 dollar (Lin, 2004).

In a competitive market the non-priority sectors, such as agriculture, light industry and handicraft industry etc, would compete with heavy industry for cheap input goods. Only State control could keep them away from scarce resources. This kind of unbalanced development strategy fuelled the comparatively disadvantaged heavy industry, at the cost of comparatively advantaged agriculture and light industry. Furthermore, the state monopolized banking system and foreign trading helped finance heavy industry further.

The production of SOEs was dictated by mandatory plans and furnished most of their material inputs through an administrative allocation system. The prices of their products were determined by pricing authorities. Government agencies controlled the circulation of their products. The wages and salaries of workers and managers were determined not by their performance but by their education, age, position and other criteria according to a national wage scale. Investment and working capital were mostly financed by appropriations from the State budget or loans from the banking system according to State plans. The SOEs remitted all their profits to the State and the State budget would also cover all losses incurred by enterprises.

In this way competition was suppressed, and profits ceased to be the measure of an enterprise's efficiency (Lin, 2004)[19].

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[19] An enterprise is bound to be loss-making if its outputs happen to be inputs to the other sectors, for example energy and transportation, because the prices of its outputs are suppressed, on the contrary, an enterprise is bound to be profit-making if its outputs are at the low end of the industrial chain, because the enterprise can enjoy low input and high output price at the same time (Lin, 2004).

The agricultural sector and the heavy industry sector

In the agricultural sector, in order to secure a cheap supply of grain and other agricultural products for urban low-price rationing, a compulsory procurement policy was imposed in the rural areas in 1953. This policy obliged peasants to sell set quantities of their produce, including grain, cotton, and eatable oils to the State at government-set prices (Pekins, 1966, Chapter 4). In addition to providing cheap food for industrialization, agriculture was also the main foreign-exchange earner. In the 1950s, agricultural products alone made up over 40% of all exports. If processed agricultural products are also counted, agriculture contributed to more than 60% of China's foreign exchange earnings up to the 1970s. China's capacity to import capital goods for industrialization in the early stage of development clearly depended on agriculture's performance.

Agricultural development required resources and investment as much as industrial development. The government, however, was reluctant to divert scarce resources and funds from industry to agriculture. The core of this unbalanced strategy involved the mass mobilization of rural labour to work on labour-intensive investment projects, such as irrigation, flood control, and land reclamation, and to raise unit yields in agriculture through traditional methods and inputs, such as closer planting, more careful weeding, and the use of more organic fertilizer. Advanced technology was hardly pervasively applied and agricultural research was always jeoparded by lack of funding.

The government believed that collectivization of agriculture would improve its performance and ensure the support for heavy industry. Despite the fact that more than three-quarters of China's population lived from agriculture

and labour-intensive light industries, consistent with China's comparative advantages, agriculture and light industries each received less than 10% of State investment in the period 1953-1985, while 45% went to heavy industry. As a result, the value of heavy industry in the combined total value of agriculture and industry grew from 15% in 1952 to about 40% in 1970s (Lin, 2004).

China has paid a high price for these achievements. Disregarding their comparative advantage, the priority of heavy industry over-squeezed the necessary investment in the agricultural sector, and the large collective farming mechanism confused the individual responsibility through a uniform wage. People's work incentive was undermined and the productivity of the economy has not been maximized. These directly led to the big famine in the early 1960s.

The most important indicator that reflected this inefficiency was the extremely low rate of total factor productivity growth in China. A World Bank study shows that, even calculated at the most favourable assumptions, the growth rate was merely 0.5% between 1952-1981, only a quarter of the average growth rate of 19 developing countries included in the study (Lin, 2004). Moreover, the total factor profitability of China's SOEs was in a state of stagnation or even negative growth from 1957 to 1982.

Banking system before transition

Prior to 1979, China practiced the mono-banking system and the institutional structure of banking was highly centralized and controlled by the People's Bank of China. Its role in the economy was passive and it existed only to accommodate the central planning mechanism as a cashier of the government (see Section 4.4).

Reform Initiation

After the establishment of the centralized planning system in 1956, the experience of several years gradually let many Chinese people realise the planning mechanism was problematic in that it did not work as well as stated in the theory. But under the current political atmosphere nobody dared to imagine adopting a market economy, letting the changes of market price adjust production and obtain the efficient distribution of resources. However, a few people still realized the necessity of the market and advocated involving some market elements as a complementary role to the dominating planning mechanism. The slogan "three complements" was invented in this time, which means national business with complementary private business, planning production with complementary free production and national market with complementary national free market. All the complementary elements were still strictly under government's control.

Among economic scholars a consensus is that a price system is necessary to give enterprises the incentive to improve their management, reduce costs and increase output, even without changing the planning system. However, their efforts were overwhelmed by the conservative power when Chen Yun, their leader, was criticised and lost his power in the Beidaihe Meeting[20] in 1962. The scholars were hated as "right-wingers" as a consequence. The "Money stimulation" and "enterprise autonomy" they advocated were strictly prohibited as capitalist economic elements.

Since 1978, when Deng Xiaoping became the CPC leader, he decided to reform in order to improve people's quality of life. His famous saying, "No matter

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[20] It was a preliminary working meeting before the Tenth Plenum of the 8th Central Committee of the Communist Party of China.

it is a white cat or black cat, as long as it can catch mouse, it is a good cat",

stopped the debate around adopting a socialist or a capitalist system. With his

political influence the majority of Chinese leaders have agreed to "try to introduce

more market mechanisms into the economy"[21]. The problem has been transferred

to how, and to what extent, to involve the market mechanism and as a result, the

reform objectives have been readjusted many times, focusing on the proportion of

market economy in a planned economy.

There is no theoretical definition which captures even the major features

of the Chinese economic reform process (Zhang & Yi, 1997). Unlike Russians

and East European people who had a clear demand to "go back to Europe",

Chinese people do not have a specified aim and their reform has never been

guided by a well-defined model. Neither the Chinese leaders nor the scholars had

any clear blueprint of how to proceed with economic reform in the late 1970s. All

they knew was that the Russian planning system did not work well and some

changes were necessary to promote economic growth. That is, they recognized the

need to involve the market. When reformers considered how to proceed further,

Deng Xiaoping advocated "To cross the river by groping the stones" and he

clearly instructed that we should not be afraid of extensive reform. If we make

mistakes during the reform, we just need to correct them. Therefore the reform

pattern always presents a pattern of "go a step, stop and look for the next".

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[21] He said "change your mind, or change your position" to threat the anti-reform power.

Dual-track system

The dual-track system was invented in such circumstances with the requirement of an easy-to-hard sequence. It originated in the late 1970s, long before it became official policy. A dual-track system was first introduced in price reform, but it actually had been used extensively in most reform areas, including urban reform, foreign trade reform, labour reform, housing reform, social security reform, and most important, ownership reform. As a result the whole Chinese economy has evolved into a dual-track economy (Diao, 1989). Generally to say "dual track" refers to adopting some aspects of a market economy while simultaneously operating under the old planned economy regimen--developing the elements of a new system side by side with the old unreformed system, and then, if things go well, reforming the old system in line with the positive developments emerging from the new components of the economy. Because of this coexisting situation the dual-track itself created a lot of interest as well as contradictions which impeded further reform.

The dual-track is the most important characteristic of China's gradual reform and the advantage of this approach is that it can split and spread the economic and political cost of transition over a long period to let the economy digest it smoothly. Under the dual-track system, a state-owned enterprise must still fulfil its compulsory output quota, and once it's done the enterprise is allowed to produce more, outside-plan, output and sell it in the emerging product market, typically at a higher negotiated or market price. But it must buy any additional material inputs in the product market, typically at a higher negotiated or market

price. This system emerged from the late 1970s, with a semi-legal black market operating alongside the planning system.

Because of the old system of low material prices, but high prices for consumer goods, a manufacture of, for example, TVs could hardly fail to be highly profitable, regardless of efficiency, while an iron ore mine was more or less doomed to loss making (Shirk, 1993, p.200). Therefore there was little incentive in either case to improve efficiency or for materials producers to increase output. Price reform therefore encouraged efficient resource allocation at the micro level, by providing management with rational price signals on which to base decisions.

One of the main reasons which caused the adoption of gradualism and the dual-track system posits that if the "old track" is too difficult to abolish, it would be better to develop the "new track" first and have it parallel the old one. The dual-track system was a hybrid economic system under which traditional central planning and the emerging product market coexisted as means of resource allocation. Under the system, an identical good would often be allocated on both the plan track and the market track.

In the late 1970s, agricultural prices were raised in order to increase production and raise rural morale, but from 1984 movements in prices were less favourable to the rural sector. Later attempts to deregulate grain prices in the early 1990s caused unrest among the urban population. The user industries formed a powerful lobby opposing price reform. Their cost structure and technology were dependent on cheap materials, and they resisted the imposition of market prices for their inputs. They emphasized how price rises might affect the whole economy. Any rapid adjustment was therefore difficult.

During the 1980s the government removed price controls for some commodities and allowed the market to determine prices. However, for many important products it first attempted a halfway house of a dual price system, whereby commodities circulated at state prices within the plan and at market prices for output produced outside the plan, with often one or more negotiated prices in between.

Price reform and dual-track prices continued to be highly contentious throughout the 1990s and bureaucratic organs had an inherent preference for the old administrative system. They could point to the real problems generated by overheating of the economy and consequent inflation. Inflationary outbreaks in 1985, 1989 and 1994 caused unrest among the urban population and paved the way for the Democratic movement in 1989. These negative consequences jeopardised the course of reform.

The government began to reunify the price system and deregulate most prices in 1990. In addition to the more favourable political environment, inflation was slowed, making it more difficult for conservative people to criticize the reform on those grounds. So as early as May 1991, the government raised the prices of basic foods to levels closer to their cost, moving although temporarily, to a more or less free market in 1993. In the first three years in 1990s, basic industrial input-materials such as cement, oil and coal were successfully targeted in order to establish a level playing field (Li, 1991). Low and declining prices in 1999 provided an auspicious environment to push further with price reform of some key commodities such as cotton, chemical fertilizers, electricity, telecommunication and water.

During the consequent 20 years after reform starting, China's market decentralization achieved great success through the dual-track system. Retail sales at State controlled prices fell from 97% in 1978 to under 30% in 1990 and only 6% in 1998; those at market prices rose from 3 to 53 and 93%. With the development under the dual-track system, China's non-state sectors grew bigger and bigger. In 1992 the CPC officially announced it was to adopt a "socialist market economy" as the goal of China's economic reform. The political regime has remained unchanged, and the state sector is still supposed to dominate the economy. However, at the same time, the non-state sectors are booming everywhere, and the market is beginning to work in most economic areas.

Corruption caused by the dual-track system

Guanxi (connections, such as friends, relatives and families etc.) played an important role in China and the regular process and regulations could be eroded by guanxi. The application of the dual-track system provided opportunities to replace non-profit guanxi with pecuniary return.

Usually the allocation of in-plan resources is handled by officials in the Material Supply Bureau. As the economy becomes more decentralized, an increasing amount of in-plan resources are allocated by officials in local branches of the Material Supply Bureau. Officials who had discretion over the allocation of in-plan resources could and allegedly did divert them to the market and pocketed the profits. This corruption was widely known in China as "guandao" or official diversion. An obvious phenomenon was that inefficient firms were always

allocated comparatively more resources and the relevant law and regulations to penalize official diversion was lacking.

For SOE, the authority of selecting managers is held by the CPC's personnel department and the industrial bureaucracy, which have inadequate incentives, and also lack information, to find and to appoint entrepreneurial people for managerial positions. Prior to the reform, manager selection was always through guanxi. In the dual-track system, the bureaucracy had an incentive to appoint the person who would help him/her making money through official diversion. The officials of the personnel department are always focused on power and money.

Unproductive profits from rent-seeking from corruption and stolen state assets have been important sources of initial capital accumulation for non-state enterprises in China. When Chinese officials are operating their own non-state businesses, either openly or underground, they may have difficulty prohibiting or restricting others from doing similar things. From this perspective, "bureaucrat capital" is an undesirable but inevitable part of the dual-track transition process and is not without some positive consequences.

Despite the apparent success of the economic reform in rapidly raising standards of living for the vast majority of Chinese, by the late 1980s there was a growing public perception that reform had led to rampant corruption. In particular, the dual-track system was widely believed to have fuelled official corruption. Wei Li's work (1999) showed the official diversion of under-priced in-plan industrial goods to market was pervasive in China from 1980 to 1989, through the analysis of detailed transaction and price data from 769 Chinese SOEs. Estimates of corruption proceeds range from 8% of GNP in 1980 to 11% GNP in 1988.

Corruption was pervasive both before and after the full implementation of the dual-track system in 1985. The dual-track system was very exposed politically to accusations both among scholars and officials, and from the World Bank, that there was an economic crisis of corruption. The corruption caused by official diversion was one of the main causes of the democratic movement in the spring of 1989.

However, the dual-track system was becoming favourable to the conservative officials who objected to it before. Government officials were assumed to be the major losers since most of their privileges and rent-seeking opportunities will be reduced or eliminated by the reform, while the power had been in their hands to a great extent. And the reform could hardly succeed without their support. The dual-track system provided them a better opportunity of rent-seeking and this was closely related to money, which was more tempting in a more and more decentralized market economy. The corruption objectively facilitated the implementation of reform as well as satisfying the officials' own interests.

Wei Li's findings suggest that it was not the dual-track system *per se* that bred corruption: corruption had been pervasive before the full implementation of the dual-track system in 1985. But this reform strategy has a serious downside due to corruption. The dual-track system allowed corruption to continue to exert an allocative role in the economy. This allocation is distorted since corrupt officials would procure and divert more resources the larger the gaps between market and plan prices.

Corruption may work against reform in several ways. It may block the evolution of the economy toward a one-track system by perpetuating the dual-

track. The positive effects of marketization may be offset by the higher transaction costs caused by corruption. Officials may attempt to monopolize their gains rather than share them. As a result of large unearned incomes accruing to corrupt officials, the chance of political instability may actually be heightened. Finally, corruption undermines the building of an effective legal system. In sum, while corruption is not totally bad, it does adversely affect economic reform.

On the other hand, this economy may not pay high political costs in the form of additional reduction of national income caused by severe social and economic chaos at the initial stages of the reform. Compared with Russia and Eastern European countries, China has so far not suffered much social chaos and economic disorder. This is not because China lacked resistance to the economic institutional changes. It is because no radical program could be adopted under the great pressure of conservative power. The only program that could pass was one that did not destroy the old economic relations at the early stages of the reform. The dual-track system was invented for this aim.

The democratic movement in 1989 has turned out to be a watershed event for China's reform. Although the government has not yet introduced democratic reform, it did try to tighten the oversight over official behaviour. From 1994, China gradually ended the dual-track system in the agricultural sector and industrial sector. As a result of these changes, corruption has shifted from industrial production and distribution sectors of the economy to other sectors, most notably the financial sector.

The banking system in the early transitional period

In 1979, the People's Bank of China began to separate its non-central banking business from the central banking business in order to monitor plan-fulfilment and financial management throughout the whole economy. The major part of this banking reform was institutional reconstruction. It involved the division of the national banking system into several specialized banks serving different economic sectors.

The first of these specialized banks was the Agricultural Bank of China (ABC), which was re-established in February 1979 to promote rural development and reform, the first phase of the Chinese economic reform. The ABC's main role was to provide working capital for state agricultural supply and marketing units in rural areas and to provide loans for the township and village enterprises. The Bank of China (BOC) was the second specialized bank created, which got its independence in March 1979. It specialized in foreign exchange dealings and helped finance the opening up of China in both trade and investment. The People's Construction Bank of China (PCBC)[22], founded in 1954, was gradually re-established and had more independence in the management of both its assets and liabilities. Its loans for construction investment became repayable and interest bearing. After 1984, the PCBC was integrated into the banking system of the PBC and had its business supervised by the latter, but its main source of funds was the large amount of government deposits. The original commercial lending and deposit-taking businesses of the PBC were taken over by the Industrial and Commercial Bank of China (ICBC), created in 1984. The ICBC has since

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[22] The People's Construction Bank of China is the former name of China Construction Bank.

become the largest of the specialized banks and is responsible for the financing of industrial and commercial activities in urban areas.

The four banks (ABC, BOC, PCBC and ICBC) are the main state-owned banks, SOBs. However, these separations do not mean that the specialized banks are extragovernmental and practice independently.

The planned system is disappearing in most of China's business sectors. Due to the absence of a mature market economy environment, many Chinese enterprises still have not developed the habit of paying back loans promptly. Some of them even use the loopholes in regulations and in bank management systems to dodge their debts. There have been two huge obstacles to the realization of the SOBs' independent practice. One is the growing weakness, or rather, the effective bankruptcy of the SOE sector, which constitute by far the largest customer base of the SOBs, while the latter still provide 63% of the total credit in the economy. The other is Chinese banks' lack of independence from local governments and the influence of local and even national officials over lending decisions. A concomitant feature was the lack of professional expertise and standards in management and professional staff at Chinese banks, especially in the critical area of credit risk assessment.

From 1980 to the mid-1990s, Chinese banks continued in most cases to lend money to the SOEs without expectation of repayment, and supported projects sponsored by local political interests without regard to economic values or debt-service capabilities of these projects. However, the more efficient and faster-growing non-state sectors, especially the small and medium sized enterprises, had difficulties in getting funds from banks. This situation leads to low efficiency of investment and lots of unsatisfied aggregate demand in the country since 1997.

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This irrational policy has caused a large amount of bad debts, which is camouflaged by high investment rates, especially in infrastructure. However, the low pace of lending reform is sowing the seeds of bigger problems in the future. The problems will be probed and discussed in Chapter 7 and 8.

In the next section, we will look at the capital market, which developed at the same time of the bank reform.

5.3   Securitization and the growth of stock market

Financial assets in China are concentrated in the banking sector and the capital market is relatively small, although it also has a history of over 100 years. In the present financial market, bank loans remain the dominant source of funding for Chinese companies, at around 80%[23] (Maswana, 2005).

A brief history of the stock market

The history of the stock market could be traced back to the middle of the16th century. The first joint-stock companies themselves were a part of imperial state formation in Europe and were created to solve the problem of financing long-distance trading. They expanded during the period of European growth from 1843 to 1973[24] (Lavelle, 2004, Chapter 2). China's stock market appeared in the late Qing dynasty when the Shanghai Stock Exchange was first set up in 1869 by

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[23] In 1998 bank loan represented 70% of total financing, while equity financing accounted for only 6% (Maswana, 2005)

[24] Among these older exchanges, the Stock Exchange of Buenos Aires was formally established in 1854, the Bombay Stock Exchange was established in 1883, and the Johannesburg Stock Exchange was established din 1887 (Lavelle, 2004, p. 27).

foreign firms. Then in 1918 the Beijing Securities Exchange, the first Chinese operated stock exchange, was established. However, the stock market had never played an important role in the economy until the early 1980s when the informal markets in company stocks first appeared in Shanghai, Shenzhen, Chengdu and several other cities and the stocks were traded Over-The-Counter (OTC).

The whole of the 1980s could be regarded as an experimental stage of stock market development which started from Township and Village Enterprises (TVEs). The experiments proved successful in raising capital and soon were quite common, becoming known as the "share holding co-operative" system (Fan *et al.*, 2003). The basic trading pattern, OTC trading, had begun in Shanghai in 1986. The formal exchange markets, Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) were re-established and created in November and December of 1990 respectively. However, there was little evidence of the close links between these two markets. Market segmentation is a unique feature of the Chinese stock market. The rationale for creating the stock market was to strengthen the shareholding reform intended to combine macro-planning with market forces (Tan, 2004). Besides reallocating capital and improving efficiency, the stock market can help the government to accomplish its planning objectives, through listed companies and shares issuing controls. With the exception of a few recently listed firms that do not involve state ownership, all Chinese listed companies are restructured SOEs. Both the Shanghai and Shenzhen exchanges were heavily promoted by their local municipal governments and had the approval of nominal regulator, the PBC. In the early 1990s, the PBC was both the regulator and player in the same market. The official corruption of PBC led to excessive speculation and regulation violation. The poor supervision generated

the specific regulators, Chinese Securities Regulatory Commission (CSRC) and State Council Securities Committee (SCSC) in October, 1992.

The most significant feature of the Chinese stock market might be the various types of stocks with particular trading restrictions to particular trader categories. For the government to have an effective control over state assets of SOEs, shares of a firm are typically split into state shares, legal-entity shares, and tradable shares, with the restriction that state and legal-entity shares cannot be traded publicly.

- About a third of a company's equity is made up of state shares (*guojia gu*) which are owned by the central or local government and the ultimate owner is the State Council. State shares are supposed to be held by the MOF and they can neither be listed nor traded in the market and their transfer is subject to multiple administrative approvals.

- Legal-entity[25] shares make another third of the shares, which are held by domestic legal entities (institutions). They are allocated to other SOEs that contribute capital to the restructuring company before the IPO (Initial Public Offer), mostly other shareholding companies, banks, NBFIs and SOEs with at least one non-state owner. They cannot be traded on the stock exchanges, although they can be exchanged.

- The rest of the shares, known as Individual Person (IP) shares (*geren gu*), can be publicly issued and are the only class that can be traded on the domestic stock exchange, and are further classified into A- and B-shares. Tradable A-shares are ordinary shares available exclusively to Chinese citizens and institutions. B-shares were designed for overseas investors

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[25] Legal-entity shares can be held by any corporate identity. It is not difficult for individuals to form

and on February 28, 2001 the restriction was lifted and domestic investors are legally allowed to trade in B-share markets but the trade currencies remain US dollars and Hong-Kong dollars respectively. SHSE B-share market is denominated and traded in US Dollars while SZSE B-share market trades in Hong-Kong dollars.

Regardless of share types, each share is entitled to the same cash flow and voting right. By April 2001, state shares, on average, accounted for 39% of total shares outstanding of a firm, legal-entity shares 24%, and tradable shares 37%. The B-share market is relatively small compared with the A-share market. As of the end of April 2001, there were only 115 B-share issues, of which 89 companies had listed A-shares as well.

In order to avoid the loss of the state's position of majority shareholding in SOEs, the trading of state shares and legal person shares is strictly banned. This segmentation resulted in poor liquidity and price bubbles of various types of shares of the same issuer. Without a unified system it is difficult to value the price of shares accurately. Well-performing firms would prefer to be listed overseas and the domestic market will therefore be undermined by the bad quality of domestically listed firms. In this case, it is risky to issue new shares and the market will shrink dramatically. Banks will inevitably be involved and financial risk increases and paves the way for the breakdown of financial crisis. Therefore, the problem changed to how to compensate the holders of tradable shares.

Apart from the share tradability restriction, at least two other features of China's stock market also have implications for asset price behaviour and corporate valuation.

1. Short sales are strictly prohibited[26].

2. There exist a large number of unsophisticated individual investors.

As of the end of 2000, there were 57.79 million A-share accounts owned by individuals in China, but the number of accounts owned by institutional investors was only 1.35 million[27]. Together with the lack of qualified security analysts, individual investors behave more like noise traders, select stocks primarily on historical price trends, and trade on rumours. This practice is sometimes termed as "stir-frying stocks" in China (Kang *et al.*, 2002). Consequently, the market appears to exhibit excessive trading and excess volatility (see details in Wang, 2004)

The growth has been extremely irregular and has not followed the traditional models of stock-market development. It is a kind of legal gambling[28]. Small investors' benefits are seriously damaged by insider dealing and corruption.

In emerging stock markets a common problem for regulators is the conflict of interest between cooperative groups of members who operate the stock exchange and the goals of investors or corporations placing their securities on the market. The weak regulatory system was a common phenomenon in emerging stock markets in the 1990s and the recent experience with stock exchanges in Central and Eastern Europe and in Asia (Neal & Davis, 2005). Therefore, in the early stage of development, the government's compulsively administrative methods always function beside the regulations and the latter keep changing with

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[26] The short-sale prohibition effectively limits the supply of a firm's tradable shares, and refrain investors from sending a negative signal via trading, which facilitate the formation of price bubbles (Harrison & Kreps, 1978). As a result, prices of past winners can revert over a subsequent period, but this is less true for past losers.

[27] The large number of individual share accounts partly reflects the fact that there are limited investment or portfolio diversification instrument in China. Apart from stocking investing, another popular type of investments is to deposit money into saving accounts with a few state-owned banks. (See Kang et al, 2002) for a discussion of the institutional background resulting in the dominance of individual investors in China.

[28] In China, traditional gambling is banned.

the evolution of the stock market. Pistor and Xu (2004) argued that during the initial period of stock market development China relied on an administrative governance structure built around the quota system[29]. This helped to mitigate the serious information problems investors and regulators face and created incentives for local bureaucrats to select viable companies to be listed.

In the Chinese context even in the administration strategies there is still conflict between central government (State Council) and local governments. Cooper (2003) showed the central government has a powerful incentive to promote macroeconomic stability and good performance of the stock market, while the local government are less concerned with the overall performance of the stock market than with gaining access to the stock market for companies under their own jurisdiction.

With the further development, formal laws are required and better investor protection in corporate law and securities regulations tends to foster market development (Coffee, 1999; Johnson *et al*., 2001; Pistor, 2001). Most stock exchanges are self-regulating organizations in fact or by law (Neal & Davis, 2005). Examining the distinct histories of the rules and regulations of the first emerging markets of the 19th century, London, New York, and Paris, Neal and Davis (2005) conclude that the rules established by the initial group of members in an exchange determine how it functions thereafter. The further improvement of the legal system for stock markets can't divert away from the on-going system.

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[29] The quota system which relies on decentralized administrative government, has been an important feature of China;'s market management prior to as well as during the transitional period (Qian and Xu, 1993; Xu and Zhuang, 1998).

Relationship between stock market and banks

As discussed in Section 2.2, the banking system and the capital market are two parallel financial channels, which are both competitive and complementary. In China the initial stock traders originated from the banking sector. The early securities firms initially were split out from the major state-owned banks, local MOF branches and other state financial companies. The close relationship between the stock market and the banks caused over-speculation and high risk in the market. And in December 1993, the State Council determined to exclude banks from the security sector. Although the State Council permitted banks and industrial enterprises to invest in financial institutions including securities firms, it prohibited securities firms from investing in any sector but the securities industry.

Groenewold *et al*. (2003) examined weak market efficiency[30] and the role of banks in the Chinese stock market and they found evidence that efficiency suffered when banks were excluded from the stock market in 1996 and efficiency improved when they were re-admitted in early 2000. They gave an explanation in terms of liquidity, given the traditionally dominant role played by the banks in the Chinese financial system. When the banks were excluded liquidity suffered and information transmission was less efficient and this process was reversed in 2000.

At present banks are much more favourable sources of finance than the stock market in financial terms. This could easily be understood as path dependence[31], that banks appeared much earlier than the stock market and people

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[30] Fama (1970, 1991) defined efficiency as the ability of the market to rapidly digest new information so that securities' prices would at every point in time incorporate all relevant available information (Groenewold et al, 2003).

[31] Path dependence is the dependence of economic outcomes on the path of previous outcomes, rather than simply on current conditions. In a path dependent process, "history matters" -- it has an enduring influence. Choices made on the basis of transitory conditions can persist long after those

got used to using banks as the prior financial channel. A well-functioning stock market requires a series of related services and legal guarantees which are always lacking in the early stage of financial development, especially for developing countries. Therefore, the development of the stock market has to be built up upon a well-performing banking system. Obviously, China's banking sector and legal system have not been developed well enough to provide the services required by the stock market. A question will be raised that whether a fully-functioning stock market is urgently required. Shall we reconsider the reform direction of the financial system? We will explore this in the following section.

5.4   Problems in stock market and Chinese banking in transition

As discussed before, finance links savings and investment. The aims of developing the financial system should be providing finance for promising programs, and investment opportunities for surplus units.

Is the Stock market necessary for China?

According to the current situation, the stock market in China cannot undertake these two tasks and on the contrary it is becoming a seedbed of potential crisis. Unqualified listed firms, over-finance and over-speculation consist of the

conditions change. Thus, explanations of the outcomes of path-dependent processes require looking at history, rather than simply at current conditions of technology, preferences, and other factors that determine outcomes. [Online] Douglas Puffert, University of Warwick. Available: http://eh.net/encyclopedia/article/puffert.path.dependence [Accessed 30 April 2007]

bottomless-cave of the Chinese stock market. Because of the four-year decline investors are very sensitive that any negative rumour could lead to a big sale. The rapid expansion, involving many firms with low quality, is regarded as the main direct cause of the decline. A defective legal system and monitoring mechanism make it difficult for investors to differentiate the listed firms and curb insider-dealings, which always hurt small investors' benefits.

Concerning the low confidence in the stock market, we might need to reconsider the necessity of a stock market itself in the Chinese financial system. On the financing side, adverse selection has excluded many good firms and driven them to try to be listed overseas. Small and Medium Enterprises (SMEs) cannot expect to get finance either in the stock market because it is hard to convince investors of their promising programs without efficient and reputable brokerages. On the investing side, investors would prefer real estate than stock market, for example the hot housing market in Shanghai.

Therefore, being trapped in the financial morass, Chinese finance has to concentrate on the banking system and try to establish a universal banking sector. The prospective banking-based financial system should be the direction of the reform. This argument will be developed in the section.

Universal banking

Following Chick's (1992, 1993) model (see section 2.8) and the experience of the Western major banking system, the sixth stage, securitization, might be a direction of the present bank reform in China. However, the immaturity of the capital market makes it difficult to trade the shares freely. Ownership restrictions,

the lack of institutional buyers and domestic buyers, and the excessive fluctuation might have excluded this direction. However, based on the confidence in the state and the convention of people's preference for banking, we could imagine skipping the stage of securitization and jump to the next stage, market diffusion, directly.

In the seventh stage of Chick's model, **market structural diffusion**, there is a trend to diffuse the retail and investment banking. The pressures of deregulation make it hard for authorities to keep segmentation in financial markets. It is more and more difficult for distinct financial institutions to operate in distinct markets. Although banks are still special because their liability is used as money, the status is undermined by the competition from other financial institutions. The result has been a blurring of the distinction between banks and NBFIs.

A flourishing network of NBFIs emerged in China during the second half of the 1980s. Since then when the SOEs were used to implement the government's financial policies, the NBFIs have enjoyed more freedom in their operations. The development of NBFIs enriched the financial landscape but it has also posed some challenges to the government, such as credit control, regulating and monitoring etc.

Under the idea of universal banking banks could take NBFIs' role through offbalance- sheet business. This will squeeze the potential market share of NBFIs and jeopardize the development of the Chinese NBFIs. This does not mean NBFIs and the capital market are not necessary. Without the restriction of strict banking regulations, they have bigger innovative scope. The priority is to build a complete and powerful banking system and then expect the NBFIs and capital market to grow later. One thing we need to notice is that this kind of bank reform helps little

in reducing the existent NPLs and the banks have to try other ways to deal with them, such as consulting professional NPLs-dealing firms (Bonin & Huang, 2001). This is an urgent issue in that a banking system with a large amount of NPLs is very vulnerable and this is always a seedbed of financial crisis.

Current reform

Since the 1980s, many developing countries in Asia and Latin America have begun to deregulate the restrictions on foreign financial institutions on the domestic financial market to different extents and have opened their financial markets to international business. Foreign banks have been allowed to build branches in these countries and foreigners have been allowed to have shares in domestic banks. Domestic financial institutions are also obliged to join international competitions. Liu Mingkang, chairman of the China Banking Regulatory Commission (CBRC), announced at the latest press conference on 1st Dec 2004 that until the end of Oct of 2004 there have been 62 foreign banks from 19 countries which have established 204 operational institutions, and 105 of them have been allowed to issue RMB[32] business. Besides the operational institutions, 223 representative offices of foreign banks were opened in China. Since 1st Dec 2003 when CBRC announced it would allow foreign banks to provide RMB business for domestic enterprises, 61 foreign banks have been allowed to issue RMB business. In 2004, 24 foreign banks got the permission to issue RMB derivative products. Until the end of Oct 2004, the total assets of foreign banks in China are US$65.9 billion, 1.8% of the total assets of financial institutions in

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[32] RMB: The Renminbi (literally means "people's currency") is the official currency of the People's Republic of China. It is issued by the People's Bank of China, the monetary authority of mainland China.

China. Net credit is \$31.5 billion and the Non-performing Loans (NPLs) rate is 1.3%[33]. The profit of foreign banks in the first ten months of 2004 is \$210 million. Until now, 9 Chinese commercial banks have been allowed to absorb foreign investments (see China Daily, 8 July 2004). Evidence from Eastern Europe suggests that competition from foreign banks provides the most effective stimulus for the transformation of domestic banking systems in transition countries (Lardy, 1998).

Foreign banks could provide over 100 types of financial products or services, almost three times more than domestic banks. These kinds of novel financial products would satisfy the increasing financial demands of financial consumers. On the other hand, the entry of foreign banks will provide an alternative channel of saving and investing. With the absence of a mature capital market, savers would like to withdraw their savings from the SOBs and deposit them in foreign banks for higher returns or better financial services. Foreign banks will achieve higher profitability than existing large state-owned banks. They use these higher earnings to offer depositors better services or, if interest rates were deregulated, to offer higher interest rates on savings. This may bring to light the insolvency of large parts of the banking system, hence creating a potential financial crisis. Therefore, the Chinese banking authorities are unwilling to allow foreign banks to compete freely with domestic institutions. Furthermore, the relatively closed financial market excludes China from the speculative shocks in the global financial market. If the Chinese banking system were as open as Korea or Thailand, and if it had been allowed to borrow freely in the international

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[33] For Chinese banks, in the lowest place - Shanghai, the historical lowest NPL ratio is 4.35%.

banking community to meet the avid investment demand of its domestic clients, China could have faced a situation similar to that of the East Asian countries.

However, China's access to WTO enhanced the pressure posed by international competition. Competition with foreign banks without governmental protection is inevitable. Have Chinese banks been well prepared for this? The situation is not optimistic when we look at the fragility of the present banking system. The existing large amount of NPLs has long been the focus of literature. The official figure of the average proportion of the NPLs announced by the PBC in early 1998 was 24%, which only took the four major SOBs consideration. Some market watchers said that the ratio could be as high as 40%. "Policy loans[34]" could be an important cause of such NPLs and the banking system's low efficiency is another cause we should be aware of. Banking reform is necessary and we also need to know where it should go. Western experience has always been discussed and many people appealed to adopt their successful banking systems in the Chinese case. However, as banking is a special sector, it is crucial to develop a system based upon its own experience. As we see universal banking is the prospect of the current reform, the next question might be how to reform "commercial banks" and manage the increasing competition from foreign banks.

Nowadays more and more economic sectors formerly controlled by the SOEs are forced to open up to non-state investors, who are rising as a dynamic drive behind China's economy. But the SOBs still prefer to finance the SOEs, claiming a higher loan security there. In addition, facing China's entry into the WTO and the gradual opening up of the financial sector to foreign banks within

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[34] The administratively allocated funds are referred to as "policy loans" or "relending". The banks, particularly, the specialized banks, are required to support government objectives ranging from the expansion of priority sectors, usually referred to as "pillar industries" to underwriting loss-making state owned enterprises, Unfortunately there is no uniform definition of policy lending and no time series data specially identified as policy lending (Lardy, 1998, p.83).

five years after entry, Chinese banks are facing a large amount of potential loss of depositors, who will have more choices in depositing. Because of their inefficient practices, it is difficult for the SOBs to supply depositors with the same or higher deposit rate as big international commercial banks do. Therefore, they cannot keep the old methods any longer - offsetting bad debts through deposit growth. They have to adjust themselves for further competition. Chinese banks, of course, will be unable to offer very attractive rates of return to savers until they are allowed and are able to develop the capacity to lend on a much more selective basis than has been the case to date. That, in turn, implies a restructured enterprise sector, particularly the exit of firms that are not financially capable of paying market-determined rates of interest on their borrowing.

Capital injection is commonly used and might be the easiest way to help SOBs. Each year, the MOF sets a limit on the amount of bad loans that SOBs are allowed to write off. The limit for 1998 was RMB50 billion, with RMB40 billion earmarked for debt forgiveness for bad loans arising from SOE restructuring (primarily mergers and bankruptcy). This limit was up from RMB30 billion in 1997, and rose to RMB60 billion in 1999 and RMB70 billion in 2000. The recapitalization plan as announced in late February 1998 will help the big four banks increase their Capital Adequacy Ratio (CAR), but will not solve the problem of bad loans, which is determined by the inherited SBC problem. This kind of recapitalization should be conditional on banks' commercial based operation, such as management, organizational structure, human resource management, risk management etc. If the government cannot diminish banks' expectation of further capital injections, the additional capital may turn out to be a waste of scarce resources. This is a typical moral hazard problem caused by SBC.

Therefore, a comprehensive and strictly followed plan should be made to rehabilitate banks and implement specific measures for preventing the deterioration of bank assets quality in the future.

Apart from bank reform, the Chinese government has to reform the SOEs first in order to cut down the policy loans from the banking system. Bank reform cannot carry on successfully with the burden of SOEs. The autonomy of the local SOBs in their credit decisions should be enhanced further to be perfectly market based. If not, banks would have reason to expect further capital injections from government and government cannot use the standards of proper commercial banks to measure banks' efficiency. The universal dilemma of the ownership problem is another obstacle for attaining successful reform. However, the privatization of the SOBs does not seem to be a realistic option in that the quality of the assets is very poor and massive rehabilitation has to be done before privatization. Even if the quality is good enough, it seems it is hard to find plenty of domestic buyers, while the involvement of foreign capital will raise potential political anxieties. Privatization cannot be on the immediate agenda. Once the restructuring of SOEs has been completed and the capital market gets enhanced, the government may start selling the shares of SOBs step by step in the capital market and reform the ownership composition gradually. The experience of privatization in Taiwan's financial reforms over the past five decades might be a good example for China's decision-making officials. During this period Taiwan's financial system has been gradually transformed "from a controlled system into a liberalized one, from a state banking system into a private banking one, and from an inward investment system into an outward investment one" (Yu, 1999). During the early stage of economic development, a centralized system could helpful, for example Russia

and Korea in the 1970s, however, once the country has started to achieve rapid growth and has accumulated sufficient resources to meet demand, it is natural for its government to gradually adopt a more modern and open financial system (Yu, 1999). Taiwan's experience is more applicable for China's situation and the same culture and tradition make it easier to be applied.

A big potential difficulty for financial reform is that the risks of the Chinese banking system are too concentrated in the big four major banks and a small mistake might damage the confidence of the whole banking system and lead to financial crisis. This ties the reformer's hands to some extent and that is why bank reform in China is relatively slow and probably too careful.

5.5 Conclusion

From the above discussion we could see that the dual-track system is crucial to facilitate China's transition. It helps avoid the dramatic drop in growth which happened in many other transition countries, although it does bring problems, such as corruption.

During the transitional period, China's banking system developed from a mono-banking system to a two-tier system consisting of a central bank and state-owned commercial banks. However, according to Chick's (1992, 1993) seven stages framework of banking evolution, China's banking system was no further than the fourth stage, "lender of last sort facility" during that period of transition.

In China, the low reputation and poor quality of listed firms make the stock market unfavourable for both deficit units and surplus units. Meanwhile, special status and the distinct ability to create credit make banks outstanding in

the financial market and drive banks themselves to evolve through the seven stages in Chick's framework. Reputation, the essential requirement of banks' existence, determines the development of the banking system and particular banks. The change of confidence goes along with the change of people's knowledge about the uncertain future.

Under the concept of universal banking, the banking sector keeps playing its dominant role in the financial system. Through various financial services, the banking system can satisfy the saving and investing demand, relying on people's confidence in it. Therefore, the further development of the banking sector should be set prior to that of the stock market, as the latter has to be developed in a complete and powerful banking system. With this understanding, what is firstly needed is the termination of policy loans. The SOBs need to work substantially as commercial banks, and then more financial products and services need to be developed in order to build a single, largely unified banking structure, the universal banking. After that, a healthy financial system, including NBFIs, capital market, and so on, will develop naturally on the basis of the banking system.

In the last three chapters, we examined the history of Chinese banking in three different periods, and we were particularly interested in the development of the methods of credit risk management. In the next chapter, we will proceed to the current credit practice in Western and Chinese banks, and we will examine both the qualitative and quantitative methods often used in related research and justify a method that is appropriate for Chinese banks.

Chapter 6   The role of quantitative methods in credit risk assessment: A critical review of literature

The history of the Chinese banking and the development of credit risk management over this history have been examined in Chapters 3, 4 and 5. The previous experience helps us understand the current situation, As discussed in Chapter 5, SBC and poor credit risk assessment contribute to the large amount of NPLs in the Chinese banking sector. In order to improve credit risk management, Western methods have been introduced into China since the early 1990s and quantitative models based on modern theories have been advocated in Chinese banks.

The purpose of this chapter is to examine these modern quantitative theories as well as the traditional systems in assessing credit risk. We will investigate how these methods are being currently used in the credit practice in both Western and Chinese banks.

Hence, the chapter is organized as follows. In Section 6.1 we will start our analysis with the traditional systems in assessing credit risk, which used to be the dominant methods in the banking sector. In Section 6.2 we will examine literature on the development of credit risk assessment in the mainstream approach, and the popular modern models based on the quantitative theories will be examined in Section 6.3. Credit derivatives, the recently developed financial instruments to trade credit risk, will be discussed in Section 6.4. After a discussion of Western theories and models we will proceed to the Chinese case in Section 6.5. Relevant

literature will be reviewed in Section 6.6 and the analysis of the procedure and requirements of corporate loans in the Chinese banks will be given in Section 6.7. Finally, Section 6.8 will summarize the main findings of the chapter.

6.1 Traditional systems in assessing credit risk: Expert system, credit rating and credit score

The traditional methods of credit risk assessment usually include three systems: expert system, credit rating and credit score. In this section, the three methods are reviewed and analyzed.

Expert system

The Expert system is the most used traditional method in assessing credit risk. When commercial banks have a loan application concerning a particular project, banks might organize a committee composed by experts to make a decision based on qualitative and quantitative information. This means the experts' expertise and subjective judgement play an important role in the decision-making process. The most popular expert system is the "five Cs" system singled out by Sinkey (2002), quoted in Heffernan (2005). The experts analyze the five factors and make a decision based on the subjective balance between the five Cs.

The five Cs are Character, Cash flow, Capital, Collateral (or security) and Conditions.

Character concerns the borrower's personal nature, reputation, knowledge, social status and credit record etc. It is usually used to measure borrower's

willingness to repay. For example, the history of an enterprise is regarded as a signal whether it is a good borrower.

Cash flow indicates the borrower's liquidity. As discussed in Chapter 2, a liquidity problem is a common cause for default. Usually banks require borrowers to submit the financial reports and frequent cash flow always means good liquidity.

Capital means the assets or capital the borrower has. This term directly relates to the amount of the loan. A leverage of debt to capital is a good index to show the probability of bankruptcy or default. Usually higher leverage means higher default possibility.

Collateral is a security or guarantee pledged for the repayment of a loan if one cannot procure enough funds to repay. The value of collateral is closely determined by the liquidity and stability of collateral. Real estate and share certificates are the favourable collateral.

Conditions are also known as Cycle Conditions, which indicate the current macroeconomic status of the economy. If the banks believe the economy is in the upturn, it would be easier for a borrower to obtain loans. If it is in the event of a downturn, banks' valuation of borrower's collateral would decrease and things would be difficult for the borrower.

Although many banks prefer to apply the expert system in their credit practice, there are two major problems about this system. One is "consistency". The problem is how to identify the common factors which can expose default risk for similar borrowers. Another problem is how to give proper weight to the five factors. Because the weights are given subjectively according to different borrowers, it is difficult to reach a common decision and it is hard to judge

experts' decision. Following the discussion in Chapter 2, 6 and 7, it is found that experience plays the most important role in the expert system.

Credit rating system

A credit rating assesses the credit worthiness of an individual or corporation, according to financial history and current assets and liabilities. Usually a credit rating could tell a lender or investor the probability of the subject being able to pay back a loan.

At the moment, there are two kinds of credit rating: external ratings published by the credit rating agencies, such as Moody's, S&P, etc., and internal ratings calculated and used by banks.

The earliest credit rating system was developed by the Office of the Comptroller of the Currency (OCC) in the US, which gives five categories to loans with different possibility of default. Afterwards bankers developed OCC's five categories into more detailed categories. Currently in the US, around 60% of bank corporations and the top 50 banks have developed internal ratings which have 9 to 10 categories (Li *et al.,* 2003). With the development of internal and external ratings, banks are increasingly mapping their internal risk ratings to public ratings.

A well managed credit risk rating systems is believed to be able to help banks promote safety and soundness by facilitating informed decision making. This system enables bank management and examiners to monitor changes and trends in risk levels and optimize returns.

Credit-scoring systems

This idea is essentially the same as previous systems: pre-identify certain key factors that determine the probability of default (as opposed to repayment), and then combine or weight them into a quantitative score. In some cases, the score can be literally interpreted as a probability of default; in others, the score can be used as a classification system: it places a potential borrower into either a good or a bad group, based on a score and a cutoff point. Altman's (1968) Z-score model is a classificatory model for corporate borrowers using linear discrimination analysis and based on a matched sample (by year, size and industry) of failed and solvent firms. The best fitting scoring model takes the form:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

Where

X_1 = working capital / total assets ratio;

X_2 = retained earnings / total assets ratio;

X_3 = earnings before interest and taxes / total assets ratio;

X_4 = market value of equity / book value of total liabilities ratio;

X_5 = sales / total assets ratio

As used by the credit officer, if a corporate borrower's accounting ratios (the X_i's), when weighted by the estimated coefficients in the Z function, result in a Z score below a critical value (which is 1.81 in Altman's initial study), they would be classified as "bad" and the loan would be refused.

The credit scoring system has some limitations, which could apply to most of the quantitative methods. The first is that the data are historical. It can not give relatively accurate prediction unless banks frequently update either the variables or the weights. Another limitation is that the credit score system imposes a binary outcome: either the borrower defaults or does not default. However, in reality there are a range of possible outcomes, from a delay in interest payments to no-payment of interest, to outright default on principle and interest (Heffernan, 2005). Because of these problems, credit score is usually used for personal loans and SMEs loans, which makes finance for small businesses more difficult.

Conclusion

With the analysis of the three traditional credit risk assessing methods, it could be found that subjective qualitative methods are the essential methods of the three systems. The principle is to identify the factors which could expose default risk, and give appropriate weights. The development of computer science enables banks to analyze more detailed factors and quantitative models are becoming popular in banks for credit risk management. In the next section, we will examine the four most popular credit risk models.

6.2 The development of credit risk assessment in the mainstream approach

Credit risk assessment refers to commercial banks' ability to predict the loss caused by borrower's unexpected default. The mainstream Western approach is to model the probability of default risk on the basis of historical data. Generally, there are three types of information relevant to the default probability: financial statements, market prices of the firm's debt and equity, and the subjective perception of the firm's risk. Brown and Wang (2002) broadly classify modelling credit risk into structural models and reduced-form models. Structural models value credit risk based on equity market and accounting information, while reduced-form models utilize rating information provided by rating agencies, such as Stand & Poor's and Moody's. Crosbie and Bohn (2003) develop the objective determining factors of default probabilities to three main elements: Value of Assets[35], the market value of the firm's assets; Asset Risk[36], the "uncertainty" or risk attached to the asset value; and Leverage [37], the extent of the firm's contractual liabilities. Many US large banks have introduced more structured or formal systems for approving loans, portfolio monitoring and management reporting, analysis of the adequacy of loan loss reserves or capital, and profitability and loan pricing analysis (Treacy & Carey, 2000).

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[35] This is a measure of the present value of the future free cash flows produced by the firm's assets discounted back at the appropriate discount rate. This measures the firm's prospects and incorporates relevant information about the firm's industry and the economy.

[36] This is a measure of the firm's business and industry risk. The value of the firm's assets is an estimate and is thus uncertain. As a result, the value, the value of the firm's assets should always be understood in the context of the firm's business or asset risk

[37] Whereas the relevant measure of the firm's assets is always their market value, the book value of liabilities relative to the market value of assets is the pertinent measure of the firm's leverage, since that is the amount of the firm must repay.

Structural models

The literature on structural credit risk modelling is extensive and growing. Until the 1990s, corporate credit analysis was still staying in the subjective stage (involving a person sitting, talking to another person and making an individual assessment without any external data), because credit staff lacked methods to quantify absolute levels of default risk. An early pioneering contribution is Altman's (1968) study of business default risk based on observations of bankrupt and operating firms respectively. A number of authors after Altman have estimated various types of default risk models on cross-sectional data sets and the attempts to quantify credit risk have been a focus of academic papers in the past 30 years. Black and Scholes (1973) propose that one could view the equity of a company as a call option, and this insight provides a coherent framework for the objective measurement of credit risk. As subsequently elaborated by Merton (1973, 1974), Black and Cox (1976), and Ingersoll (1977), this approach has come to be called "the Merton model"[38], in which the equity of the firm is a call option on the underlying value of the firm with a strike price equal to the face value of the firm's debt.

What Black, Scholes, and Merton actually proposed is a general framework for valuing contingent claims. In 1984, Vasicek took a novel approach to implementation of the Merton model that has proven to have considerable success in measuring credit risk. This version of the Merton model has been developed by KMV Corporation to become a *de facto* standard for default-risk

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[38] The Merton model is also called Black-Scholes-Merton model (BSM model) or Merton-KMV model.

measurement in the world of credit risk. There is no single Merton model and the KMV model is largely a variant of the Merton model (Kealhofer, 2003a).

Oldrich Vasicke and Stephen Kealhofer have extended the Merton model to produce a model of default probability known as the Vasicek-Kealhofer (VK) model. This model assumes the firm's equity is a perpetual option with the default point acting as the absorbing barrier for the firm's asset value. When the asset value hits the default point, the firm is assumed to default.

Stein (2000), Sobehart and Keenan (1999), and Sobehart and Stein (2000) argue that the Merton model can easily be improved upon, and Kealhofer and Kurbat (2001) argue that the Merton models capture all of the information in traditional agency ratings and well known accounting variables. Duffie and Wang (2004) show that the Merton model has significant predictive power in a model of default probabilities over time, which can generate a term structure of default probabilities. Hull *et al.* (2004) propose a simpler method for estimating the model's parameters from the implied volatilities of options on the company's equity. They use data from the credit default swap market to compare their implementation of Merton's model with the traditional approach to implementation.

Some negative comments also appeared. Bharath and Shumway (2004) examine the accuracy and the contribution of the KMV-Merton default forecasting model and conclude that the Merton model does not produce a sufficient statistic for the probability of default, and it appears to be possible to construct such a sufficient statistic without solving the simultaneous nonlinear equations required by the KMV-Merton model. They argue that the KMV-Merton

probability is a marginally useful default forecaster, but it is not a sufficient statistic for default.

Jackson and Perraudin (2000) explain why credit risk modelling has become such a focus of interest for practitioners and financial supervisors and offer the possibility of major changes in the ways banks are managed and regulated. They suggest some thoughts on how back-testing and other types of model assessment might be performed. Dietsch and Petey (2002) concentrate on the credit risk modelling issues of small commercial loans portfolios. They propose specific solutions dealing with the most important peculiarities of these portfolios: their large size and the limited information about the financial situation of borrowers.

In the last decade, a whole range of modelling techniques has been developed to analyze portfolio credit risk. Carling *et al.* (2004) classified them into four groups of portfolio credit risk models. The first group is structural and, based on the Merton model individual firms default when their asset value falls below the value of their liabilities. Examples of such microeconomic causal models are CreditMetrics and KMV's PortfolioManager. The second group consists of econometric factor risk models, like McKinsey's CreditPortfolioView. Both thus require a similar kind of aggregation. The third group contains a top-down actuarial model, like Credit Suisse's CreditRisk+, that makes no assumption regarding causality. A number of authors, such as Carey (1998), use non-parametric methods.

CreditMetrics, first published and well publicized in 1997 by JP Morgan, is based on credit migration analysis, i.e. the probability of moving from one credit quality to another, including default, within a given time horizon, which is

often taken arbitrarily as one year. KMV's methodology differs somewhat from CreditMetrics as it relies upon the "Expected Default Frequency" (EDF), for each issuer, rather than upon the average historical transition frequencies produced by the rating agencies, for each credit class.

At the end of 1997, Credit Suisse Financial Products (CSFP) released a new approach, **CreditRisk+**, which only focuses on default. CreditRisk+ assumes that default for individual bonds, or loans, follows a Poisson process. Credit migration risk is not explicitly modelled in this analysis. Instead, CreditRisk+ allows for stochastic default rates which partially account, although not rigorously, for migration risk.

McKinsey, a consulting firm, proposed its own model, **CreditPortfolioView**, which, like CreditRisk+, measures only default risk. It is a discrete time multi-period model, where default probabilities are a function of macro-variables such as unemployment, the level of interest rates, the growth rate in the economy, government expenses, and foreign exchange rates, which also drive, to a large extent, credit cycles.

All of these models have something in common that they are all built on three more or less general components to calculate portfolio loss distributions. First, they contain the process to generate conditional default rates for each borrower in each state of nature and a measure of covariation between borrowers in different states of nature. Second, their set-up allows for the calculation of conditional default rate distributions for sets of homogeneous sub-portfolios (e.g., rating classes) as if individual borrower defaults are independent. Third, unconditional portfolio default distributions are obtained by aggregating homogeneous sub-portfolios conditional distributions in each state of nature; then

conditional distributions are averaged using the probability of a state of nature as the weighting factor. Finally, they have similar mathematical structures (Carling *et al.* 2004).

Reduced-form models

The proposed new regulation of the supervisory standards for banks' credit risk capital requirements by Basel Committee (Basel II), concentrates the interest of banking supervision and commercial banks on internal ratings. It is expected to gain in importance because of their potential role in determining the adequacy of regulatory capital. Banks are allowed to use their own internal ratings for the calculation of capital requirements, provided that they fulfil a number of so-called minimum requirements. Banks' rating systems differ significantly from public rating systems, such as Moody's or Standard & Poor's, partly because internal ratings are assigned by bank personnel and are usually not revealed to outsiders.

One central requirement of Basel II is that ratings are based not only on traditional quantitative, financial factors but also on qualitative, non-financial information. This qualification is supported by empirical work that confirms the additional information content of soft facts (see Grunert *et al.*, 2004 and Becchetti & Sierra, 2003).

Banks already rely regularly on qualitative information for the assignment of ratings. Treacy and Carey's (2000) research, based on information from internal reports and credit policy documents for the fifty largest US bank holding companies, find many banks use statistical models as an element of the rating process, but rating assignment and review almost always involve the exercise of

human judgment. Because the factors considered in assigning a rating and the weight given each factor can differ significantly across borrowers, banks (like the rating agencies) generally believe that the current limitation of statistical models is such that properly managed judgmental rating systems deliver more accurate estimates of risk.

Having emphasised the importance of quantitative and qualitative information, the problem changes to how to combine all the different risk factors into an overall rating. A partially statistical and expert judgement-based approach is to combine financial factors into a scoring function via credit scoring techniques and to convert the metric scores to ordinaly scaled rating grades (e.g. AAA, AA, A etc.). The financial rating is then adjusted to reflect non-financial data by a credit analyst, based on his subjective opinion (see Crouhy, *et al.*, 2000).

A second, purely statistical, approach is to combine financial and non-financial factors into one scoring function (see Becchetti & Sierra, 2003). Both procedures involve the transformation of score to ratings. Well known scoring techniques, such as linear discriminate analysis (Altman, 1968), logistic regression (Martin, 1977), and neural networks (Alterman *et al.,* 1994), were formerly applied to support credit granting decisions (2-group classification); that is, to separate firms into default and non-default groups.

Treacy and Carey (2000) also mention the incentive problem of rating for credit staff. At banks that use ratings in computing risk-adjusted profitability measures or pricing guidelines, the staff may be tempted to assign ratings that are more favourable than warranted. Therefore a balanced and mutual supervised mechanism is necessary such that most banks rely heavily on loan review

departments and informal disciplines associated with corporate culture to control incentive conflicts.

In this section, we briefly reviewed the development of credit risk modelling in the last 30 years. The principle of these complicated quantitative models is to quantify the factors which contribute to the default risk and the corresponding loss. In the next section, we will look at some popular quantitative models currently used in the Western banking system.

6.3 Popular modern models in assessing credit risk: KMV-Merton model, CreditMetrics, McKensey model and CreditRisk+ model

In the last 30 years, the banking sector and credit market have been expanding rapidly. The insufficient number of qualified credit officials and the increase of risk make it difficult for the expert system to satisfy the demand for risk management. Banks have to explore less costly methods to measure and control credit risk. The development of financial theories and the innovation of new credit instruments provide a foundation to explore quantifiable methods for risk management. In this section we pay attention to the most successfully used models in banking sector for risk assessing, including KMV-Merton, CreditMetrics, McKinsey's CreditPortfolioView and CSFP's CreditRisk+ models.

A mature credit risk management should be able to reflect most potential causes of default, and also be able to provide an efficient quantified model for

practice in credit risk management. There are some general points to be regarded when designing a model, such as:

Time range: The usual time range set to be one year or the same as the period of loan. The latter enables credit officials to compare the quality between different loans but a one-year assessing period coincides with the accounting year of banks. The efficiency of every credit risk modelling depends on the quality of required data. Credit Risk+ requires credit exposure, the default rate of borrowers, fluctuation of default and the recovery rate of default loss.

Credit exposure: Credit exposure to counterparty is the amount lost when the counterparty fails to meet its financial obligations[39]. Bank's credit exposure depends on every borrower's exposure, which is integrated to bank's credit exposure.

Default rate: default rate means the probability of the event of default. It refers to specific borrower. Such as watching his transaction history, his credit score which is calculated by agencies.

KMV-Merton model

The theoretical development of the Merton model was examined in Section 6.1. The Merton model shows how the probability of company default can be inferred from the market valuation of companies and the equity of the firm is a call option on the underlying value of the firm with a strike price equal to the face value of

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[39] i.e. when it defaults. Credit exposure depends on the value of transactions (e.g. swaps, loans and other securities which introduce credit risk) entered into with the counterparty, and taking into account any master agreements specifying netting rules between the parties involved. Unlike outcome, credit exposure does not depend on the default probability of the counterparty. The greater the size of the transactions or investments entered into with a single counterparty, the greater the credit risk.

the firm's debt. It is believed that the event of default is determined by the market value of the firm's assets in conjunction with the liability structure of the firm. Through the observation of a sample consisting of hundreds of firms, KMV Corporation found that, when the market value falls below a certain critical point (usually the value of liability), the firm is considered to be in default.

Generally there are three steps in the determination of the default probability of a firm:

Step 1: Estimate asset value and volatility: In this step the asset value and asset volatility of the firm are estimated from the market value and volatility of equity and the book value of liabilities.

Step 2: Calculate the distance-to-default: The distance-to-default (DD) is calculated from the asset value and asset volatility (estimated in the first step) and the book value of liabilities. The KMV approach does not solely rely on an analytical Merton model. Before calculating the default probability, it takes a preliminary estimation which is called "distance to default" (DD). Asset value, business risk and leverage can be combined into DD, which compares the market net worth to the size of a one standard deviation move in the asset value. DD is calculated as:

DD = (Market Value of Assets – Default Point) / (Market Value of Assets)*(Asset Volatility)

DD combines three key credit issues: the value of the firm's assets, its business and industry risk, and its leverage. Moreover, DD also incorporates, the asset value and volatility, the effects of industry, geography and firm size (KMV, 2003).

Step3: Calculate the default probability: The default probability is

determined directly from the distance-to-default and the default rate for given levels of distance-to-default.

As discussed in Section 6.2, Vasicke and Kealhofer have extended the Merton model to produce a model of default probability known as the Vasicek-Kealhofer (VK) model. KMV has implemented the VK model to calculate an Expected Default Frequency (EDF) credit measure which is the probability of default during the forthcoming year, or years for firms with publicly traded equity (KMV, 2003). The EDF value requires equity prices and certain items from financial statements as inputs. EDF credit measures can be viewed and analyzed within the context of a software product called Credit Monitor (CM). CM calculates EDF values for years 1 through 5 allowing the user to see a term structure of EDF values. KMV's EDF credit measure assumes that Default is defined as the non-payment of any scheduled payment, interest or principal (KMV, 2003).

EDF credit measures are based on market prices. Accurate and timely information from the equity market provides a continuous credit monitoring process that is difficult and expensive to duplicate using traditional credit analysis. They are forward looking and reflect the current position in the credit cycle. They are a timely and reliable measure of credit quality. EDF values are also often used to help focus the efforts of the traditional credit processes. They provide a cost-effective method to screen credit applications quickly and to focus credit analysis where it can add the most value. Further, because EDF values are real probabilities, they are the key data items in many institutions' provisioning, valuation and performance measurement calculations (KMV, 2003).

KMV's methodology differs somewhat from CreditMetrics as it relies upon the "Expected Default Frequency" (EDF), for each issuer, rather than upon the average historical transition frequencies produced by the rating agencies, for each credit class.

CreditMetrics

CreditMetrics, first published in 1997 by JP Morgan, is based on credit migration analysis, i.e. the probability of moving from one credit quality to another, including default, within a given time horizon, which is often taken arbitrarily as one year. Morgan developed transition matrices for this purpose as early as 1987 and a broad literature of work which applies migration analysis to credit risk evaluation have been built afterwards (see Gupton *et al.,* 1997).

CreditMetrics is a framework for quantifying credit risk in portfolios of traditional credit products (loans, commitments to lend, financial letters of credit), fixed income instruments, and market-driven instruments subject to counterparty default (swaps, forwards, etc.) (Gupton *et al.,* 1997). The model includes a method to measure the Value-at-Risk of portfolio, a free online data set and JP Morgan's software pack.

The calculation of portfolio Value-at-Risk due to Credit (Credit-VaR) is based on a multiple stand-alone risk calculation and its estimation through Creditmetrics is summarized by Figure 6.3.1:

Figure 6.3.1   Credit Metrics Framework
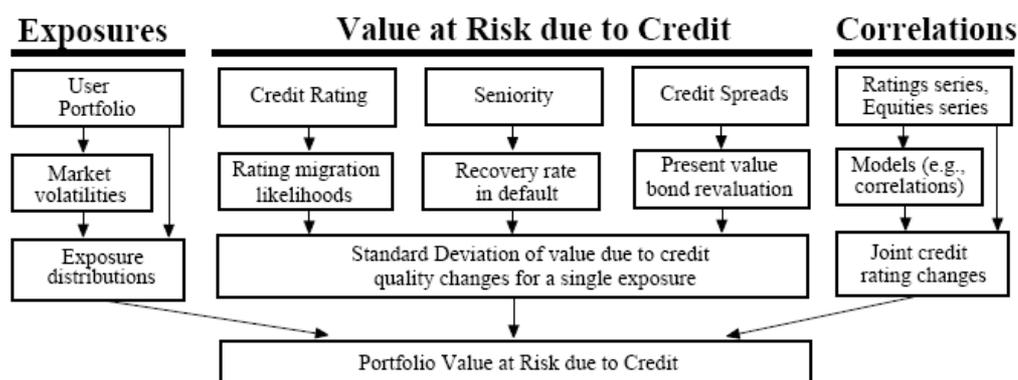
Source: Gupton *et al.,* 1997, p.iv

The two most popular statistic terms, standard deviation and percentile level, are used in CreditMetrics. Because credit risk does not follow a normal distribution, the CreditMetrics framework uses *Monte Carlo simulation*[40] to create a portfolio loss distribution at the horizon date.

For stand-alone risk calculation, there are three steps: credit rating migration, valuation and credit risk estimation.

Firstly, each borrower is assigned a credit rating and a transition matrix by credit rating agencies, which should be carefully interpreted since it usually represents average statistics across different industries, and over several business cycles. It is used to determine the probability that the borrower's credit rating will be upgraded or downgraded, or that it defaults. Although default represents the most extreme value deterioration, a credit instrument can also decline in value when the obligor is downgraded (Crouhy *et al.,* 2000).

The next step is to specify the forward pricing model. The seniority of the bond determines its recovery rate in the case of default. The forward zero curve

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[40] Monte Carlo simulation is a method for iteratively evaluating a deterministic model using sets of random numbers as inputs.

for each credit rating category determines the value of the bond grade. Both of these aid revaluations of the bond (see Gupton *et al.,* 1997).

The likelihoods from Step 1 and the values from Step 2 then combine in our calculation of volatility of value due to credit quality changes.

Based on the calculation of stand-alone exposure, CreditMetrics calculates the portfolio value by randomly simulating the credit quality of each borrower. The credit instruments are then repriced under each simulated outcome, and the portfolio value is simply the aggregation of these prices. Correlations between the changes in credit quality usually depend on industry, region and the state of the economy. CreditMetrics assumes the equity price as a proxy for the asset value of the firms. The correlations between the equity returns of various obligors are directly inferred to expected correlations between changes in credit quality.

The model's portfolio framework incorporates diversification benefits which reduce the aggregate risk of stand-alone transactions. Correlated credit movements of borrowers (such as several downgrades occurring together) are addressed, and any borrower, industry or geographical concentrations in the portfolio will result in increased capital requirements (Crouhy *et al.,* 2000).

Different from the KMV-Merton model, CreditMetrics focus on the risk assessment side rather than the pricing side. The calculation and data set are free of charge and transparent. It is applicable to various bank credit products and it gives the user a variety of options to use for measuring economic capital which may in turn lead to further uses of CreditMetrics, such as three applications of an economic capital measure: exposure reduction, limit setting, and performance evaluation (see Gupton *et al.,* 1997). JP Morgan does not give a credit rating and

the inconsistency between credit agencies' ratings, such as S&P, Moody's, KMV, make it hard to compare results.

McKinsey (CreditPortfolioView)

McKinsey, a consulting firm, proposed its own risk measurement model, CreditPortfolioView, developed by Wilson (1997a, 1997b, 1998). It is a multi-factor model used to simulate the joint conditional distribution of default and migration probabilities for various rating groups in different industries and countries, conditional on the value of macroeconomic factors, such as unemployment rate, GDP growth, interest rates, foreign exchange rates, government expenditures and the aggregate savings rate etc. (Crouhy *et al.,* 2000).

Instead of applying historical data of default events, CreditPortfolioView uses the default probabilities conditional on the current economy. When the economy worsens both downgrades as well as defaults increase and the default probability of a borrower would be presumed to be higher in the downturn than in the upturn. Unlike CreditRisk+, where simply an expected value and a standard deviation of the default rate are assigned to each sector, complete time series of default rates per sector are required in the CreditPortfolioView.

Firstly, a rating and a country-industry-segment have to be assigned to every credit exposure/debtor in the portfolio. This information usually could be obtained from credit rating agencies. Secondly it is necessary to identify the macroeconomic variables which can represent the systematic risk of default rates in the chosen country-industry-segments. For each country-industry-segment, the designer needs to identify up to three macro variables as the most suitable

exogenous factors using a non-linear OLS regression and therefore as the best to explain past fluctuations of the default rate in this segment. Thirdly, the new realisations of every single macro variable for the next period can be simulated using historical auto-regressive patterns. Finally CreditPortfolioViewTM draws new ratings for each counterparty in the portfolio and for every simulation scenario out of those conditional sector-specific migration matrices (Kern & Rudolph, 2001). McKinsey's model is basically a logistic model where default risk in homogeneous subgroups is determined by a macroeconomic index and a number of idiosyncratic factors. These models employ closely related Monte Carlo simulation approaches to calculate portfolio risk.

In CreditPortfolioView correlations between the single country-industry-segments are not taken into account. It is the joint dependency on macroeconomic risk drivers that results in correlated rating migrations and defaults.

CreditPortfolioView is a complex econometric model. It needs a lot of time series data concerning particular industries and countries (see an example in Table 3 in Kern & Rudolph, 2001). As it is up to the user's subjective judgement to identify the potentially relevant macro variables for the different groups of debtors in the portfolio and to supply the respective time series, it is hard to judge or compare the accuracy of the result.

CreditRisk+

At the end of 1997, Credit Suisse Financial Products (CSFP) released a new approach, **CreditRisk+**. Unlike the Merton-based approach used by Portfolio Manager and CreditMetrics, the CreditRisk+ methodology is based on

mathematical models used in the insurance industry. It takes into account information relating to size and maturity of an exposure and the credit quality and systematic risk of an obligor.

The modelling of credit risk is a two stage process. The first stage concerns the frequency of defaults and the severity of the losses, the second stage concerns the distribution of default losses.

It makes no assumptions about the causes of default. Instead of absolute levels of default risk – such as 0.25% for a triple B rated issuer – CreditRisk+ models default rates as continuous random variables and incorporates the volatility of default rates in order to capture the uncertainty in the level of default rates (CSFP, 1997; Phelan & Alexander, 1999).

By calculating the **distribution of default events**, the risk manager is able to assess whether the overall credit quality of the portfolio is either improving or deteriorating. The distribution of losses allows the risk manager to assess the financial impact of the potential losses as well as measuring the amount of diversification and concentration within the portfolio (CSFP, 1997).

Given the number of default events, we now consider the **distribution of losses** in the portfolio. The distribution of losses differs from the distribution of default events because the amount lost in a given default depends on the exposure to the individual obligors. Unlike the variation of default probability between obligors, which does not influence the distribution of the total number of defaults, the variation in exposure magnitude results in a loss distribution that is not Poisson in general. Moreover, information about the distribution of different exposures is essential to the overall distribution. However, it is possible to

describe the overall distribution of losses because its probability generating function has a simple closed form amenable to computation (CSFP, 1997).

In the event of a default of an obligor, a firm generally incurs a loss equal to the amount owed by the obligor less a recovery amount, which the firm obtains as a result of foreclosure, liquidation or restructuring of the defaulted obligor. A recovery rate is used to quantify the amount received from this process. Recovery rates should take account of the seniority of the obligation and any collateral or security held. In order to reduce the amount of data to be processed, two steps are first followed:

1. The exposures are adjusted by anticipated recovery rates in order to calculate the loss in a given default.

2. The exposures, net of the above recovery adjustment, are divided into bands of exposure with the level of exposure in each band being approximated by a common average.

An example of the use of CreditRisk+ could be seen in Chen (2002).

Default correlation is generally caused by external factors such as regional economic strength or industry weakness. CSFP argues that default correlations are difficult to observe and are unstable over time. Instead of trying to model these correlations directly, CreditRisk+ uses default rate volatilities to capture the effect of default correlations and produce a long tail in the portfolio loss distribution (Carling *et al.,* 2004). CreditRisk+ can handle thousands of exposures and uses a portfolio approach which reduces risk for diversification. Exposures can be allocated to industrial or geographical sectors and different time horizons of exposure can be incorporated. The minimal data requirements make the model

easy to implement, and the analytical calculation of the portfolio loss distribution is very fast (Phelan & Alexander, 1999).

Credit default events are rare and occur in a random manner with observed default rates varying significantly from year to year. The approach adopted partly reflects these characteristics by making no assumptions about the timing or causes of default events and by incorporating the default rate volatility. By taking a portfolio approach, the benefits of diversification that arise from a large number of individual risks are fully captured. Concentration risk, resulting from groups of obligors that are affected by common factors, is measured using sector analysis.

The CreditRisk+ Model is scaleable and computationally efficient. It is capable of handling portfolios containing large numbers of exposures. The low data requirements and minimum of assumptions make the CreditRisk+ Model easy to implement for a wide range of credit risk portfolios, regardless of the specific nature of the obligors. Furthermore, the efficiency of the model allows comprehensive sensitivity analysis to be performed on a continuing basis, which is a key requirement for the ability to quantify the effects of parameter uncertainty.

Review of credit risk models

The concept of CreditPortfolioView can be seen somewhere in between CreditRisk+ and CreditMetrics, as with CreditMetrics losses from defaults and rating downgrades can be accounted for. As well a rating migration matrix constitutes the foundation of the model and has to be provided by the user. Yet default correlations are not approximated by stock data, but the original migration matrix is adjusted according to the prevailing macroeconomic situation. Therefore

default probabilities are not constant but volatile, as is the case in CreditRisk+. But while in the latter simply an expected value and a standard deviation of the default rate are assigned to each sector, complete time series of default rates per sector are required in CreditPortfolioView. Those time series are the most important data input for a complex econometric tool used by CreditPortfolioView to Monte Carlo simulate macroeconomic scenarios (Kern & Rudolph, 2001).

It is true that altogether CreditPortfolioView is a much more complex model than for instance CreditRisk+, but thereby its economic intuition and the transparent causality between the macroeconomic environment and the default behaviour in the different segments are convincing.

Because of the universal existence of uncertainty and the fully unknowable knowledge, subjective judgement has to play an important role in decision-making. Although plenty of quantitative models have been published to assess credit risk from an objective standing point, none of them have taken uncertainty into account or given enough consideration. This makes these models much less powerful in emerging economies undergoing structural changes, such as China. Furthermore, lack of sufficient data makes all the models listed less efficient. Uncertainty is always the case, but using quantitative models could make it easier for experts to make decision based on the result of quantitative methods. Quantitative methods make credit risk assessing much less expensive, so the use of qualitative and quantitative methods is also a strategic problem (see Section 7.4).

With the development of the financial market, an innovative way for banks to hedge credit risk appeared in the late 1990s that banks can trade the risk

in the credit derivative market. This new method involving a series of complicated financial contracts will be examined in the next section.

6.4   Credit derivative market

Credit derivatives have been a financial innovation of the last decade and the markets for credit derivatives have helped banks create synthetic liquidity in their otherwise illiquid loan portfolios.

A credit derivative is an over-the-counter contract to transfer the risk of the total return on a credit asset falling below an agreed level, without transfer of the underlying asset. Credit derivatives do not represent a single or a few products, instead they are a group of financial instruments that have as their common main purpose (but not necessarily common features) the managing of credit exposures, and thus credit or default risk. The financial instruments exist as financial contracts reflecting the value of the credit risk incorporated in each agreement between two parties. Each financial contract associated with one or other of the credit derivatives, of which there are a number, derives its value from the existence of a prior lending contract in which credit risk may be just one of some risk features. Others include foreign exchange and interest rate risks (Batten & Hogan, 2002).

The market for credit derivatives was developed during the early 1990s by large commercial banks and investment banks. At the beginning, many financial institutions were concerned about their credit risk exposure and viewed credit derivatives as a useful tool for risk management. The credit derivatives market was then seen as a complement to the loan securitization markets. Rapidly, the

credit derivatives market experienced an independent rapid development and became simply a key place to hedge and take credit risks on corporate and sovereign debt.

The significance credit derivatives will have in the future is still uncertain, and this topic has been a focus of recent relevant publications (see Duffee & Zhou, 2000; Ranciere, 2001; Rule, 2001; Instefjord, 2005). In the case of conventional derivatives, for example a gold forward, if you know the current price of gold and the carrying cost of gold then you have all the information that is needed to price gold forwards. This is because the forward price of gold is equal to the current price of gold plus the cost of carrying gold (Bodie *et al*., 2002, p.755). However the nature of credit risk is a fundamental problem in the trading of credit derivatives. The exact level of credit risk is unknowable and so are several of the factors that might be used to estimate it. This means that the trading of credit derivatives will always be complicated by these uncertainties. Understanding the extent that credit risk is not a simple or measurable attribute, it may be that they will help firms avoid unnecessary risk and so prevent financial disasters from occurring and create greater financial and economic stability. However it may also be the case that credit derivatives will lead to new dangers that could potentially be a cause of greater instability.

Additionally, credit derivatives, like all forms of insurance, are subject to insider trading problem, which has become a significant concern for regulators and participants. Acharya and Johnson (2007) attempt to quantify the problem and they find significant incremental information revelation in the credit default swap market under circumstances consistent with the use of non-public information by informed banks. The information revelation occurs only for negative credit news

and for entities that subsequently experience adverse shocks, and increases with the number of a firm's relationship banks. They find no evidence, however, that the degree of asymmetric information adversely affects prices or liquidity in either the equity or credit markets.

6.5   Background of credit risk assessment in China

As we discussed in Section 2.2, banks play an important role in financial market, especially in an economy with emerging capital market. The Chinese banks' credit risk assessment evolved with the development of the economy and the current practice is heavily influenced by the experience of the earlier central planning period.

As we saw in Chapter 4, in the 30-year planning period (1949-1979), a planned financial system copied from the former Soviet Union was practiced where the People's Bank was the central bank with a few state owned commercial banks. In 1979 China started its transition to a market economy. In the first period (1979-1992) a dual-track system involving both planning and market dominated the economy and a relatively complete market economy was established in 1992 (see Section 5.2). In 1984, a two tier banking system established which split note issuing and credit allocation systematically and paved the way for a basic internal controlling principle, called "deposit determining credit". The SBC problem makes risk assessment less necessary and banks got used to being careless in credit risk management. Due to lack of experience of dealing with credit risk, during the early transitional period, the Chinese banks cannot properly manage credit risk and a large amount of NPLs accumulated in the banking system. In

1994, Asset Management Companies were established which enable the split of good financial assets from the bad. Meanwhile, a securitised risk hedging mechanism was constructed, which improved banks' working efficiency and competitive ability. Furthermore, in the summer of 2006, the first financial derivative trade was opened in Shanghai. Therefore, after a series of financial reforms from 1991, a universal financial system, consisting of money market, capital market, insurance market, foreign exchange market and bullion market, has been gradually formed.

Within these three periods, banks' credit management evolved from an agent of financial supply, following the order from the planning committee, to a transaction system based on the market. In the transitional period, banks need to keep importing and modifying Western models and experience to their own situation. Their own experience in the last 20 years should be taken into account, too. After introducing the background of research, we will have a review of the Chinese literature on credit risk management since the early 1990s in the next section.

6.6 Literature review of the risk assessment in China

Chinese researchers have started to consider credit risk since the beginning of economic reform in 1978 and various articles appeared from the early 1990s. Compared with Western economic journal papers, most Chinese articles are much shorter. However, with a brief introduction, Chinese researchers usually cut into the topic directly and make the argument intensively.

During the bank reform in the 1980s and 1990s, Chinese banks gradually realised the necessity of improving the incentives and skills in evaluating credit risk, since the share of SOEs, the previous main customer group, in total industrial output declined from 77.6% in 1978 to 28.8% in 1996 (Cull & Xu, 2003) and the changes in ownership structure made bankers face a rapidly increasing number of borrowers outside the planning system. At the same time a large amount of NPLs accumulated in the banking system. Afterwards the interpretation and solution of the NPLs became a focus for researchers and policymakers, one of which is the transitional approach centred on the SBC problem.

Transitional approach

The earlier researchers look at this problem from a transitional view in that the SBC problem plays a central role there. It is well documented in Chinese literature and a general discussion of credit risk in transition could be seen in Hu (1993), Chen (1993), Yang and Yang (1994), Zhao (1995) and Liu (1995).

The SBC problem makes SOBs issue a large amount of policy loans to SOEs to help them restructure. This kind of subsidy went through the MOF in the planning period. In the name of the dual-track system, the most important characteristics of China's gradual approach, the continuous capital injection from the banking system to SOEs consumed most of banks' capital which constrained economic growth and enriched the early generation of Chinese businessmen in communist China (see dual-track system in Section 5.2). A large amount of NPLs accumulated during the early period of this reform (Wang, 2002)[41].

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[41] Wang also refers to Prof. Fan's "diluting solution" to NPLs, NPLs being diluted within the rapid growth in the next 20 years, with the precondition that there are no new NPLs created.

In the early 1990s, Li (1990) notes the appearing credit risk caused by the semi-privatised ("*Cheng Bao*")[42] enterprises. Without government's backup, the managers of these enterprises have to be totally responsible for the management of their enterprises, which is a great challenge without experience of operating with a purely commercial orientation. According to Bai *et al.*'s (1991) investigation of Nanjing's credit market, privatizing SOEs to joint-stock companies is advised as an effective method to reduce credit risk, in that it helps separate ownership from control and clarifies the obligation of enterprises. It also reduces indirect credit risk through diversifying financial investors and relieves the financial pressure of the banking system. A similar argument is also seen in Yuan and Shi (1992). The importance of a market based relationship between banks and enterprises is emphasised in these articles in 1990s.

The policy loan, a widely accepted cause of NPLs is investigated by He (1991) with a review of various definitions of policy loans. He excludes the possibility that Chinese banks could be modified to work in a Western banking mechanism in that they have to follow the instruction from the planning committee during the transitional period. Therefore, the focus of discussion is how to manage policy loans wisely and He suggests classifying them and giving corresponding compensation to commercial banks in order to smooth the implementation of macro adjustment and protect commercial banks' benefits. Huang (1998) pays particular attention to the policy loans to the construction sector before and after granting, where expertise in construction is highly required and the importance of collateral's liquidity is emphasised as well. Song and Guo (2000) consider the credit risk in policy banks where the profit rates in most of

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[42] Cheng Bao refers to a contract between Government, the owner of enterprise, and the individual agent who is supposed to be responsible for the management of enterprises and pays a fixed amount of profit to the government.

their projects are lower than the social average. Therefore, government support is very important for the healthy operation of policy banks.

The effects of local bureaucrats in credit risk is investigated through a study of Changchun in Yang and Huang (1994), where bureaucrats instruct banks to issue loans, rather than market oriented considerations. Furthermore, the post changes of bureaucrats confuse the responsibility for these loans and leads to potential losses. Chen (2002) indicates that the distribution of SOBs' branches is mainly based on geographical considerations which make it easy for local government to influence on the management of local banks.

Due to the problems stated above, regular audit and legal systems are regarded as a crucial solution to this problem (Yang & Huang, 1994; Che & Zou, 1996). However, with the universal control of the Party and the government, it is difficult to make such a perfectly independent audit, and the legal system is also under the influence of the government. On the other hand Luo (1998) makes a similar argument in a positive way that local government could create good external social circumstances to help banks hedge credit risk by monitoring enterprises' operations, making corresponding policies, and enhancing legal enforcement.

In these papers above with a transitional approach, policy loans through commercial banks and government intervention are regarded as responsible for the accumulation of NPLs.

Asymmetric information approach

After a hot debate about policy loans, the establishment of four policy banks diverted researchers' focus from the SBC problem to Chinese banks' own performance.

The contemporary researchers since the late 1990s, importing the New Keynesian approach in the absence of domestic models or theories, examine this issue in the view of asymmetric information which is well documented (see Section 2.6). The common starting point for researches is Stiglitz and Weiss's (1981) paper where the interest rate is used to screen borrowers with different risk types.

Many Chinese scholars followed Stiglitz and Weiss's model and tried to apply it to China with various modifications (Pang *et al.,* 2001; Pang & Yao, 2001; Liu, 2002a; Shu, 2002; Yang & Han, 2003). Yang (2003) models adverse selection and moral hazard in the Chinese credit market and indicates the dominant role of information in determining credit risk. Yang suggests that a marketized relationship between banks and borrowers, relationship banking and internal/external rating system would be helpful for reducing credit risk. Liu *et al*. (2003) apply Stiglitz and Weiss's model to joint-stock banks and indicate that the asymmetric information between banks' departments plays an important role in causing credit risk, beside the asymmetric information between banks and borrowers. Li and Chi (1999) formulate the guarding model of moral hazard according to the theory of operations research and information economics, while Cheng *et al*. (2001) models the incentive mechanism regarding moral hazard problem.

Generally, full information is assumed obtainable and uncertainty is ignored in these articles except Zhang and Li (2002), where the existence of uncertainty is mentioned as complementary to the dominating role of asymmetric information. The uncertainty of future events is regarded as an essential reason of the uncertainty of risk in Zhou (1997). However, in his model uncertainty is replaced by a quantifiable number according to past experience. The ignorance of uncertainty undermines the effectiveness of models from a theoretical perspective.

Empirical studies

The early empirical studies on credit risk in the Chinese literature could be seen in Huang (1996) where 116 big corporate borrowers in Shanxi Agriculture Bank are examined. He shows that the proportion of enterprises with high ratings is low, only 15.5% and the ratio of debts to assets is high (45.7% of examined borrowers' is above 80% and some are even over 200%). Wang and Wei (2004) make survey of the medium and long term loans in four southwest provinces, Sichuan, Guizhou, Yunnan and Xizang, which shows that most of the guarantee are mutually guaranteed[43] and land using permit is the most preferred collateral. A similar finding could be seen in Liu (2002b) where a case study has been done on a local branch in Hubei and Pan (2001) which concerns a case study of Shenzhen's banking system.

The branch of PBC, the central bank, in Hangzhou also published an empirical analysis of local commercial banks' inspection and measurement of credit risk from a central bank's view. It suggests a credit monitoring system

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[43] Mutually guarantee means two borrowers provide guarantee to each other. This increases the potential risk for banks.

composed of an alerting index and a structural index. An alerting index consists of the ratio of deposit to loans, NPL rate and interest collecting rate, while the structural index consists of the structure of NPL, loans distribution, and loan terms. These two indexes are supposed to be able to reflect potential credit loss (PBC, 1997).

Because of the lack of experience in operating in a market economy, the early researchers and policy makers tended to use "scientific" techniques to measure credit risk where quantitative models are blindly preferred with limited justification. Ma (1991) uses basic statistical skills in calculating credit risk with no space for structural changes and uncertainty. Quantitative methods inspired by the research on asymmetric information have been developed in the late 1990s and thereafter. Han (1996) gives the early approach which introduces Western banking's expert system, such as 5Cs, and tries to modify it to the Chinese case. Le (1999) gives a similar argument about credit risk assessing models using data collected in Shanghai. The focus of both Han and Le's arguments is how to confine and weigh the factors which determine credit risk. A computer program based on the expert system is made by Huang and Wang (1999) and a warning model through AHP (Analysis Hierarchy Process) is established by Sun (2002). In his model, various factor weightings in risk index systems, and exponents of loan risks can be calculated, thus the consumer loan risk grade and early warning state are obtained.

Besides the articles advocating quantitative models, Chen (1998) indicate the importance of uncertainty in Chinese context and points out that large uncertainty exists in the contemporary transitional period due to the rapid

structural changes. With this consideration, we can suggest some suitable methods for China.

Suitable methods for China

In developing countries, the application and performance of modern quantitative models is restrained because of the characteristics of emerging market. Abundant creditable data is the most basic requirement of any model or technique. All these credit risk models need plenty of information concerning various types of enterprises. This is almost unattainable in most emerging economies, since many SMEs' financial information is unavailable and large enterprises' financial information is always confidential. The data collected from different periods might be incomparable because of rapid structural change. The imperfect data chain undermines the effectiveness of models from a practical perspective and make researchers and policy makers give more consideration to qualitative methods.

Qualitative methods can only be developed in the accumulation of experience in history. At the same time in practice a guarantee or collateral is always required for securing loans and Chinese banks' skills in assessing credit risk has been developed with the improvement of managing collaterals and guarantees.

The problems in the loans with collateral remain in verifying (clarifying ownership), valuing (accurately valuing with consideration of uncertainty), storage (keeping secure and undervalued) and executing (how liquid it is)

processes (Zhao, 1995; Tan *et al.,* 1996; Wang & Han, 1997; Zhu & Chang, 1997).

Compared with the loans with collateral, loans with guarantee from the third party are more problematic. As early as 1994, Luo and Zhang (1994) note the ineffectiveness of guarantee compared with collateral. The default rate of the loans with guarantee is only slightly lower than the loans without guarantee. Luo and Zhang raise the idea of establishing a guarantee company as a medium to provide support for borrowers and help banks relieve pressure in assessing risk. However, the operation and growth of this highly risky company need good external credit circumstances which are lacking in current China. Therefore, the idea can hardly be turned into practice.

In the innovation of techniques in credit risk management, subjective factors and insurance are given more attention.

Liu and Lian (1994) focus on the subjective risk in credit officials' decision-making process, such as credit rating, government intervention and corruption, and these compose the main cause of NPLs (Li, 1991; Liu, 1997). Therefore, a mechanism combining both quantitative methods and qualitative methods is expected by researchers and policy makers. At the time under the "scientific spirit" guidance, Western experience was also imported in the 1990s, with Zhou (1995) and Jia (1996) concerning the US case and an unnamed author concerning the Australian case also being imported (Anon, 1997). A brief general discussion of other countries' experience besides the US could be seen in Zhang (2002) and a structural induction of credit risk management in Western banks could be seen in Li (2003) which shows a balanced Western structure composed of particular departments which are mutually restricting and monitoring.

Individual responsibility, classifying credit authorisation and clarifying the aim of risk management are supposed to be helpful inspiration for Chinese bankers.

Credit insurance is regarded as another important solution to help banks reduce credit risk. The possibility of insurance on credit risk is explored in Lu (1992). This topic is further developed by Hao and Wang (1993). However, the terrible social credit circumstances in the 1990s hobbled the growth of this business and insurance on loans struggled for a couple of years and disappeared. In the late 1998 an innovative analysis on the trade of credit derivatives as a new technique to control credit risk is introduced by Zhang (1998) and these new techniques are still in the experimental stage.

In summary, SBC problem, government intervention and asymmetric information are regarded as the main causes of the large amount of NPLs in the Chinese banking system and the inefficient credit risk management in Chinese banks. Quantitative models and credit derivatives are still new in China, while the banks are still relying on the traditional systems to manage their credit risk. In the next section we will justify these conclusions through analysis of the procedure and requirements of corporate loans in some Chinese banks.

6.7 Conclusion

In this chapter we examined the development of credit risk assessment, including the traditional systems and the modern quantitative methods. We have found that few of the credit risk models have taken uncertainty into account or given enough consideration, and a lack of sufficient data undermines the predictive power of these models. An innovative way to hedge risk is to trade the loan portfolios in the

credit derivative market. To some extent, this method leads to new dangers that could potentially cause financial instability, although it does help banks manage their assets and liquidity.

Different from Western banking where quantitative models and derivatives are becoming popular, Chinese banks are still using the traditional systems which mainly rely on the subjective judgement based on particular documents and information. Through an analysis of the requirements and procedure of corporate loans, we find that, besides the routine examination of the projects' nature, Chinese banks are particularly interested in the borrower's proper identity (shown on relevant licenses), credit record (shown on COL), and governmental attitude towards it (represented by permits and approval documents issued by the government).

In the next chapter, we will further discuss the problem of how to assess credit risk through an analysis of interviews with Chinese and British bankers. The interviews enable us to obtain much information, particularly the information that is rarely found in publications.

Chapter 7   Evidence of credit risk assessment in China and the UK

After an examination of credit risk theories and practice in Western and Chinese banking, we focus on the problems emerging in the transitional Chinese banking, such as credit allocation, requirement of collateral, SME finance, and the use of quantitative models and the role of experience. In order to further probe these problems, we have interviewed some Chinese and British bankers and these interviews help us interpret and apply the literature and obtain some extra information by which to assess the literature.

The interview is a widely used tool in qualitative research, which enables researchers to obtain rich data, particularly information that is hard to accommodate in quantitative models and publications. In a sense it is a powerful research instrument in the Chinese context, because there the control on publications is stricter than that in the Western world.

As we discussed in Section 2.2, full information is unobtainable. It is also impossible to quantify uncertainty and subjective ideas and then fit them into quantitative models. Therefore, it is difficult to deal with the information concerning uncertainty in quantitative research and the interview is a good tool to collect such information. Since knowledge is limited, people's understanding based on their knowledge is varied. Interviews help us access their understandings and allow for our interpretation. Unlike the cold data found in publications, answers given by different people to the same question could be varied and even the same interviewee may give different answers to the same question when asked

at different moments. In this sense, the interpretation of a question and its answer needs to be contextualized.

Existing publications about Chinese banking are always based on the analysis of banks' and other financial institutions' reports. Few interviews (such as Cull & Xu, 2003) have been done with Chinese bankers, especially in lower local branches. My interviews are a good complement to contemporary research in Chinese banking in that a general picture of local banks' management was obtained and the views from banks' head offices are also for comparison. Furthermore, similar questions were also raised in the interview with a British banker. This helps us investigate the puzzles in China from a Western banker's view and also provides some insights for the current bank reform in China.

The chapter is organized as follows. We will introduce the general information of interviews with Chinese bankers in Section 7.1 and the findings will be illustrated in Section 7.2. Similar questions were raised again to a British banker and the findings are stated in Section 7.4. A comparison of the findings from interviews with Chinese and British bankers will be given in Section 7.5. Based on these findings we will provide some suggestions for the current credit practice in the Chinese banking in the light of the Post Keynesian approach and the consideration of bank strategy. Finally, Section 7.6 will summarize the main findings of the chapter.

7.1 The corporate loans structure and procedure in the Chinese banks

The structure of Chinese banks' loan service is similar to that of the Western banks and here we are particularly interested in corporate loans. Corporate loans are generally categorized into working capital loans, fixed asset loans, project loans and housing development loans. Some loans are across categories.

Working Capital Loan

A Working capital loan is designed to satisfy customers' needs for short-term and seasonal funding of the process of operation in order to guarantee the normal production and operation activities [44], mostly in domestic currency RMB. According to the length of maturity, a working capital loan can be divided into a temporary one with the term within 3 months, which is mainly used for the temporary funds needed in the one-time goods purchase or for making up the insufficiency of other payments; the short-term one with the term between three months and one year, which is mainly used as the turnover funds in the process of production and operation of enterprises; and the medium-term one with the term between 1 to 3 years, which is mainly used as frequently occupied funds in the process of production and operation.

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[44] ICBC website:
http://www.icbc.com.cn/e_icbcmodule/thirdindex.jsp?column=Corporate%2BBanking%3EFinanc
ial%2BBusiness%3EWorking%2BCapital%2BLoan

With the banks' principle of acquiring security, liquidity and profitability, the general requirements for applicants could be summarized as follows (through the analysis of SOBs and joint-stock banks' requirements):

1. The borrower must stand for good credit and has ability to repay principal and interest, and the original accrued loan interest and the due loans are paid in full;

2. The borrowers shall complete the annual checking at the administrative authorities for industry and commerce (supervision authority);

3. The borrower must have a primary account or general deposit account in the lender bank;

4. Unless otherwise required by the State Council, the cumulative investment by foreign equity capital in the limited liabilities company and the joint-stock limited company does not exceed 50% in equity;

5. Asset/liability ratio complies with requirement by lender;

6. The ratio between equity and the total needed investment in the corporate body applying for mid and long-term loans to cover the new projects shall not be lower than the capital ratio required by the State regulations as to the investment project.

Source: ICBC website[45], BOC website[46]

The basic documents to be provided include:

1. A written application

2. A Certificate of the legal representative or a letter of authorization, resolutions of the Board of Directors and the statute of the Company

3. Business License for the Legal Entity verified in the annual check

4. The audited financial statements for last 3 years and the recent financial statements (if the business is less than 3 years old, it must provide all available financial statements)

5. Loan Certificate/Card issued by PBC

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[45] ibid

[46] BOC website: http://www.boc.cn/en/common/third.jsp?category=1099363157100

6.	Other additional documents and certificates required by particular banks for particular purposes

Source: BOC website[47]

Besides the necessary identity certificates and financial reports, a certificate/card of loan (COL) issued by the central bank is also required. The COL system originated from the branch of PBC in Shenzhen, one of the most developed special economic zones, in the early 1990s. The original motive of this system was to hedge some borrowers who hide their bad credit record with the intention to acquire loans from different banks in different areas. The COL system required borrowers to write down the information of their enterprises' operation and credit history in a hard copy certificate and this must be submitted to banks when they apply loans. The COL system was made electronic and spread to the whole country by the central bank after 1996. It also developed from a hard copy of credit record to an ID of credit and all the credit information referring this ID could be found in the database of PBC.

Application procedure:

1. The applicant should contact the corporate banking departments, submitting the written application as well as supplementary documents;

2. The bank will examine and verify the application materials of the potential borrower;

3. When the application is accepted by the Bank, the borrower and the lender will sign a working capital loan agreement and other agreements (such as a guarantee letter, a mortgage agreement, or a pledge agreement) if necessary.

4. After signing the agreement, the borrower must provide a third-party guarantor, mortgages or pledges. It may need to register the mortgage, purchase insurance for the mortgaged

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[47] ibid

property, or deposit the pledged rights with the bank.

5.　The borrower shall open a RMB loan account in the lender bank for drawing.

6.　The clients can consult with the bank to confirm the interest rate charged on working capital

　　loan according to the PBC loan interest regulations.

Source: BOC website[48]

With the characteristics of short term, simplified procedures, high flexibility, and lower financing cost, the working capital loan has become an efficient and practical financing means, widely used among customers.

Fixed Asset Loan

A Fixed Asset Loan refers to loans granted to meet the demands of enterprises in their investments in fixed assets, including capital construction[49], technical innovation[50], developing and manufacturing of the new products[51] as well as related house purchase, civil engineering, purchase and installation of the technical equipment, etc[52]. The fixed asset loan is divided into Long-term Loan, Temporary Circulating Loan and Foreign Exchange Loan based on different purposes. This type of loan is also categorized as project loans by some banks.

Beside the requirements similar to working capital loans, fixed asset loans emphasize the permission or instruction of the government's planning in the sense that, because of this loan's nature, most of the borrowers are either directly owned

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[48] BOC website: http://www.boc.cn/en/common/third.jsp?category=1099363157100

[49] Capital construction refers to infrastructure, municipal works, service facilities, new or enlarged productive projects ratified and approved by the authorities concerned of the state.

[50] Technical innovation refers to the technical innovation items aimed at the expanded reproduction by the existing enterprises.

[51] Developing and manufacturing of the new products refers to the activities concerning research, manufacturing and development of the new technologies and products and with regard to the transformation or application of the development results in the production field.

[52] BOC website: http://www.boc.cn/en/common/third.jsp?category=1099363216100

by the state or with a background of state. Therefore, the cooperation of government becomes very important for banks' decision-making.

The application procedure is similar to working capital loans with more strict pre-loan investigations and evaluations since the amount of fixed assets loan is relatively bigger. Banks look into the credit level of the borrower as well as into the legitimacy, safety and profitability. They also need to verify and examine the pledges, properties and guarantors, which always involves the help from the third party, such as external agencies.

Project Loan

A Project Loan refers to the practice that the sponsor (i.e. shareholder) of a project which establishes a project company borrows loans in the name of the company, uses the cash flows and revenues of the company to repay the loans and leaves the assets of the company as the guarantee. [53]

This financing mode is commonly applied to large-scale infrastructure projects which generate steady cash flows, such as power generation, roads, railways, airports, bridges, etc. The scope of application is expanding to some other areas such as big petrol chemical projects. There are two forms of project financing, project loan without recourse and project loan with limited recourse

A project loan without recourse is also referred to as a pure project loan. In this form of financing, repayment of the interest and principal solely depends on the performance of the project. At the same time, the lending bank acquires the property right to the project assets as collateral. If the project fails to be completed

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[53] ibid

or its assets or proceeds are inadequate to repay all the loans, the lending bank will have no recourse to the sponsor of the project.

In the form of project loan with limited recourse, with the operational revenue stream of the project as the source of repayment and property right as guarantee, the lending bank also requires a third party to guarantee the loans. Thus the lending bank has recourse to the third party guarantor and the guarantor is only liable to the amount of guarantee. So it is referred to as project loan with limited recourse.

The requirements for a project loan concentrate on the nature of the project as follows:

1. The project has been approved by competent government authorities.
2. The feasibility study report of the project has been reviewed and approved by relevant government authorities.
3. The import of foreign technology, equipment, patents and so on has been approved by the economic and foreign trade authorities.
4. Project production has reliable source of raw materials and the material supply contract or letter of intent is available.
5. The project company can provide guarantee on the completion of the project and financial arrangement for over-expenditure of capital construction cost to the creditor, and agrees to transfer the insurance interests to the creditor, and mortgages the construction in progress or the already-built fixed assets as well as pledges the proceeds made from the project to the creditor. The shareholders of the projects agree to pledge their equity rights to the creditor.
6. Products of the project has good marketing channel preferably with "take or pay" purchases and sales contracts.
7. Products of the project are expected to have sound market prospects and good potential of development and profitability.
8. The land use right of the project has been secured. Water supply, power supply,

communications and other support facilities are available.

Source: ICBC website[54], BOC website[55]

The corresponding required materials are as follows:

1. Approval of the feasibility study report issued by related government authorities;

2. Approval of the environment authorities;

3. A foreign invested enterprise must provide the official written approval of the joint venture contract and articles of association issued by the Ministry of Foreign Trade and Economic Cooperation;

4. A copy of the business license;

5. The tax registration license, national tax and local tax;

6. A copy of the institution reference code certificate of the People's Republic of China;

7. A copy of the foreign currency registration certificate (foreign-invested enterprise;

8. Construction land planning permit, construction project planning permit, etc.;

9. Identity certificate of legal representative;

10. Certificate/Card of Loan issued by PBC

11. " take or pay" purchase and sale contracts, material supply contracts, completion guarantee, plan for overspent costs, transfer of insurance interests, mortgage of construction in progress or already built fixed assets, pledge of the project's usufruct and shareholders' equity right.

Source: BOC website[56]

Regarding the emphasis on the nature of project, borrowers need to submit the approval documents from the government and a detailed plan of the project. Banks need expertise to verify this information and monitor the execution, which

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[54] ICBC website:
http://www.icbc.com.cn/e_icbcmodule/thirdindex.jsp?column=Corporate%2BBanking%3EFinanc
ial%2BBusiness%3EProject%2BLoan
[55] BOC website: http://www.boc.cn/en/common/third.jsp?category=1099363308100
[56] ibid

involves the cooperation from external agencies and institutions. A further discussion with interviews with Chinese bankers can be seen in the following section 7.2.

Housing Development Loan

A Housing Development Loan is a type of loan where the lender issues a loan to the borrower for the purpose of commercial housing and the relevant facilities development and construction[57]. The borrowers may include qualified real estate developers and real estate operators, who intend to buy newly-built or stock residence and office estates, and release the acquired property for a certain period.

Besides the same requirement as working capital loans and fixed assets loans, housing development loans require more about the project itself which is similar to the case of project loans. It requires that the loan project has been included in the State or local construction development plan, and the project initiation documents are legal, thorough, truthful, and valid. The borrower should have acquired a State-owned Land Use Right, Construction Land Planning Permit, a Construction Project Planning Permit, and a Construction Project Commencement Certificate.

The actual purpose of the loan project should conform to the project planning and is suitable for the local market demand and the project should have a standard feasibilities study report. The borrower's proprietary fund in the loan project shall not be less than 35% (30% for economical apartments for low-

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[57] ICBC website:
http://www.icbc.com.cn/e_icbcmodule/thirdindex.jsp?column=Corporate%2BBanking%3EFinanc ial%2BBusiness%3EReal%2BEstate%2BDevelopment%2BLoan

income groups, all refer to owners' interest contribution) of the project fund and the equity is funded before or upon the bank's loan release.

The loan term is usually no more than 3 years and it usually needs to be secured through guarantee, mortgage, pledge, or the combination of these. Considering the state-owned nature of the land, all the business concerning real estates is only confined to the use permit of land, not the ownership.

The loan interest rates executed in all these corporate loans are under the instruction of PBC, the central bank. Commercial banks could apply a flexible band up to 50% of the benchmark loan rate.

Although the basic requirements and necessary materials are clear, the decision-making process/mechanism is still in a "black box". This black box is approached further through interviews with Chinese bankers in next Chapter.

7.2 My interviews with the Chinese bankers

Four interviews were conducted concerning Chinese banks' credit risk assessment and the aim is to understand their banks' working mechanism in credit risk assessment. The sample questions and the transcripts can be seen in the Appendices 1-5. One was conducted with a credit officer of the Industrial and Commercial Bank of China (ICBC)'s head office in Beijing in August, 2005. The other three were conducted with the heads of three local branches of banks (including the Agricultural Bank of China, ICBC and a joint-stock commercial bank) in a medium-sized city in North China[58] in April of 2006.

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[58] The name of this city is concealed due to confidentiality

Interview 1 (I1): The first interview was conducted with a female officer in charge of the credit department of ICBC's head office on 5 August, 2005. It was chosen at lunch time in the lounge of the head office in Fuxing Road, Beijing and it lasted for an hour and a quarter. Before the interview, I had emailed the outline of questions to her. Since she is a credit officer in the head office, most of her views are based on the regulator and controller's perspective.

Interview 2 (I2): The second interview was conducted with a male vice-president of ICBC's branch in a medium-sized city of North China in the morning of 14 April, 2006. The venue was his office and it lasted about an hour and a half. I had also emailed him the outline of questions in advance and he kindly prepared the answers in the written form and some reference materials for the interview.

Interview 3 (I3): The third interview was conducted with a male head of the credit department of Agriculture Bank of China (ABC)'s branch in the same city as above in the afternoon of 14 April, 2006. It was held in his office and lasted about an hour and a half. Two credit officers also took part in the interview and provided some helpful complementary information and comments. The outline of questions had been emailed to him before the interview. The responses from I2 and I3 overlap to some extent.

Interview 4 (I4): The fourth interview was conducted with a male head of a district branch of a local joint-stock commercial bank in the same city in North China at lunch time on 15 April, 2006. The venue was his office and the interview proceeded smoothly with little interruption, since it was a Saturday and the bank was closed. The one-hour-and-a-half interview was conducted in a casual way and it did not strictly follow my interview schedule. During the interview, he shared with me many of his personal opinions.

The findings from the interviews are discussed below by topics.

7.3 Findings of interviews with Chinese bankers

1.   Structural problem in transition – government intervention in credit allocation

The most striking problem which undermines Chinese banks' performance perceived by the interviewees in I2, I3 and I4 is the structural problem inherited from the planning period. Although the SOE share of total industrial output declined from 77.6% in 1978 to 28.8% in 1996, those enterprises still possessed 52.2% of industrial fixed assets (Cull & Xu, 2003). According to Lardy's research in 1998, policy loans, also known as directed credit, accounted for one-third of total loans outstanding in 1985 and one-fifth in 1995 (Lardy, 1998; Cull & Xu, 2003). Obviously, it was a big burden for Chinese banks since the reform from 1978. In 1993 three policy banks which are supposedly responsible for the non-commercially oriented loans of the four large state banks were established. However, due to insufficient resources and large demand, state-owned commercial banks are still required to issue loans to loss-making SOEs. On the other hand, these banks are often instructed by the authorities to purchase bonds issued by policy banks (Yusuf, 1997). This situation described in many scholars' researches has been confirmed in the interviews conducted in that all of the four interviewees admitted that local government intervention undermined their bank's performance in credit business, although they are not supposed to take policy loans.

It is pointed out in Cull and Xu's (2003) interview with a vice executive of the credit department of a county branch of the Agricultural Bank of China that "local government did not have direct authority over the local branches of banks and those branches reported to branches further up in the hierarchy of the affiliated bank" (Cull and Xu, 2003, Section 3). They concluded that "government had at most limited influence over bank decisions". However, regarding this problem we received different answers from I2, I3 and I4, where we interviewed some credit officers from the local branches.

It is true that local governments did not have direct authority over the local branches and banks did not have to directly satisfy local governments' financial demand or follow their instructions. But in reality it is impossible for bankers to ignore local governments' requests in that bankers need local governments' help or cooperation in many aspects.

For instance, according to I4, even for joint-stock banks, "the serious thing is the intervention from local government, who are responsible for issuing loans but not for repayment. In most cases, it is just a phone call from the local bureaucrat", the interviewee said. In Western countries, the legal system is regarded as the last-resort for repossessing loans, while in China the legal system is not independent from the government. As the interviewee in I2 said "Banks almost have 100% confidence to win (the default case) in the court", but the local government will use their power to jeopardize the execution, which always leads to the failure of enforcement. Therefore, he said, "banks have to be very careful before they apply for a repossessing enforcement, especially for enterprises with a relatively large size." In addition, he summarized, "Considering the reality, banks

have to take government intervention into account in order to avoid the outcome of 'win lawsuit but lose money'".

Outside the formal interview, the interviewees in I2, I3 and I4 all complained about government intervention in credit allocation in the informal chat after the interviews. This is not only confined to SOE borrowers. Due to serious corruption in certain areas, some bureaucrats also require local banks to give prior consideration to some borrowers with little state-owned background. This kind of borrower might have a certain relationship with the bureaucrats. In this sense, the intervention of local government is much more than a SBC problem in transition but a kind of abuse of the government's power. With this pressure, banks have little space for doing something. The bankers said if they did not follow local governments' instructions, they would have to face many difficulties in their individual life and the bank's daily operation, such as good education for bank employees' children, adequate electricity supply, the welfare of bank employees etc.

The incentive problem is another thing that is worth attention. According to Cull and Xu's (2003) interview with a vice executive of the credit department of a county branch of the ABC, bank employees had some incentives to allocate credit to profitable endeavours in that they could get bonuses from the good quality of the lending portfolio. However, according to my interview data, few banks in China linked employees' income to banks' performance. In ICBC for example, the interviewee from the head office admitted that "ICBC applied more punishment and fewer bonuses". In ABC, "It is easy to apply punishment for bad but fewer bonuses for good. Therefore, punishment is used as negative bonus." Even in banks with good performance, due to the income policy of central

government, it is not allowed to raise wages. The National Audit Office (NAO) organizes an annual audit and inspection and banks are always given warnings about extra bonuses. In this kind of working circumstances , most credit officers reasonably prefer to lend to the safer borrower, such as the extremely good borrower with close relationship and good record, or the borrowers, with which, when default happens, it is easy to sort it out. Furthermore, according to my interviews, Chinese banks are experiencing a drastic transitional period from previously governmental institutions to commercial firms, especially during the time when Chinese banks successively issued their shares in the stock market. Many bank employees face the threat of losing their jobs. Therefore, few credit officers would take the risk to lend to private firms or promising new enterprises.

2.   Requirement of Collateral

The interview data show that collateral is an essential requirement for almost all the loans issued. Additionally, banks also require the exact information from borrowers about the projects to be financed. In some cases, banks send out credit officers to do on site investigation. Then there is a paradox that if banks can obtain enough collateral with high liquidity, it is not necessary to know anything about the project since banks could repossess through auction of collateral when default takes place; if perfect collateral is unobtainable, the examination and prediction of the project plays the vital role and it would be less meaningful to require any collateral. The possible explanation might be the lack of perfect collateral and the existence of uncertainty. As discussed in Chapter 2, uncertainty is universal, including uncertainty of the return from projects and uncertainty of

the collateral's value. Usually an estimation of the return from any project would be done for investors' decision-making. Any estimation is based on current information and the trend of the past history. Considering the nature of uncertainty, it is always difficult to give an accurate estimation. Involving uncertainty the value of collateral is fluctuating with the changes in market and in other factors.

Because of the uncertainty attached to projects and the value of collateral, banks have to rely on their judgment on the return of the project, which becomes very difficult when there is great uncertainty. Therefore, the most secure way is to carefully examine the project as well as requiring the best collateral obtainable.

3.   **SME finance**

SME finance is a common difficulty for almost all banks. Many banks or financial authorities have special policies for SME borrowers. In China SMEs' financial space is even narrower. According to the World Bank Investment Climate Survey in China, SMEs in China face important credit constraints: SMEs in China obtain only 12% of their working capital from bank loans, while SMEs obtain 21% in Malaysia, 24% in Indonesia, 28% in the Philippines, 26% in both South Korea and Thailand (Dollar *et al.,* 2003). This situation has been confirmed by the interviewees. It is introduced by the interviewee in I1 from the macroeconomic perspective that "Considering economic growth and governments' requirement, we also encourage SME loans. In this part, higher profit coexists with problems, mainly because of the local branches' poor execution of rules and regulations, and also fake bills. Generally, there is more benefit than loss in SME loans."

In practice the local branches still prefer SOEs to SMEs, as interviewee in I3 indicated, "Although in principle we don't think a lot of ownership background, we still prefer the well-operating enterprises with State-owned background". Due to the ownership background that both SOBs and SOEs share the same owner - the state, it is safer to lend to SOEs in that if default happens the borrowers, SOEs, can never disappear and it is easy for bank employees to allocate responsibility and duties. In most cases, government will help to sort it out, such as cancellation from the balance sheet. In this sense, credit officers face less risk when dealing with SOE borrowers. As stated earlier, banks apply more penalties for bad and fewer bonuses for good, credit officers do not have an incentive to take the risk to lend to SMEs.

Because of the local branches' negative attitudes and the rigorous requirement of collateral, most SMEs' primitive capital accumulation has to be financed through an informal circle of family and friends or underground banks, although the latter is strictly forbidden.

4.   Quantitative techniques in credit examination

Western quantitative models have been introduced into China in the last ten years and central authority is trying to encourage banks to apply more quantitative skills in examining loan applications, rather than subjective judgment. The interviewee in I1 indicated that "at present ICBC is trying to reduce the subjective assessing components gradually" and "quantitative methods are more and more preferred. All borrowers are required to pass quantitative assessment." She attributed the underperformance of previous credit business to the lack of quantitative skills that

"in the past many loans were issued on experience, which caused many problems", and the supportive evidence is that "most SOBs abusively issued loans to "good companies" and fell over each other for loans, which led to vicious inter-banking competitions."

However, this view is not supported by the interviewees in local branches. According to the interviewee in I2, the loan application and examination procedure of their branch of ICBC consists of three parts: preliminary examination, first hand information collected by their credit officers and experts' opinions. The preliminary examination is based on borrowers' written documents from local government planning committees such as the Development and Reform Committee and the Bureau of Environmental Protection etc. These required documents are more to be used to prove borrowers' identity not the profitability of their projects. In some cases, branches' credit officers need to do on-site investigation. The important part is that banks also invite experts to help evaluate the project and the cost of evaluation is paid by the borrowers. Looking at this branch's procedure we do not see any space for quantitative techniques and instead the interviews confirmed the important role of the expert system in credit practices.

The interviewee in I3 said ABC does have a quantitative model based on its Credit Management System (CMS) which is a database containing ABC's customers' credit information. Though in charge of the credit department of this ABC's branch, he did not know many details about its working mechanism and admitted that "they don't use it often". He put more emphasis on the expert system and the information collected.

In the branch involved in I4, they do not even use any quantitative techniques. Considering the nature of their business, bankers could obtain various information easily as the interviewee said, "We all live in this small area and know each other or could be known from other channels".

5.   Role of experience

Experience here could be understood as the subjective skills which are difficult to summarize in written work or taught. Experience is vital in credit risk assessment. All the four interviewees admitted that experience is necessary in examining loan applications and different weight is given respectively. The interviewee in I2 defined the content of experience that "Experience consists of the judgment of governments' policy changes, judgment of macroeconomic information, judgment of particular customer, and the integration of these three things." As Deng Xiaoping said, China's economic reform is in a process of exploration and mistakes and reiterations always take place. The policies in the financial sector are always changing. The skills dealing with credit risk in this situation could only be obtained through practice and experience. Quantitative methods can only function in a relatively peaceful period when Chinese economic reform goes to a stable stage.

The interviewee in I4 indicated the function of experience as being "very important especially in examining credit applications. Experience help us differentiate information, and find details and extra information between the lines". As indicated by the interviewee in I1, bills fraud is a big problem in SME loans. Experience can help a lot in examining and avoiding fraud cases. The

interviewee in I3 looked at experience from a developing perspective that "the country is in transition with always changing policies, which makes data collection more difficult. In addition, the interpretation of data is also changing. Experience help us understand these changes and make decision." Experience themselves are also evolving through the development and "during the reform and transitional period, new experience are formed as the old fade away", said by the interviewee in I4.

Conclusion

Through the analysis of interviews with Chinese bankers, it is found that government intervention in credit allocation is the most striking problem which undermines Chinese banks' performance. Besides routine risk examination through the traditional expert system, collateral is used as an essential method to secure the loans. The high requirements of collateral make it worse for SME borrowers to obtain bank loans.

The interviews confirmed the important role of qualitative methods in credit practices and the crucial role of experience in the risk examination. In current China, the experience itself is quickly evolving as well. In the next section, we will analyse the interview with a British banker where the similar questions were raised.

7.4 Analysis of interview with a British banker in the autumn of 2006

This interview was conducted in the early September 2006 with a female officer, who has worked for a few UK banks in charge of credit business, in early September 2006. I particularly pay attention to 5 points: 1) the consideration of ownership structure in issuing loans, 2) the techniques for information collection, 3) policies and products for SME finance, 4) the attitudes to quantitative and qualitative methods. 5) The reliance on the legal system for recovering bad debts, in order to make a direct comparison with the Chinese interviews.

It was conducted at supper time in her home in Edinburgh and the interview lasted for an hour and a quarter. Before the interview, I had emailed the outline of questions to her and she kindly let me use a recorder in the interview. Through this semi-structured interview, I am trying to probe the risk control in the credit practice of UK banks. The transcript is in Appendix 1. Since her experience is not confined to any particular bank, most of her views are based on the general situation in the UK.

1. The role of ownership background (or the role of government) in the UK banks

The main target of the UK banks' business is profitability and the earning of the UK's banking sector was significantly more than the cost of capital (Cruickshank, 2000). Generally speaking ownership background is not taken into account when

assessing loan applications and the market-based working mechanism enables UK banks to manage their operations concentrating on the enterprises' economic character.

The credit officer will look first at the capital size of the borrower's business, which determines which part of the bank will deal with them. Within a bank, there are different departments specializing in issuing loans to a particular size of borrower, including large firms, medium-sized firms, small firms and individuals.

After capital size, the second thing banks need to look at is the industrial sector. The aim of this is to diversify risk. Banks would not like to issue loans to only a few sectors and they prefer to lend to various independent sectors, for example, agriculture, retail, manufacturing etc. Through diversifying borrowers' background banks could manage their exposure to particular segments. Banks would not want to be lending too much money to a series of mutually-related sectors either, since a failure of one sector might cause a series of bad consequences for other sectors. Therefore, they will identify multiple categories, but firstly capital size, and then by industry. Considering the accumulation of experience, it is easier for credit officers to manage loans of a familiar size or within a familiar area.

For the UK government finance is an important issue and there are many government-supported capital projects, such as highway and infrastructure construction. This kind of government borrowing usually goes through the capital market, which has been well developed in the UK. As early as the 18th century England and France issued bonds to raise money for government finance (Smith & Villamil, 1998).

The government issues bonds to the capital market, normally with a guaranteed interest rate; for example, they issue bonds at 5% with a fixed payment day after 12 years. Buyers do not have to wait until the bonds expire, since these bonds can be traded on the market at any time at a discount. The government bonds are also called "gilt edged" because of their "hugely high liquidity" and the high quality, which make them very popular in capital market. Therefore, the highly efficient capital market is preferred by government to the credit market to raise finance.

Actually the role of government is passive in the credit market and generally the government does not interfere with the credit business in the banking system. When I asked the interviewee in I5 about the possibility of government intervention, she said, "Absolutely not! Absolutely not! Banks are very independent from the government". An independent central bank is the precondition for a banking sector independent from the government and Alesina and Summers (1993) found such correlation within developed economies. But they failed to find any correlation between the independence of central banks and rates of economic growth. The implication of their findings is that "the countries with political independent central banks can maintain lower rates of inflation with no loss in terms of economic growth" (Howells & Bain, 2002). In the UK, on 6 May 1997, the Bank of England was granted operational independence from the UK Treasury and interest rates would in future be set by the bank rather than by the government following consultation with the Bank, as had previously been the case (Howells & Bain, 2002).

There are occasional initiatives the government might take but really they want to make sure that everyone has access to the banking system, such as

encouraging loans to SMEs and individuals with potential difficulties, such as not having driving licenses or passports because they do not have a car and never go on holiday. Government actively participates in the credit market with the social welfare consideration that "Government didn't intervene with legislation but they worked with the banks to make sure that the banks go with the idea that everyone should have access to the banking system." However, currently in terms of influencing who the banks lend to, the government have stopped trying to do that.

Banks do not have to favour any particular interests, and they do not have pressure from government either. Despite borrowers' different status, the banks' examining process is quite objective, being all about the ability to repay, collateral etc. The interviewee raised an example that "If the prime minister applied for a loan, it even goes through the same loan process as anyone else. There are a couple of posh banks that deal with the royal family and other very rich clients, but they have lending criteria just like everyone else."

At the moment government are reviewing the banks according to whether they are willing to lend to everybody and whether or not the banks are taking into account people's ability to repay loans. Previously banks were focused on building models to predict whether the borrowers would default and they didn't actually look individually at their abilities and willingness to repay. According to the interviewee, the government are now putting pressure on the banks just by working with them to improve and make the banks agree to things to avoid legislation.

2.   SME finance in the UK banks

As we know, availability of SME finance is a common difficulty in all economies, including the UK. In order to help SMEs obtain finance, the government and central bank encourage commercial banks to lend to SMEs. According to the interviewee, the banks themselves also have various loans to SME customers and these loans always require collateral or a good credit history. In Cruickshank the research on SME business is one of the weaker areas. The Cruickshank report was published on March 2000 and its findings were based on 1998 data, which were collected through the voluntary cooperation of banks. Because of banks' different understanding and definitions of SMEs, the data provided are not quite consistent, which made the report less persuasive. Even though in this report it was found that the major sources of the banks' excess profit were personal and SME customers, and that banks are making £4 billion to £ 6 billion per year of excess pre tax profits, "it is very unlikely that less than half - around £2 billion to £ 3.5 billion - are being generated from services supplied to personal and SME customers" (Cruickshank, 2000, p.227).

The requirement for collateral and a good credit history help a lot to protect banks from being overexposed. Currently a lot of banks use the so called "risk-based pricing" system that if the borrowers have collateral or a good credit history, then the banks will take on less risk. As a consequence, banks would like to offer a lower interest rate to compete with other banks and attract borrowers. In the UK, the interest rate is not the same for everyone. The main rate in the UK is the Bank of England base rate and then each bank adds a certain amount onto the Bank of England base rate. Commercial banks have the right to offer a higher or

lower loan rate around the Bank of England's base rate, which gives credit officers more flexibility to control for risk. In the sense of macroeconomic adjustment, the central bank could change the base rate and then the loan rate moves to a certain extent as a consequence. It is possible to arrange fixed rate borrowing, but floating rates are common. According to the interviewee, for new firms without collateral or history, in the UK there are various government agencies and enterprise agencies that work to support new businesses and start up businesses. "There are government agencies that are helping new firms by giving them grants and giving them assistance, and that's completely separate from the banking system", she said.

In summary, it is not easy for SMEs to get loans unless they have got collateral or security. If they do not have a fairly long credit history the bank can look at, it becomes very difficult. Although in the banking system there are lots of loans to SME borrowers, they have to work harder to get the money. For example, "they have to provide a business plan and they have to provide a projection". As the owners always are the main beneficiaries in the firm, they quite often are willing to give personal guarantees to support the borrowing of the SMEs. The UK banks are very risk-averse in order to keep the stability of the banking system and they seldom lend to the firms without collateral, guarantor, or history. Therefore, this kind of borrower usually goes to a venture capital company to get finance.

A venture capital company is a kind of financial investment institution which raises funds from wealthy individuals, companies, and pension funds etc. The venture capital companies lend this money out to certain borrowers at a relatively high loan rate. Different from the banking system, their loans are

always with high profit and high risk. A venture capital company will screen the business prospects and technical merits of the proposed company carefully before investing in venture capital funding, including some informal resources, such as anecdotal or impressionistic evidence. Mason and Harrision (1996) telephone interviewed 31 business angels and 28 owner-managers of venture capital companies and concluded that in most cases the informal venture capital process has worked relatively well.

Generally venture capital companies will only invest in a small percentage of the businesses they review with a long-term perspective and prefer to actively participate in the company's management by contributing their expertise, technical skills, and business experience which they have gained from helping other companies with similar growth challenges

3.   The role of the credit bureau

Referring to Chapter 2, information is an essential factor in issuing retail and corporate lending and most bankers concede that lack of information makes retail lending even more difficult than corporate lending. According to the interviewee, the role of the credit bureau in the UK is an institution to pool and share credit information, such as Experian, Equifax and Callcredit (now a subsidiary of TransUnion).

The working principle of a credit bureau is called "reciprocity". Most banks have joined the programme and they currently send monthly reports of their customers' credit information to the credit bureau. As a benefit a bank can see other banks' reports. Although data protection is concerned, it has been printed on

the loan application form that the customers must give permission to banks to share their credit information with other banks and credit agencies. Borrowers know what happens and people in the UK are very aware of credit bureaus and credit ratings.

Banks that send data can look at the data for someone who sends in the application. When a customer applies, the bank asks the credit bureau for his credit history. For example, if someone applies for a loan from a bank, the bank will send off her name and address, her date of birth, and her application details to the credit bureau. The credit bureau will send back electronic files. The bank will be able to see if she has loans from other UK banks, how much the loans are, how much the repayments are, whether she has ever missed a payment, and the term of the loan. The bank can see all the information about each one of her loans with other lenders. The credit bureau has the information about borrowers' performance and the banks can build credit risk models based on this information.

Verification of information is another important issue since wrong information may lead to a wrong decision. In the UK it is very difficult to cheat banks through fake information since most of the information could be obtained through public agencies. For any borrower banks can get nearly all the credit information from the credit bureau. They do not need to get it from borrowers. When the borrower fills in the application form, sometimes it is found that what the borrower has told banks is different from what banks can see from the credit bureau, and in fact that very difference could itself be predictive of default. The information like income could be found in a bank statement and the borrower' name and address could be found in public record. Evidence is always required for any claim.

In other cases, for consumer credit, credit cards, or small loans, not every bank verifies income. Sometimes they just take what borrowers put in the credit application form. Defraud is possible but most of the information is checked externally, either through credit bureau or public records, so it's harder to make those kind of fraud. As credit risk models are extensively used in the UK internal fraud is also difficult, since the people who build the models know what's in the model but they don't work with customers. The people who are face to face to customers are not given access to how the models work. The credit officers who actually take loan applications and meet customers don't have access to how the system works. They don't know what the system is doing precisely.

4. Credit rating and quantitative models

Internal and external ratings

Credit rating is quite sophisticated in the UK banks in that they use both external and internal ratings for corporate loans. A lot of external credit rating agencies publish ratings on most firms regularly, such as KMV, Moody etc. In combination with these external ratings the banks will build their own credit risk models to build internal ratings based on the information obtained from credit bureau for retail loans.

The way they build the internal ratings is by using models that look at the probability of default and they will get a credit score using the internal model. For an existing customer of the bank they will get the external rating model but they will also have a behavioural model that is built using the performance of the

account status, and they will combine the behavioural model with the external scores.

Banks combine the behavioural model with the external scores, and combine external rating with internal data, if they have internal data, to come out with an overall risk assessment model. Quantitative models are well established in the UK. Credit risk models and credit scoring techniques are used not only to predict whether or not an account will default but also predict what the loss will be for a given default.

Bank strategy

According to Basel II which allows lenders to use models to calculate capital adequacy, banks have to work out whether they have got an adequate amount of capital to cover the loans they are making (BIS, 2004). Banks can model what the capital adequacy cover is by taking into account the probability of default and the loss for a given default. Using these very sophisticated models is going to reduce the amount of capital they've got to hold to cover the loans. All of the banks became very interested in risk models, and built even more sophisticated ones in that it all helps, not only to predict default, but it will be more profitable if they have less capital to cover loans, because they can use the additional capital to invest to generate more profit. In terms of corporate strategy, although the R&D of credit risk models are expensive and time consuming, it makes credit officers' work much simpler and lowers both the qualification and wage of the credit officers. The initial risk models were just trying to avoid the people who would default, but increasingly people are building models looking for profitability.

Credit risk models

More and more specific and sophisticated credit risk models enable banks to model different business areas by using different models. The interviewee gave an example that for each product, credit cards will have a range of models, loans will have a range of models, mortgages will have a range of models, and then bank have models for loans of different amounts, modelling small loans different from bigger loans.

The number of models really is determined by the amount of data. When banks are building a credit score model, they have to try to segment the data to get the most powerful model. A very general model will be less powerful in predicting than a more specialized model and it comes to a point when banks just do not have enough customers in that segment.

The principle of various credit risk models is the same, which is looking at the prior loans, seeing which ones were good or bad, and trying to identify what characteristics the bad loans shared. These characteristics will be used to predict defaulters.

Appeal to quantitative result

The credit officers are well experience in the credit business, but they do not have much discretion to change the result of the quantitative model. If they key an application into the system and the system declines it, they have to make a request rather than overwrite the system. Most banks have an internal appeal unit for credit officers to make a request against the system's decision. In those

circumstances credit officers are usually required to provide some additional or exceptional information to explain why the system's decision is wrong.

One of the main shortcomings of quantitative methods is that, although the system is assumed to have taken everything into account, all the internal data and external data, there may be some additional relevant information.

The interviewee gave an example of a company that has not been doing very well, but recently has secured a big order and they have evidence to support this. Since the credit score system cannot see the future, credit officers can provide additional information and the appeal unit will review it.

It doesn't really matter if the individual credit officer doesn't like the system's decision and the banks mainly are managing their complex exposure via the risk models, because when they set up the models they set it up in the expectation that these models will let banks take on fixed amount of bad debt. If the credit officers do not accept the model's decision, then the designers have to change the preset amount of bad debt. The bank does not want that kind of surprise and they use the model to predict the bad debts' figure.

5.   Experience in decision-making

Credit risk assessment based on quantitative models has just developed over the last 25 years. Until the 1980s, it was still an expert system, involving a person sitting, talking to another person and making an individual assessment without any external data.

Credit risk models developed quickly in the last 20 years and the status of subjective judgement based on experience became less important in the lower

level of credit business. However, quantitative models are always looking back, and draw conclusions based on the repeated events in the past. It can never take account of future developments which are not like the past. Experience is useful when dealing with the issue of relatively big loans and the issue of uncertainty. If for any segment banks do not have enough data to build a powerful model, the application information will be passed to a higher level. Anything very unique or a very specialized project, such as building the Channel Tunnel, or in a completely new market, cannot be modelled and this will go to expert lenders who are in expert lending teams. They will use subjective methods based on the same sort of data, like adding their own experience to the information, to come up with a decision.

Experience has also been used to deal with borrowers' liquidity problem, which is a commonly seen cause of default. Quantitative models are used to issue new loans but not for refinance for borrowers with a liquidity problem since borrowers' liquidity problems are too various to be modelled. For these cases, experience becomes very important. When borrowers go to default, they usually will be contacted by the banks either by a letter or a telephone call. Through contact banks could know the reason for default and ask for evidence to verify. By looking at the borrower's account history, credit officers could have an idea how the borrower manages capital outflow and inflow to know the situation of the business.

Now if it is reported as a liquidity problem, a financial projection of the next 12 or 24 months will be required so that the credit officer could see the borrower's present position, and how it looks in the future, and check the evidence of where the liquidity is going to come from. A certain amount of

refinance will be issued based on the knowledge about the borrower's business and projections. This work can seldom be done by quantitative models. As the interviewee said, "The system might do refinances of personal loans but there aren't very many. I don't know any systems of refinance corporate borrowings, where there are credit problems."

The role of experience is that it can use innovative information to make a subjective decision, when dealing with a situation which is uncertain because it is not limited to repeatable events.

6.   Incentive problem for credit officers

According to the interviewee there is no direct commission from loans, which means credit officers cannot get extra income by granting more loans and she said, "I don't know if it's the same for all the banks. In the banks I have worked in they do not get commission on loans directly. They used to get commission directly." More recently banks have moved away from that and credit officers' salary is partly based on the profitability of the bank and partly on individual performance.

A grading system is used in the UK banks for assessing employees' performance. For a loan officer, it is possible to get a higher grade by selling a lot of loans, but it would not be the only thing. The relationships with other employees, timekeeping, work efficiency etc, all sort of things would contribute to the grade and then the grade combined with the bank's profit determines what the salary is.

There is no direct relationship between credit officers' salary and bad loans since the causes of bad loans are always a complex combination of various

factors. The only punishment would be if the credit officer has not stuck to the bank's procedures. As long as they follow the procedure, the performance of the loans has nothing to do with their salary at all.

7.   Use of the legal system in recovering default and attitude to bad debts

A contract is treated seriously in the UK and what happens to a defaulter is that they have breached a contract. When a borrower applies to a bank for a loan, an agreement has to be reached and this agreement is the same as a contract. If the borrower does not pay the loan instalment in time, she simply breaches the contract. The bank will pursue her through the court system to enforce the contract, and that is just the normal legal right. If in the end the borrower cannot pay the entire loan, then she will be made bankrupt by the court system. As a consequence the bank could recover the loan by auctioning the property of the borrower.

There might be a problem with small loans, since the cost and effort of recovery through the legal system along with the likelihood of recovery might be more than the value of the loans. In this case, banks usually sell the loans to a debt collection agency at a discount. Bad loans are unpleasant for banks, but on the other hand, bad debt can be quite a good thing, since the way the banks work is that they are expecting a level of bad debt. If a bank has got no bad debt, it may mean the bank's lending policy is too tight and it has not optimally exploited its capital. They will be very heavily criticized in the market and it could affect the bank's share price. Therefore, a bank's lending policy must be such that they have a managed amount of bad debt.

7.5 A comparison of credit risk control between Chinese style and UK style

From the analysis of interviews with Chinese bankers and the analysis of the interview with a UK banker, it was found that Chinese banks are trying to restructure their management according to the Western banks' working mechanism and many similarities are shared between UK banks and Chinese banks. However, due to the systematic problem inherited from the planned period, credit risk control in Chinese banking is more complex and problematic. Government intervention is the biggest problem.

Government finance and the independence of banks

Government finance is very common in both China and the UK but the finance channels are different. In China it is usually through the banking system (see Chapter 4 and 5) while in the UK the capital market is more preferred. In the UK the capital market is well developed and government bonds are always popular because of their quality and liquidity. A prosperous capital market makes it easy for the government to raise money there.

In China the owner of SOBs is the government and the capital market is less developed (see Section 5.3). It is very easy and cheap to borrow from the banking system to finance government projects. In addition since the SOEs and SOBs share the same owner, it is taken for granted that the government asks SOBs to lend to SOEs (see Section 4.5 and 5.2). Although most of the SOEs keep making a loss, without an independent status it is impossible for banks to reject

the request from the government. Government interventions are often seen in Chinese banks' operation, which is regarded as the main obstacle to the banks' reform.

Compared with the Chinese case, the consideration of ownership in the UK is much less important in the credit officers' decision-making process, but it is still a factor of concern for both government and banks, which is usually with the consideration of social welfare, to make sure everybody has access to the banking system.

One of the basic causes of the different attitudes to government finance in China and the UK is the difference in property rights, which is one of the most fundamental requirements of a capitalist economy. Property rights are concerned with the exclusive authority to determine how a resource is used, whether that resource is owned by government or by individuals. It usually means a bundle of rights, including controlling the use of the property, benefiting from the property, transferring or selling the property, and excluding others from the property. The protection of property rights makes people establish a stable long-term expectation that the owner could assume the profit or loss from her management of the property. In other words, without a complete system of clear property rights, whoever takes the final benefits or costs from the management of the property is vague. A blurred property rights system must lead to confusion of responsibility. Therefore, few people would make a long term investment since they are not sure whether they can benefit from it.

Considering the SOEs in China, the manager is assigned by the government, and is responsible for the management of the enterprise but does not have property rights. The manager does not expect to benefit from any long term

investment because of the uncertainty that she might have to leave at any unexpected time with any unexpected reason. Therefore, the optimal choice of the manager can never be to make a long term investment. Additionally, due to the SBC problem that she knows the government will bail the enterprise out when she cannot repay the bank, she will prefer some short term investment with high return and high risk.

Besides SOEs, this moral hazard problem is often seen in private enterprises as well, where the property right is assumed to be much clearer. For private enterprises, although the government cannot intervene directly, the changing of governmental policies makes private entrepreneurs feel uncertain about the future, both the market and the policies. In this sense they do not believe they can operate healthily for a long time and they do not believe they can benefit from long term investment either. Therefore, a good credit is not valuable for their management and they will prefer to do the same short term investment with high risk as SOEs do. Bank loans to this kind of borrower would be very dangerous.

The point is that in China the legislative process is imperfect and the government has the power to create power (they could use the power to make policies to entitle themselves to more power), which is excessively abused especially in local governments. The often changing policies create too much uncertainty. Under these circumstances, both borrowers and lenders' expectations are distorted and short term profits are definitely preferred to long term profits.

Theoretically a good credit should be able to bring more benefit in the long term and it might need people to give up short term benefit (default) for some purpose. How to make the former (long term benefit) as people's optimal choice would be the best method to avoid default. In this sense it is important to

help borrowers build the expectation that they can operate healthily and earn profits for a long time if they do not break any contract with banks; and government will not interfere or change the policy dramatically. As discussed in Chapter 2 the building of confidence in expectations must be a long and slow process. Unfortunately in China due to the transitional nature the government has to revise their policies according to the regularly changing situation. As a consequence people's expectations are always changing with the policy changes as well. Therefore, instead of a good credit environment, the banks have to rely more on the legal system to protect the loans.

Credit information and legal system

In banking history credit loans are always developing with some bad debts. In the UK no bad debts will be seen as a signal of too tight a lending policy and the profitability of capital has not been maximized. "A bank's lending policy must be such that they have a managed amount of bad debt", the interviewee in I5 said. However, in China the amount of bad debts is so big that it is widely criticised (see Chapter 8).

In theory banks' last resort to recover bad debts is to send the borrowers to court simply by using the legal right. However, for most default cases either in the UK or in China, the legal system is not regarded as the best choice because of the necessary cost and effort, although the UK's legal system is assumed to be powerful enough to enforce the execution of the court's judgement. The threat to send defaulters to court is mostly used with the consideration of "moral hazard".

Banks assume that if the borrowers believe the serious consequences of default, they will strictly follow the loan contract to pay instalments on time.

Actually compared with the legal process, a good credit environment is much cheaper and efficient. The legal process must be expensive, since it needs evidence to persuade the judge. Sometimes this kind of evidence is difficult to provide due to various reasons in practice, such as no voluntary witness, underdeveloped techniques etc. Therefore, it is difficult to rely on the legal system to hedge a defaulter and the efficiency of legal methods is limited. Building a good credit atmosphere in the economy is a much cheaper method for borrowers and safer for lenders in the long term. If borrowers' expectation is long term, they will respect their credit record and invest cautiously.

The broadcast of information is crucial to keeping a good credit environment in the economy. Considering a small village, any information about default will be regarded as immoral behaviour and spread to everyone quickly. This will make it very difficult for the defaulter to borrow again in the village and her life will become very difficult since neighbours and relatives will doubt her nature. The method of transmitting credit information is very original in the village which is usually through "gossip" (see Merry, 1984; Ke & Zhang, 2003). The lender, having been defaulted, will tell everyone she meets about the defaulter's bad nature and the listener will tell other people in the village. Gossip is the cheapest and quickest way to transmit news about someone's bad behaviour as the old Chinese saying that "Bad news travels fast, good news stagnates". Because a single default will spoil credit easily in the village, few people will dare to default or defraud lenders. People prefer to keep a good credit record, under the consideration that they prefer to give up short term benefit in order to obtain long

term benefit. If we look back to Chinese banking history, in the late 19th century when the Piaohao dominated the Chinese banking system, there was no central bank regulation, but the bad debt level was very low and the Piaohao's business was so successful that it extended west to St. Petersburg in Russia and east to Kobe in Japan (Zhang, 1987) (also see Section 3.1).

If we move to a larger economy (the cities) the "gossip" method is much less effective since a single lender being defaulted cannot transmit the information quickly herself and the transmitting process becomes extremely expensive. Fortunately, with the development of the information industry, credit agencies appeared to provide the service to publish credit information.

Credit bureau/credit reference agency and quantitative models

In a small economic circle, for example, a village, the information of any default will spread quickly. It might be through gossip, which is an informal but effective way to transmit information. Referring to the interviewee in I4, he mentioned that it is easy to investigate local borrowers' credit nature through gossip or inquiry. This method does work in rural China but it becomes very difficult in big cities. The appearance of agencies, such as Stand and Poor's, Moody's etc, is a modern and more efficient way to publish credit information. Most of the defaulters' information will be published with regularly credit rating, which could show their credit nature, financial status and the credit history. A credit bureau (US) or credit reference agency (UK) has the similar function and it is more useful for the banks.

According to the interviewee in I5, in the UK most banks send monthly reports of their customers' credit information to the credit bureau and this

information is shared within these banks. When a customer of bank A wants to borrow money from bank B, bank B can see the credit history and the status of her account through the monthly report of bank A submitted to the credit bureau. This information sharing mechanism makes it difficult for a borrower to hide or falsify her credit status. UK banks bring back credit information from the credit reference agencies and build internal ratings. Then they combine the internal ratings with the external ratings published by credit agencies, such as KMV and Moody's, to form a final rating to decide whether or not to grant the loans.

In China the central bank, PBC, is developing two databases of credit information for personal and corporate loans respectively which provide the similar function to a credit bureau. A national database of personal credit information has been prepared since 2004 and put into operation in January 2006. The database has a network with all the commercial banks and some of the rural credit cooperatives in China. The population of the database has been over 0.34 billion people and 35 million of them have credit records[59].

The database of corporate loans has been developed since 1997 and it collects data on enterprises from commercial banks and other financial institutions, including enterprises' profile, borrowing and guarantee information, and the financial indices etc. Up to Nov 2005, the database has collected over 4.52 million enterprises whose loans take about 90% of total loans in Chinese financial system which covers almost all the corporate loans. A complete database of enterprises was due to be put into operation in the middle of 2006[60].

The databases let banks see borrowers' credit history and financial status, which paves the way for the development of quantitative models based on this

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[59] http://news.xinhuanet.com/fortune/2006-01/16/content_4059330.html
[60] http://news.xinhuanet.com/fortune/2006-01/16/content_4059728.htm

information. At the moment Chinese banks' credit rating mechanism is quite behind the UK banks. The internal and external ratings are only confined to a limited number of larger corporate borrowers and it makes the rating system less useful for rural bankers to assess credit risk.

The data problem has puzzled both UK and Chinese banks. But the problem is more serious for China. In China the continuous structural changes and the less transparent information-publishing system make it very difficult for researchers to build a stable data chain and the scarce data directly limit the power of quantitative models. As the four Chinese bankers interviewed said, none of them use quantitative models in their credit business. Some of them never touched quantitative models and some others are unsatisfied with the performance of the models. Although there have been less structural changes in the UK, it is also difficult to find a stable data chain for a particular sector to make precise predictions. Nevertheless the preference for quantitative models is a part of the bank strategy since it reduces salary costs and raises the transparency of credit officers' work (see Section 7.7).

Role of experience in assessing credit risk

The expert system based on subjective judgement dominated credit assessment until the late 1980s. With the development of quantitative methods, the status of the results obtained from quantitative models becomes more and more important. However, the role of experience still plays an important role in decision-making process.

In the UK, at the lower level most banks just require credit officers to key in borrowers' information into the model and the model will determine whether to accept or reject the loan applications. This simple method is based on two assumptions, one is that quantitative models can give a relatively precise default prediction; another is to weaken the qualification of credit officers in order to cut down salary costs. Experience is more important in big loans and the loans to some unique projects or in some new markets. Because of the good credit circumstances and convention, experience is less used to verify borrowers' information provided, but more used in the prediction of the potential return of borrower's project and the developing potential of the borrower's business area.

In China, credit risk assessment is not far from the expert system. Although Western models have been imported to China in the 1990s, it still remains in the stage of exploring and research. In my research all the Chinese interviewees admitted the important status of experience in examining loan applications. Due to the structural changes, the power of quantitative models is very limited. The main reason is the lack of valid data. Another reason is that the credit officers are not familiar with the models and they do not believe that the quantitative results could be more accurate than their subjective judgement. Lack of confidence and the unfamiliarity with quantitative models make subjective judgements dominate the decision-making process. Different from the UK, in China the verification of data is crucial since the information-publishing mechanism has not been established and bill fraud cases always take place. Credit officers need to use their experience to verify the information provided by the borrowers, since the inter-bank information sharing mechanism is very primary and most credit information needs to be provided by the borrowers.

In summary, in China experience of credit officers is more important than in the UK. But with the development of quantitative methods, the expert system will give space to credit models for lower level loans and experience will be more used for large loans and unique projects.

Incentive problem

In both China and the UK, the banks have moved away from the incentive mechanism of direct commission and credit officers cannot get extra income by granting more loans. One obvious reason is that under this mechanism credit officers would like to issue more loans to some unqualified borrowers for more commission which will increase the possibility of bad debts; another reason is that the various causes of default cases make it inappropriate to attribute bad debt to the credit officer's individual performance.

Due to the above reasons, Chinese banks consider credit officers' whole year's performance to decide their salaries and promotion (relegation). As the interviewee in I1 said in ICBC, punishment is more applied than bonus. The direct consequence is a tighter credit policy, such that credit officers would prefer to lend more cautiously. As we know, China is enduring a dramatic structural change, and banks are restructuring as well, which includes employees' moving. In the interview I3, the interviewee complained the alternation of employees makes the credit officers feel uncertain about their future career in the bank and issue loans too cautiously.

In the UK the credit officers' salary is partly based on the profitability of the banks and partly based on the credit officers' individual performance. A

grading system helps banks measure credit officers' performance, involving relationships with other employees, timekeeping and work efficiency etc. In the UK there is a complete information publishing and enquiring system which makes credit officers' work more transparent and the monitoring of their performance much cheaper than Chinese banks. It also makes the cost of defrauding banks very high. The high cost of fraud and the efficient incentive mechanism makes most UK credit officers follow the procedures properly as their optimal choice.

SME finance

As discussed previously, the proportion of banks loans to SMEs is very low in China (see subsection 3 in Section 7.2) and SME finance is difficult in the UK as well. If we compare these two cases, some similarities and differences could be found and this is helpful for considering of China's bank reform.

China is in the transition from a planned economy to a market economy, and the financial structure is still developing from the old one which used to serve the planned economy. Under this structure, most of the capital in the banking system, dominated by the SOBs, is consumed by the SOEs and other enterprises with state-owned background. It lacks an adequate credit system for SMEs, composed of the appropriate financial-service institutions. Considering the insufficiently developed capital market with high risk, especially the often reported fraud cases, it excludes the feasibility for SMEs to attract finance through the capital market. Therefore, SME owners have to take the banking system as the best, maybe the only option, for external finance. However, the rating requirements for loans are quite high and are hardly met by most SMEs and

the amount of capital banks will lend is vastly less than the demands for SME finance.

In the UK, a well developed market economy, bank loans are regarded as the main finance channel for SMEs as well. This market has oligopoly characteristics. According to the research by Cruickshank Bank Review (2000), the big four banks (Nat West, Lloyds TSB, Barclays, and HSBC) controlled 80% of the market for SME banking services and they also supplied 90% of the current/deposit account and overdraft services with numerous entry barriers. Within this market dominated by the big four, SME borrowers' choices are limited. The high lending demand enables banks to use less costly quantitative methods, such as credit scoring, to screen SME borrowers with less consideration for borrowers' various background and situation (see bank strategy in Section 7.4).

The most commonly used method to reduce the information problem in SME finance is the requirement of appropriate collateral. Compared with the estimation of the profit in SMEs' business, it is easier to assess the value of collateral. Therefore most banks would like to ask for collateral to secure the loans. In both the UK and China, there are no special requirements for collateral, and in principle anything could be used as collateral with various values. Property/real estate is always the most welcome asset to be used as collateral. In the UK it is because the UK has a strong property market which enables the banks to keep liquid, as they can easily sell the property in the market with less loss. In China the value of real estate is more preferred since in the booming economy the value of real estate is expected to be more stable than other assets.

A "risk pricing" mechanism is used in both China and the UK, so that commercial banks can apply different extra loan rates to the base rate regularly

published by the central bank. In China the risk pricing mechanism was started in the late 1990s and credit officers are not quite familiar with it and are not able to use it proficiently, and according to the feedback of some credit officers this mechanism is not easy to apply to particular borrowers. Although good collateral could both benefit bank and borrowers with less risk and cost, the narrow floating band makes the risk-pricing mechanism less effective.

Beside the insufficient capital for lending to SMEs, another obstacle for SME borrowers is the lack of credit information. In the UK, collateral is not absolutely necessary, and a good credit history could help them obtain cheap finance through the banking system. However, in China, because of the lack of history, it is very difficult for banks to issue credit loans to SME borrowers according to their credit history. In urban China, banks always require bank statements and other financial documents to show their credit history, but fake documents make banks spend much time and effort in verifying these documents. In rural China, things are much easier. Due to the nature of the credit environment, banks could collect the borrower's credit information well through informal channel, such as "gossip".

In summary, SME lending is difficult in both China and the UK. Although the banks are trying to encourage SME finance, most SMEs' finance demand is not satisfied. Borrowing from friends and relatives is still regarded as the first choice beside retained profits.

Conclusion

Through the comparison between the Chinese style and the UK style in credit risk management, it is found that government finance in China is through banking while in the UK it is through the capital market. The UK banking system is more independent from the government control. In the UK, there is a better information collecting and publishing agency, credit bureau, which help raise transparency in the credit market. Furthermore, a complete legal system helps the enforcement of loan contracts and protects the creditor's benefit. In both China and the UK, qualitative methods are important in credit practice, especially for the big loans and the loans to some unique projects or in some new markets. In next section, we will justify the findings of interviews with the Post Keynesian approach.

7.6 Post Keynesian approach and bank strategy

In the previous sections, we can find the credit risk models are becoming popular in Western banking and Chinese banks are trying to import quantitative models. However, the existence of uncertainty and the high profile requirement of data sets make these models less efficient. Therefore, the problem is not the lack of relevant quantitative techniques.

As discussed in Chapter 2, rather than applying money into the economic model to see the effects on nominal variables, Post Keynesians take money as an integral feature of the monetary economy and they focus on the process and consequence of credit creation. The term of uncertainty is introduced and the subjective perception of uncertainty determines the liquidity preference. As a

result, the role of bank is to pool and satisfy the various liquidity preferences, and "credit is almost synonymous with uncertainty" (Giocoli, 1997, p.489).

If we take the view that there is uncertainty attached to risk assessment, whenever we carry out an act with future consequences, it is always the case that we have to carry out without precise knowledge of these consequences. It is also impossible to forecast or estimate them accurately in the form of a probability distribution. Therefore, we can say that the lack of information (or knowledge) is one of the important sources of uncertainty and this makes it impossible for agents to have resource to the probabilities themselves. This could explain the strong reliance on experience we find the interviews. In China, even the convention and experience are evolving with the transition (see Section 7.2).

The fundamental basis of banking system is the confidence in which it is held by the economy. This kind of confidence is built and evolved with the evolution of the banking system. The distinctive state of banks in the financial system is based on their peculiar ability of mixing different liquidity preferences. As we know agent's liquidity preference is depending on her knowledge about the current situation and the expectation of the future.

The specialization of banks enables themselves to have more knowledge related to the credit market through the contracts with various customers. Additionally banks' liability is used as money. Because of this, banks could create credit to finance before saving. In the credit market banks have much more lending space than the NBFIs. On the other hand, through the business with the customers with different illiquid debt contract, banks gradually built up a comparative advantage in assessing the risk attached to these contracts. And with the inter-banking competition, the premium attached to the loans was adjusted and

became more reasonable for both sides of any contract. During this process, banks gradually established a relatively stable customer group and also establish the confidence among the customers. As well in this market banks have obtained enough knowledge to assess the risk.

As we find in interviews and discussed in Chapter 2 credit officers' experience are more helpful than any quantitative methods, although these experience do not mean banks can have access to 'true' risk which is unattainable. Credit officers are always needed to make judgment based on conventional judgment and intuition. The conventional judgment is inherited from the former manager and the intuition is hard to tell and transmit. Banks have comparative advantage of knowledge in the credit market and they have various confidence determined by the knowledge and convention. If the uncertainty attached to some borrower is too much, banks would feel little confidence in the business. Therefore, the premium can be estimated, even roughly estimation is hard to make. Then bank has to reject the loan application.

Why are the banks still trying to introduce quantitative models in credit risk assessment? The essential explanation is based on the bank strategy.

Firstly, as we know, the formation is a historical process and the transmission of experience needs time. Quantitative models based on the past data to some extent could give an estimation of the borrower's default risk. The use of these models could greatly reduce the time and the banks' cost in credit assessing process.

Secondly, if the credit risk examination process is subjective, it is hard to apply a detailed uniform procedure to follow. It is also difficult to judge or compare the result. This gives space for fraud and monitoring difficulty. In

present-day China, there is a lack of a complete legal system especially for financial fraud cases. Poor credit circumstances s make banks prefer to apply a uniform and objective method. If any problem take places, it is easy to allocate the fault and give punishment.

Thirdly, the difficulty in China is data. Banks could bear the defects and limitation of quantitative models but in the booming China it is difficult to collect enough of the data the models require and the explanatory power of the past data is very limited. In the long run, with the development of data collection, information publishing, and the improvement of techniques, banks could rely more on quantitative models to screen borrowers. However, in the short run, as we find in the interviews, most credit officers still prefer to rely on the traditional methods in practice.

Finally, it is the strategic importance that there is a trade-off between the need to keep control of risk and the role of credit expansion for bank's market share. Due to this reason, quantitative models are more used in personal loans, SME loans and a small amount of credit loans. The requirements of collateral provide a kind of guarantee of the repayment. For a large amount of corporate loans, most Chinese banks require the borrower to provide documents and hire experts to examine and make decision. The unrepeatable nature of this kind of loans makes the use of quantitative models less efficient.

7.7   Conclusion

In this Chapter, through an analysis of interviews with Chinese and British bankers, we find that in developing countries, such as China, the application and

performance of modern quantitative models is greatly restrained because of the characteristics of an emerging market. Abundant creditable data is the most basic requirement of any quantitative method. All credit risk models need plenty of information concerning various types of enterprises over a long period in which there have been structural changes. This is almost unattainable in most emerging economies, since many SMEs' financial information is unavailable and large enterprises' financial information is always confidential. The data collected from different periods might be incomparable because of the rapid structural changes in China since the reform took place.

However, qualitative methods relying on convention and experience help banks examine borrowers' risk and the experience is also evolving with the development of the credit business. It is argued that with the accumulation of credit information, quantitative methods will be more used in low-level business such as SME loans and personal loans. But the loans to some unique projects and large loans have to be granted through the traditional expert system.

Convention is crucial in credit practice and convention cannot be generated overnight. This could partly explain why the foreign banks in China have to attract local staff from domestic banks when they enter the Chinese financial market. On the other hand, they need to establish their own convention about the Chinese market and this process might take a long period of time.

After a discussion of both quantitative and qualitative methods in credit risk assessment before granting, we shift our focus to the dealing with existing NPLs in the Chinese banking system. In the next chapter, we will explore the methods of disposing of NPLs with reference to other countries' experience.

Chapter 8   Dealing with the Existent NPLs

In Chapters 6 and 7 we have examined the theories, models and practice of credit risk assessment in both Western and Chinese banking systems through an analysis of related literature and interviews done with Chinese and British bankers. The evidence shows that subjective judgement plays a dominant role in credit risk practice although quantitative methods are regarded as more "scientific" by some researchers and bankers. However, due to the uncertainty in the economy, especially in the transition economy undergoing rapid structural changes, the power of quantitative methods is very limited. Furthermore, the credit allocation in Chinese banks is also affected by governmental intervention, which to a great extent undermined Chinese banks' performance. In summary, the SBC problem and the poor credit risk assessment in SOBs contribute to the large amount of NPLs accumulated in the banking system.

The purpose of this chapter is to examine the methods of disposing of the existent NPLs and provide some suggestions for future development with reference to some foreign experience, taking account of the particularities of China's situation.

The chapter is organized as follows. In Section 8.1 we will try to find out the true figures of the NPL stock in the Chinese banking system through   an investigation of the official figures published by authorities, the figures estimated by Western scholars and the figures estimated by Chinese scholars. In Section 8.2 we will examine the currently used methods of NPL disposal through AMC management, including the initiation of establishing AMCs, organizational structure, achievements and problems. In Section 8.3, we will examine the

experience in the US, Hungary and Japan comparatively, and try to find some solutions to the problems which have appeared in the Chinese case. The suggestions and prediction of the further development will be demonstrated in Section 8.4. Finally, in Section 8.5 we will summarize our major findings and conclude the chapter.

8.1 Origin and current situation of the NPLs in Chinese banking

As discussed in Chapter 5, China practiced the mono-banking system before 1979 and the banking institutional structure was highly centralized and controlled by the People's Bank of China, which operated as both central bank and commercial bank.

In 1979, the People's Bank of China began to separate its non-central banking business from the central banking business. Four specialized state-owned commercial banks were established which are responsible for particular sector. The four SOBs are the ABC, BOC, CCB, and ICBC. However, these separations do not mean that the specialized banks are extragovernmental and operate independently. From 1980 to the mid-1990s, Chinese banks continued in most cases to lend money to the SOEs without expectations of repayment, and support projects sponsored by local political interests without regard to the economic values or debt-service capabilities of these projects. This non-market-based policy has caused vast NPLs in the banking system.

Prior to 1998, Chinese banks used a loan classification system based on actual loan performance that divided NPLs into three types: overdue, doubtful and

bad. This approach underestimated NPLs, as it did not include highly risky loans that were still paying interest and were not yet overdue (Bonin & Huang, 2001). In the alarming and self-searching atmosphere of early 1998, particular attention was paid to the NPLs on the books of Chinese banks. Xinhua Financial News (12 January, 1998), citing "Estimates of the People's Bank of China", put the level at 20% of the loans, or more than RMB one thousand billion (Yabuki, 1999, Chaper 19). The main borrowers of the system were the SOEs and state projects. It was estimated by Yabuki that half of these borrowers were losing money and not properly servicing debts. Furthermore, China's accounting standards and bank management practice made it easy for both borrowers and banks to neglect bad debts.

Existing estimations suggest that the proportion of the NPLs was likely to have been about 24% before the Asian crisis and about 29% after the crisis (Bonin & Huang, 2001; CCER, 1998; Fan, 1999; Li, 1998). Such proportions are very high even compared with NPLs in the crisis-affected East Asian economies (Bonin & Huang, 2001). Liu Mingkang, chairman of the Bank of China, has reportedly said that, currently, some 48% of all SOB lending should be classified as NPLs (Pierce &Yee, 2001).

In the accounting agency Ernst & Young's annual report on global debt released on 3 May, 2006, the bad debts in the Chinese banking system are estimated at a staggering $911 billion. According to this report, the NPLs in China were equal to 40% of the GDP and twice the 2002 figure of $480 billion. The four large SOBs accounted for $358 billion of bad loans, almost three times the officially reported figures. However, under pressure from Beijing, Ernst &

Young withdrew its report a week later, declaring it had been in error and promised that "such an embarrassing situation will not happen again".

The official figures released by the China Banking Regulatory Commission (CBRC) were much lower than the Western scholars' estimation. According to CBRC, the NPL figure at the end of the third quarter of 2006 was RMB1273.63 billion, 7.33% of the total loans. The figures used to be RMB1717.6 billion, 13.21% of total loans at the end of 2004 and RMB1313.36 billion, 8.61% of total loans at the end of 2005[61].

According to Fan (2003), Director of the Institute of National Economy, for the time being, the total bad debts of the four SOBs of China stood at 26-27% of China's current GDP. The ratio would shoot up to 40%, a widely-recognized alarming level, if the bad debts now stripped to the four government-sponsored AMCs were also taken into account.

How can the four SOBs sail along calmly, despite having such a big volume of bad debts? And why do Chinese depositors keep, as always, putting their money confidently in the SOBs? The reason is that these bad debts are, to a large extent, the national debts of the state. The credit behind the four SOBs is that of the state. Therefore, depositors do not believe in the bankruptcy of the SOBs as long as the state is still sustainable. As for the reason for the formation of the bad debts, the bulk of them come from the SOBs' loans to the SOEs, which afterwards are unable to pay back the loans as promised. Thus, the non-performing debts can be treated as the central government's "fiscal subsidies" to the SOEs, although the so-called subsidies flow to the SOEs through the SOBs

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[61] CBRC website: http://www.cbrc.gov.cn/chinese/home/jsp/docView.jsp?docID=2485

instead of, as it should be, through the MOF. Also, there are very few financial channels for citizens to invest - depositing money in the SOBs is the only way.

The NPL problem in China's banking system has a long history and is considered the "chronic disease" of the Chinese economy for several years. While this is widely acknowledged, their actual level is a subject of debate. There has been plenty of literature regarding the fragility of China's banking sector (see Bonin, 1999; Bonin *et al.* 1999; Lardy, 1998). With the worries of the fragility of the Chinese banking caused by the amount of NPLs, four AMCs designed to deal with the SOBs' NPLs were established with the sponsor of the government in 1999.

To summarize, policy loans and the old habits of credit allocation inherited from the planned period contributed to the large amount of NPLs. The true figures of NPLs might never be exposed due to the opaque accounting standards in the Chinese banking system and the lack of credible information sources for the Western scholars[62]. However, at least both the government and the researchers believe the NPL stock in the Chinese banking system is large enough for the authorities to take immediate action to deal with them. Below in Section 8.2 we will examine the currently used methods of NPL disposal through AMCs.

8.2 Split NPLs and restructuring through Asset Management Companies (AMCs)

Before the "PRC Commercial Banking Law" was released in 1995, the SOBs were operating as specialized banks where a high proportion of credit loans were

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[62] Foreign institutions and individuals are not allowed to collect data in mainland China.

heavily policy-oriented. Because of their operating nature, few Chinese banks had set up a particular department to deal with bad debts, which resulted in a constant accumulation of NPLs. The purpose of establishing the AMCs is to deal with these NPLs.

Establishment of Asset Management Companies (AMCs)

With the consideration that the large accumulating amount of NPLs seriously jeopardized the health of the financial system, the Chinese government decided to set up financial asset management companies for the integrated management and disposal of the NPLs acquired from commercial banks. On 20 April, 1999, with the approval of the State Council China's first asset management company, China Cinda Asset Management Corporation (Cinda) was established, drawing on overseas experience and China's specific situation. Cinda is responsible for purchasing and disposing of China Construction Bank (CCB)'s NPLs. In October of 1999, another three asset management companies, Orient, Great Wall and Huarong were established to deal with the NPLs of the other three SOBs which are BOC, ABC and ICBC (see Table 8.2.1 for general information). The intent was to remove a portion only of the NPLs from the balance sheet of the parent banks, and place them with the AMCs, which take the responsibility for their workout and recovery. The AMCs are expected to collect what they can or repackage the loans and sell them at discounted value on secondary markets. According to the experience of foreign asset management companies, usually there are two types of structure: one is the asset management company established for the NPL problem in the whole banking system and another is an individual

bank's own established asset management company. China's situation is similar

to the latter case.

Table 8.2.1   The general situation of Chinese asset management companies

Name	President	Registered capital(RMB bn)	Working for	Established date
Cinda	Zhu Dengshan	10	CCB	20 Apr, 1999
Orient	Sun Changji	6 and 0.5($bn)[63]	BOC	15 Oct, 1999
Great Wall	Wang Xingyi	10	ABC	18 Oct, 1999
Huarong	Yang Kaisheng	10	ICBC	19 Oct, 1999

Source: Li *et al.*, 2003

Each of the four AMCs has registered capital of RMB10 billion, directly

funded by China's MOF and in 2000, each of the four AMCs issued ten-year

bonds, guaranteed by the MOF, to their respective "partner/parent" SOBs in order

to finance the purchase of the SOBs' assets transferred to them. The founding of

these four asset management companies is an important measure to dispose of

SOBs' NPLs based on law, and is of great significance to take precautions against

and dissolve financial risks, and enable SOBs to move forward with fewer

burdens.

Organizational structure

The AMCs established in 1999 are wholly state-owned NBFIs operated under

relevant legislation, including the AMC Regulations; the Rules on Accounting

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[63] 40% of China Orient AMC's registered capital was paid up in US dollars, presumably because the Bank of China's portfolio of troubled assets included many NPLs denominated in foreign exchange.

Practices of Financial Asset Management Companies, promulgated by the MOF on June 30, 2000; and the Rules on Disposition of Assets by Financial Asset Management Companies promulgated by the MOF on November 8, 2000 (Pierce and Yee, 2001).

Figure 8.2.1   Organizational structure of AMCs
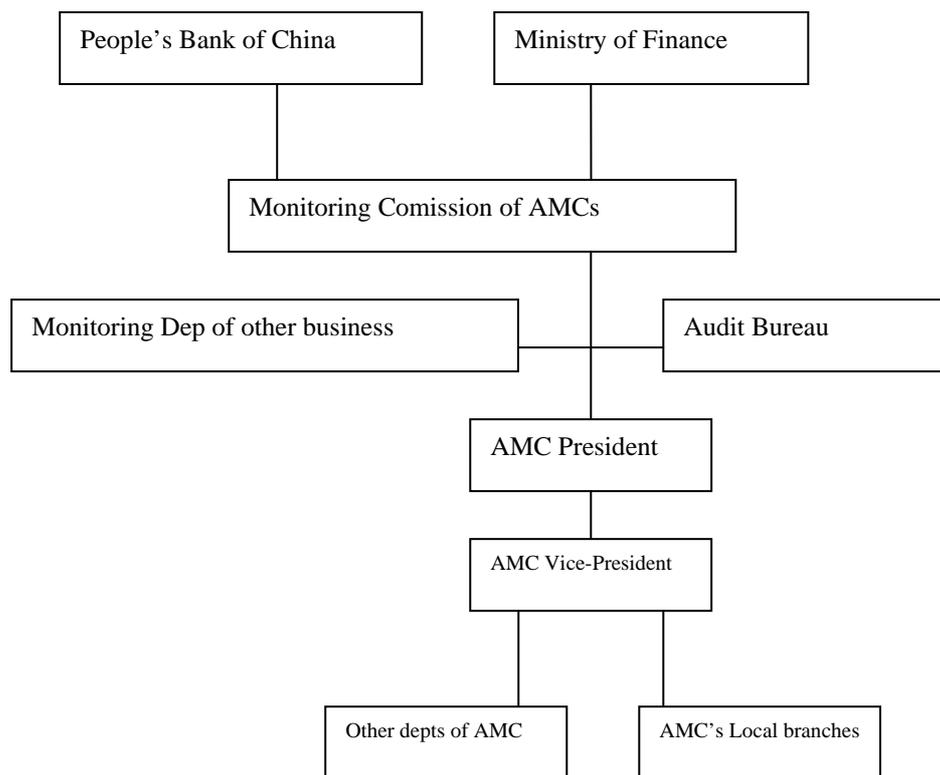
Source: Li *et al*. (2001)

The SOBs have responsibility for arranging the valuation of each asset to be transferred to an AMC. The valuation is to be made by a "competent independent intermediary", and such valuation needs to be submitted to the MOF for approval. Purchased assets to date have mainly comprised NPLs made to SOEs before 1996. The AMCs purchased the principal amount of NPLs and all interest chargeable to the profit and loss account associated with those loans (Pierce & Yee, 2001). In accordance with the Regulation on Financial Asset

Management Companies, AMCs have been fully engaged in debt recourse, asset leasing, transfer, and restructuring, debt-equity swap and temporary equity holding, sponsoring for listing within the scope of asset management and underwriting relevant bonds or stocks, financial and legal advisory services, asset and project evaluation[64]. The AMCs have implemented a debt-equity swap operation to support SOE reform with the intention to facilitate a reorganization of their capital structure and promote their profitability. Debt restructuring has been taken to enhance debt recovery. Some debtors with certain repayment capabilities and not suitable for legal resolutions have been investigated for their maximum repayment potential and a certain portion of the debt has been excused, subject to repeated negotiations and strict approval procedures. This has served to spur the debtors to repay the rest of the liabilities.

The NPLs from the four SOBs to the AMCs were transferred at a discount of the face value and two methods were used to compensate the SOBs fully for all transferred NPLs. One method was to transfer some central bank lending from the parent banks to the AMCs at an interest rate of 2.25% which accounted for about 40% of the value of the transferred NPLs. Another method was for the parent banks to purchase bonds issued by the AMCs, guaranteed by the MOF, and paying interest at about 2.5%, which is accounted for about 60% of the value of the transferred NPLs (Bonin & Huang, 2001). A crucial feature of this kind of purchase is that they were transferred at current book value rather than the valuations set by reference to the market which means that there might be large losses incurred when the AMCs eventually divest the assets (Piere & Yee, 2001).

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[64] Summarized from the the four AMCs' websites: Cinda, http://www.cinda.com.cn; Huarong, http://www.chamc.com.cn; Great Wall, http://www.gwamcc.com; Orient, www.coamc.com.cn.

AMCs' achievements

Recent statistics published on the AMC and CBRC websites reveal that by the end of March 2006, the four AMCs together have purchased around RMB1.4 trillion NPLs, which is about 19% of the total loans of SOBs and 16% of 1999 GDP. As of the first quarter of 2003, the four AMCs had liquidated around 25% of the NPLs in their portfolios, with a cash recovery rate of around 20%. Until the end of the third quarter of 2006 the four AMCs have disposed of assets around RMB866.34 billion, with cash recovered of RMB180.56 billion (see details in Table 8.2.2).

Table 8.2.2   Disposal of non-performing assets by AMCs in 2005 and 2006 (RMB billion)[65]

	2005 Q1	2005 Q2	2005 Q3	2005 Q4	2006 Q1
Accumulated Disposal (RMB bn)	688.55	717.42	736.66	839.75	866.34
(Cash Recovered) RMB bn	140.89	148.46	155.03	176.60	180.56
Disposal Ratio	54.95%	57.28%	58.71%	66.74%	68.61%
Asset Recovery Ratio	25.50%	25.55%	25.62%	24.58%	24.20%
Cash Recovery Ratio	20.46%	20.69%	21.04%	21.03	20.84%

Source: CBRC website[66]

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[65] Disposal Ratio = Accumulated Disposal / Total Non-Performing Assets Purchased; Asset Recovery Ratio = Total Assets Recovered / Accumulated Disposal; Cash Recovery Ratio = Cash Recovered / Accumulated Disposal.
[66]CBRC website: http://www.cbrc.gov.cn/chinese/home/jsp/docView.jsp?docID=2456; http://www.cbrc.gov.cn/chinese/home/jsp/docView.jsp?docID=1331

By the end of 2006 Cinda AMC disposed of assets valued at RMB206.77 billion, Great Wall AMC disposed of assets valued at RMB270.78 billion, China Orient AMC disposed of assets valued at RMB141.99 billion and Huarong AMC disposed of assets valued at RMB246.8 billion (see Table 8.2.3).

Table 8.2.3   Disposal of non-performing assets by the four AMCs by the first quarter of 2006

Source bank	Asset Management Company	NPLs (RMB bn)
Bank of China	China Orient	141.99
ICBC	Hua Rong	246.8
China Construction Bank	Cinda	206.77
ABC	Great Wall	270.78

Source: CBRC website[67]

Figure 8.2.2   Disposal of NPLs by Four AMCs (2004-2006Q1)
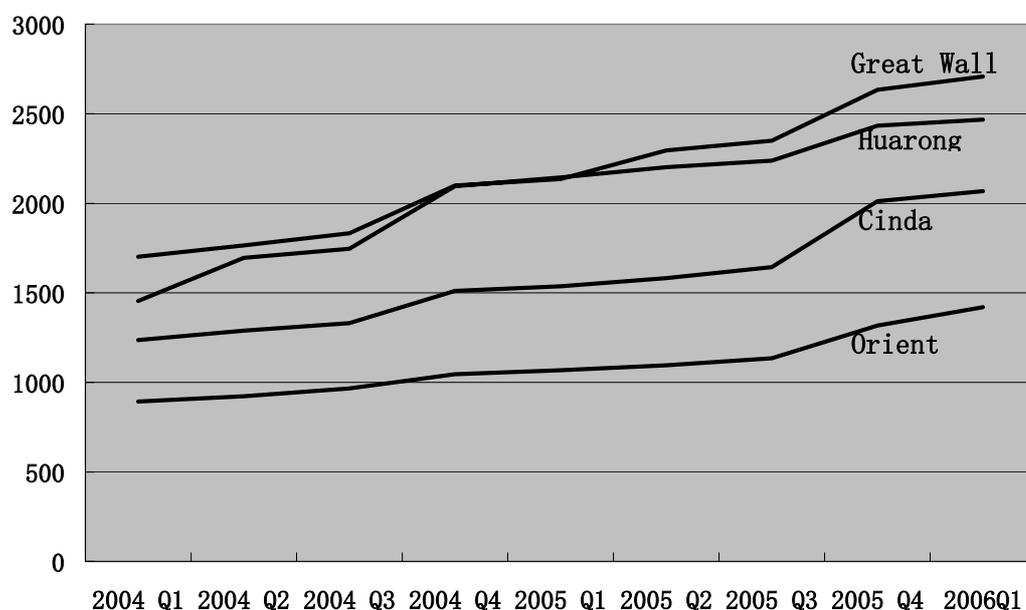
Source: calculated based on the data published by CRBC[68]

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[67] ibid
[68] ibid

Figure 8.2.3 Quarterly growth rate of NPLs disposal ratio and cash recovery (2004-2006Q1)
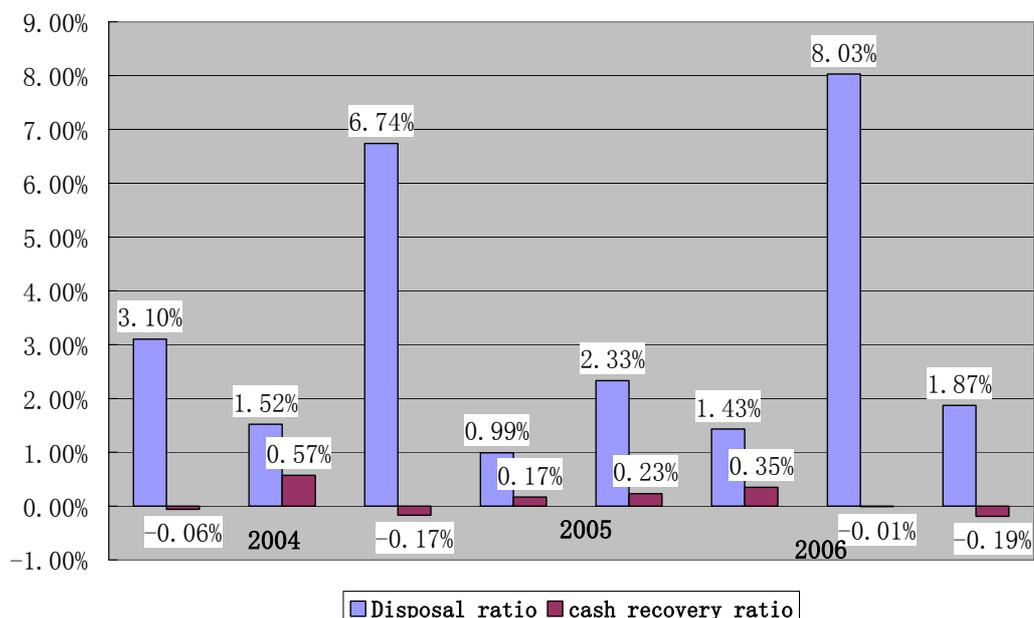
Source: Source: calculated based on the data published by CRBC[69]

From Figure 8.2.2 and Figure 8.2.3 we can find that between 2004 and the first quarter of 2006, the accumulation of disposal improved steadily. The disposal ratio grew quarterly at an average rate of 3.25% while the cash recovery ratio grew at a rate of 0.11%. The low cash recovery ratio is because the easiest parts were done with preference in the end of 1990s and the early of 2000s; while the difficult parts were left to the future.

Problems and limitations

Although the AMCs have made great achievements in the several years, there are still some outstanding problems.

The first problem is that even after the transfer of NPLs to the AMCs, the big four SOBs still have a large amount of bad loans on their books.

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[69] ibid

The second problem concerns the nature of AMCs, that their organizational structure is similar to the SOEs', under the oversight and control of three government agencies, the MOF, the PBC and the State Economic and Trade Commission (SETC). This organizational structure and associated regulations tied their hands.

The third problem is the AMCs have been relying mainly on debt-equity swaps or sales of collateral assets, since there is no market for trading distressed securities in China. This created a moral hazard problem between SOBs and SOEs, that the debt-equity swap may actually encourage even profitable SOEs to stop paying interest on bank loans so that they could qualify for debt relief as a loss-making SOE. The moral hazard problem also existed between the SOBs and AMCs, that the SOBs will perceive the AMC to be an outlet to which it can transfer more NPLs in the future (Bonin & Huang, 2001).

The fourth problem is that the AMCs' employees lack the requisite skills to engage in a broad range of financial activities e.g. loan recovery, venture capital activities, strategic consulting and investment banking etc (Bonin & Huang, 2001).

As far as these four major problems are concerned above, we shift our focus to the US, Japan and Hungary[70] with regard to their experience of NPL disposal. Their experience may provide useful insights for China and some suggestions will be offered in Section 8.4. These three countries are chosen to represent different economic and institutional backgrounds: the US is a large economy, which similar to China; Hungary is a transitional country which also

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[70] The experience of Korea, Sweden, France and Poland could be seen in Li et al.(2003); Italy and Germany experience could be seen in Yun (2001), and Czech experience could be seen in Bonin and Huang (2001).

suffered from the SBC problem; Japan and China are both located in East Asia and share the similar culture and tradition.

8.3 The experience of other countries (US, Hungary, and Japan)

The Resolution Trust Company (RTC) in the US

In the US, there has been over 20 years' history of dealing with the NPL problem, where the well-developed capital market and the complete legal system help banks reduce NPLs by the securitization through capital market.

A banking crisis in the US took place in the mid-1980s when the government loosened their supervision and the banks' market share kept dropping due to the competition from NBFIs. Meanwhile, the Savings and Loan Associations (S&Ls) made a huge amount of loans to the real estate sector, such that the proportion of real estates loans of the total bank loans increased from 15.71% in 1985 to 23.5% in 1990 (Yun, 2001). These loans became non-performing when the real estate bubble burst and the price of real estate dropped dramatically. Furthermore, the rising interest rate deteriorated the portfolios of S&Ls and the banking system was threatened with a credit crisis. The NPL figures were $17.7 billion in 1987 (0.97% of total loans), $21.4 billion in 1989 (1.1% of total loans), and $28.1billion in 1990 (1.37% of total loans) (Yun, 2001).

In 1989, the Resolution Trust Company (RTC) was set up by the US government as a special disposal agency to resolve the NPLs from the failed S&Ls.

The RTC set its main goal as to dispose of the NPLs while maximizing their profits and available housing for low-income individuals, as well as to minimise the impact on real estate markets and financial markets in the short time. It was set up as a temporary federal agency intended to operate until 1996, whose most effective method is called "bank sale". The RTC took over both performing and non-performing loans from commercial banks or other financial organizations and sold multiple projects in one package. Although the size of the asset package was huge, the large discount helped attract a lot of investors; for example, the discount rate was more than 50% in the first sale in 1993 (Yun, 2001). Besides bank sales, auctions and securitization are two other main disposal methods.

Undoubtedly, with the help of the well-developed capital market, securitization played a significant role in this process. An important factor in the success was the support of the government. At the beginning, the government guaranteed the payback of the principal and interest generated from the loans, which enhanced investors' confidence and the securities issued could always get a high rating. The guarantees from the government made it favourable especially for institutional investors, which pursue stable earnings and lower risk.

The RTC model is ultimately demonstrated as a success. The assets transferred amounted to $465 billion or about 8.5% of total financial sector assets and approximately 8.5% of the GDP of the US in 1989. And the RTC disposed of all the NPLs with a total amount of above $400 billion by 1995, one year earlier

than expected. The recovery rate on total assets transferred was 86% (Bonin & Huang, 2001).

The outstanding thing is that the quality of the assets transferred to RTC was good, with high liquidity, since about 50% of the assets were real estate loans and mortgages while 35% were cash and other securities and the level of NPLs reached only 3% of the total banking sector assets at the height of the US crisis (Bonin & Huang, 2001). This feature makes it easier to be sold quickly through bundling, securitization and auction through the developed capital market.

Privatization in Hungarian experience

Due to the SBC problem, economic depression and inadequate legal protection, Hungary's economy fell into chaos during the transitional period after the collapse of communist power. In 1993, around 29% of the total loans of Hungarian banking were non-performing, which led to a severe crisis in the banking sector (Li *et al.,* 2003, p.322). The Hungarian economy was in great danger. The government applied three steps to deal with the NPL problem: Purchase, capital injection, and privatization.

- Step 1. Purchase (Dec 1992-Dec 1993)

The 14 banks and 69 rural credit cooperatives whose CAR was lower than 7.25% were split and cleared. The state treasury spent $1.3 billion in purchasing the creditors' right to their NPLs, which improved the banks' asset quality. The NPLs before and after 1992 were purchased at a discount of 50% and 80% respectively, while for some special companies the NPLs were priced at full face value. The

Hungarian government issued tradable bonds with 20-year maturity to finance this purchase.

- Step 2. Recapitalization and bank restructuring

The Hungarian MOF recapitalized the banks through issuing government bonds to raise the CAR to over 4% in 1994 and meanwhile, the government asked banks to restructure their organization, working mechanisms, and risk monitoring systems with a fixed term to prepare for the later privatization. After this restoration, Hungarian banks' CAR and asset quality improved and most of the banks became profitable from 1994 (Li *et al.,* 2003, p.324).

At the same time, the government also made great efforts to restore the SOEs. In late 1993, 12 representative large size SOEs' unpaid debts to the state were exempted or extended. 55 SOEs were picked to experiment with NPL disposal with various methods, e.g. debt-equity swap, arranging extension etc. through negotiation (Li *et al.,* 2003, p.324). The government also provided low-interest loans to finance NPL disposal.

- Step 3. Privatization (Dec 1994 – Dec 1997)

Privatization is the main method used to solve the NPL problem. The Hungarian government were eager to privatise the state-owned banks by selling controlling shares to foreign investors. With the improvement of the SOBs' performance, at the end of 1994 the Hungarian MOF announced enforced privatization as the main method to solve the problems in the banking sector. However, the privatization process was kept at a slow and steady pace, so that most of the Hungarian SOBs completed their privatization by the end of 1997.

Additionally, Hungary firstly used the law of bankruptcy to pacify the conflicts between banks and enterprises. The strict law of bankruptcy was applied

in 1992, so that any enterprises which only defaulted over 90 days would be forced to go bankrupt. This law was intended to convert the resources used on non-economic areas to reform enterprise (Yun, 2001). The government played the leading role and bore a tremendous cost. During the banking restoration process, the Hungarian government issued bonds with a value of over 360 billion Forint (Hungarian currency), around 10% of GDP. The interest generated in 1994 was equal to 1.2% of GDP, 3.5% of fiscal expenditure. In 1995 the figures were 1.6% and 5.2% (Li *et al.,* 2003, p.326).

Japan's experience – based on the legal system and the financial system

In the early 1990s, the Japanese economic bubble burst and a large proportion of the excessively issued loans turned into NPLs. During the financial crisis in 1997, many Asian countries' banking systems were threatened by the dramatically expanded NPLs. According to the estimation based on the figures provided by Japanese banks in March 1998, the NPLs in the Japanese banking sector were around $800 million, which worsened the economic depression and both governments and banks were desperately seeking new ways to deal with these problems (Li *et al.,* 2003, p.304).

In 1999, the Japanese government founded the Resolution and Collection Corporation (RCC), which is functionally similar to the Resolution Trust Corporations (RTC) in the US. Beside the traditional NPL acquisition and collection, the RCC also provide: 1) Securitization using the trust structures; 2) business rehabilitation; and 3) Asset liquidation services (Ernst & Young, 2004).

The total volume of securitised NPLs between January 2001 and March 2003 was approximately 889 billion yen ($8.2 billion).

In addition, the Industrial Revitalisation Corporation of Japan (IRCJ) is another active government agency, aiming to rapidly revitalise the indebted companies. Whereas the RCC focuses on revitalising small and medium-sized enterprises, the IRCJ focuses on large ones.

Furthermore, the Japanese government formed the Financial Reconstruction Commission (FRC) in October 1998 to allocate public funds and to instruct necessary restructuring and reorganizations, which ensures the future cash flow generated from the NPLs. On March 8, 1999, Japan's government injected 7.45 trillion yen of public funds to fifteen major banks and afterwards $200 billion were distributed gradually (Herr & Miyazaki, 2000). The infusion of public funds provided the banks with the capital needed to dispose of NPLs through various methods, e.g. securitization, auction, etc.

Similar to the US experience, the relatively developed capital market helped the securitization of NPLs in Japanese banking and the securitization further facilitated the development of the capital market. Furthermore, foreign investors, such as Goldman Sachs and Morgan Stanley, also played an important role. In order to make it more convenient for disposal, the Japanese government also amended the old regulations, tax rules, and classifying measurement. For example, the legislation in April 1996 defined asset-backed bonds and commercial paper as securities, allowing their issuance in the domestic market and facilitating the trading of these issues.

In the early 2000s, while the structural reforms started to take effect, the figure of newly-added NPLs dropped from 9 trillion yen in 2002 to 4 trillion yen

in 2003. At the same time, the NPL ratio decreased from 8.4% in 2002 to 7.2% in 2003. The reduction in NPLs was caused by the banks' increasing disposal of NPLs from 5 trillion yen to 10 trillion yen[71].

Application of this experience to the Chinese case

Referring to the experience of disposing of NPLs in the US, Hungary and Japan, we could find some useful experience for China's NPL disposal work.

The first point is the government support, especially at the early stages - although due to the power and nature of the government, it took part in the NPL disposal in various forms, a huge amount of capital was always injected to finance the banks' disposal of NPLs. In most countries, the governments created AMCs to dispose of NPLs through securitization, while in some countries the governments provide guarantee to the bonds issued by AMCs. Furthermore, in order to clear up the restriction and barriers, the governments also promulgated new legislation or amended old policies and rules to facilitate NPL disposal.

The second point is that special institutions to deal with NPLs are necessary – although the NPL disposal agencies were named differently in different countries, the AMCs or similar institutions were established to take over the unhealthy banks or their non-performing assets and sell or auction them to investors after NPL restructuring.

The third point is pricing the NPLs properly in purchase and sale, which is a very tricky problem. A lower purchasing price might frustrate the banks and slow the split of NPLs; a higher selling price might increase the investors' costs

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[71] Summarized from the Annual Report on Japan's Economy and Public Finance
http://www5.cao.go.jp/zenbun/wp-e/index.html

and lead to AMCs' liquidity problem. Negotiation is generally used to moderate the conflicts among the government, banks, AMCs and investors.

The fourth point is to use integrated multi-methods as experienced in different countries, where the different methods were complementary.

The fifth point is to keep NPL disposal away from the state and loss-making SOEs. Through the analysis of the Hungarian experience, we could find "Of more importance than inherited bad loans to the forward-looking operations of the bank are inherited bad clients" (Bonin & Huang, 2001). It is important to keep banks and NPL disposal agencies independent from the state and the undesirable clients. The steady privatization excludes the influence of the State and the strict law of bankruptcy extinguishes the low efficiency enterprises. As discussed in Section 8.2, in that the Chinese AMCs are wholly state-owned, it is impossible to keep independence from the state and undeniable clients, the loss-making SOEs.

The sixth point is to exclude newly added NPLs; it is a crucial point of preventing the flow of new bad loans as well as getting rid of the existing bad loans (also see the research on the Czech case in Bonin & Huang, 2001).

The seventh point is to be careful of debt-equity swaps, that an inappropriate swap might make banks responsible for enterprise restructuring. The debt-equity swap was chosen disproportionately by the weaker banks since they lack the expertise and experience in restructuring large companies (also see the research on the Polish case in Bonin & Huang, 2001).

The lessons from the experience of NPL disposal in the US, Hungary and Japan provide helpful suggestions for the undergoing work in the Chinese case. In

the next section we will examine the methods and instruments used in the Chinese AMCs with reference to the overseas experience.

8.4 The existing problems in China's NPL disposal methods and some suggestions

As discussed in Section 5.6, the NPLs in China's banking sector originated from the triangular relationship among the SOEs, the SOBs and the fiscal system (also see Huang & Yang, 1998). In the late 1980s and the 1990s, most of the loss-making SOEs heavily replied on the support from SOBs. Since the subsidy, previously through the MOF, changed to through the banking system and following orders from the government, the SOBs had to make loans to the SOEs on a non-commercial basis (see "Before" in Figure 8.4.1). Much of the banks' loans were used to finance SOE losses, to pay workers' wages and fund pension obligations. Due to this situation it would not be surprising that a large number of SOEs defaulted on loans from the SOBs and the SOBs were not quite responsible for their performance.

Figure 8.4.1   Relationships between SOEs, SOBs, AMCs, and government
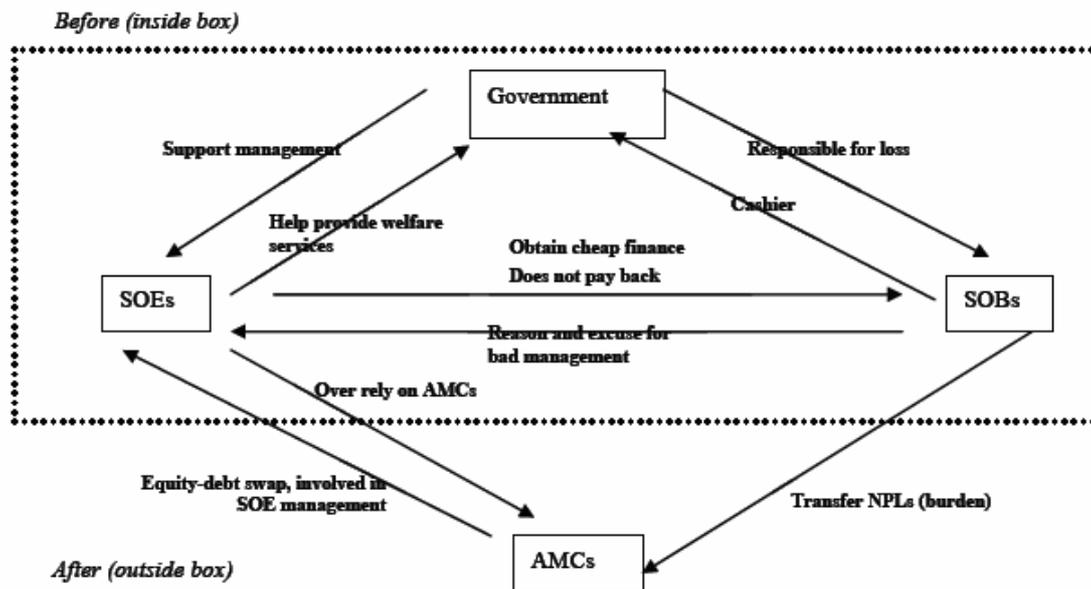
In 1994, the NPL problem was begun to be addressed by the Chinese government and three policy banks were created, the Long-term Development and Credit Bank, the Agricultural Development Bank, and the Import-Export Bank, which are not allowed to take household deposits but may hold equity stakes in companies. The policy banks are supposed to take over the policy loans from SOBs. However, except for the policy loans transferred to the policy banks, the SOBs still have a large amount of NPLs to recover.

Enforced bankruptcy

The traditional method to recover NPLs is to enforce the bankruptcy of defaulted enterprises and recover the NPLs through auction of the defaulter's assets. This method is frequently used to recover NPLs in the Western banking sector and it also worked well in the Hungarian case.

On the one hand, this method is not only helpful for recovering NPLs but also for creating a hard budget constraint expectation within enterprises. Since it is a harsh method with great constraints for enterprises, it is meaningful to differentiate the promising enterprises with a liquidity problem from the enterprises with little development scope. The former should be encouraged and helped, while the latter should be washed out by market competition.

On the other hand, the loss or disappearance of some bankrupt enterprises may cause a series of consequences to the economy to various extents. The principle of "too big to fail" is also applicable, especially for China, a developing country in transition. As discussed in chapter 5, the collapse of SOEs would lead to unemployment, and social instability. Over 65% of the SOEs have the high leverage problem and heavily rely on help from banks. Therefore, the application of enforcing bankruptcy to SOEs has to be careful and local government would not welcome this. But it might be a good way to recover the NPLs in the SMEs.

Recapitalization of the SOBs through Bad Debt Reserve (BDR)

Bank credit is developing with NPLs, and Bad Debt Reserve (BDR) is the liquid capital in commercial banks' reserves whose volume depends on the bank's loan situation. Usually it has two kinds: normal BDR and project BDR (or special BDR) (Li *et al.,* 2003, p.330). Normal BDR is reserved according to balance of loan structure. This proportion is determined by experience, and the rough prediction of economic growth. It concerns the total volume of loans, not the internal accounting loss of the NPLs. It only changes with total loans, not the quality of loans. Project BDR is reserved according to a different risk perception

to different loan categories. It will increase with the increase of loss perception with the NPLs. Some banks also have Special BDR, which is similar to project BDR but targeted at a particular country or sector. It shares the same property, reserved method and target with project BDR.

The BDR is reserved for the expected NPL loss in normal credit business. Considering the uncertainty in the market and the borrowers' individual situation, banks will have an expected loss, which instructs banks to retain a proportion of the profit as BDR to cover this risk. The proportion usually will not be more than 2% of total loans, since too much BDR will have bad effects on the banks' profitability.

In the Chinese case, the large amount of NPLs is caused by the policy loans to the SOEs, not the expected loss caused by uncertainty. Therefore, it is inappropriate to use BDR to cover this kind of NPL and the BDR is not enough. In 1997, PBC used RMB30 billion to recapitalize the SOBs and in 1999 it was RMB40 billion.

Debt-equity swap

Debt-equity swap is an instrument used in China for dealing with NPLs. It usually has two types: one is direct swap, referring to the method that the banks use the NPLs to swap for the borrower's shares; another is indirect swap, which means the bank transfers the creditor's rights to a third party and the third party uses it to swap for the borrowers' shares.

A direct swap changes the bank's status from creditor to investor while an indirect swap transfers the bank's creditor status to the third party and stops the

relationship with the borrower. This direct swap used to be used before 1995 when the commercial banking law appeared. This law prohibits banks from investing in any enterprise's stocks and bonds. Therefore, Chinese SOBs usually sell the loans to AMCs and let the AMCs swap the NPLs for borrowers' shares.

After several years practice, some problems have been found with debt-equity swaps. The first problem is government intervention. The choice and execution of debt-equity swap should be done following market principles, which guarantee the benefits of both lenders and borrowers. However, in China, the banks' benefit is not protected properly, so that some local governments abused their power to impose some unpleasant debt-equity swaps on banks. For example, some debt-equity swap might be made without banks' permission; Government might improperly value borrowers' assets, and deny banks' ownership right on the borrowers' collateral.

Additionally, a moral hazard problem might appear through the debt-equity swap. Since the involvement of the lender (bank) in the ownership makes the borrowers (usually SOEs) feel less pressure to repay the loans and the bank might have to lend more to SOEs since they are partly responsible for the management.

According to the Polish experience, the debt-equity swap was chosen disproportionately by the weaker banks since they lack the expertise and experience in restructuring large companies. The improper debt-equity swap makes the bank' assets less liquid. Considering the nature and management of SOBs, the debt-equity swap should be avoided to a maximum extent (Bonin & Huang, 2001).

Due to the problems in China and elsewhere, the method of direct debt-equity swap was gradually dropped by SOBs. The more popular method is indirect debt-equity swap with the involvement of AMCs.

Some suggestions for AMC management to solve the NPL problems

As discussed in Section 8.2, the method of AMCs is the one currently used in Chinese banking and four problems have appeared there. AMCs are established as temporary financial institutions with multiple roles to play during their ten-year lifespan. They will operate as both rapid asset disposal and SOE restructuring agencies; the latter involves both financial and operational restructuring (see "After" in Figure 8.4.1). Because of the lack of investment banks and venture capitalists in China, AMCs are likely to perform a host of tasks required to restructure SOEs and promote their eventual financial viability (Bonin & Huang, 2001). Therefore, the expected functions of AMCs are more than the AMCs in other countries.

The first step is to stop the flow problem of new bank lending to bad clients, especially the SOEs. As Bonin and Huang (2001) argued that "the dynamic evolution of stock of NPLs in other transition economies consists of both gradual recognition and continued soft lending to loss-making clients, i.e. making new bad loans". The former problem is caused by information and uncertainty, which could be improved by the accumulation of banks' experience and the development of procedures; the latter problem is solely a SBC problem due to the nature of SOBs and SOEs. One possible solution is to attract cooperation with

foreign banks and investors, who might be able to help SOBs resist the pressure from the local government.

Similarly, the SBC problem also stays in the AMCs with their state-owned nature. The transfer and disposal of NPLs is a game consisting of three players: government, SOBs and state-owned AMCs. The three players share the same owner, the State. How to clearly allocate responsibilities and rights is a very important issue to determine the success of AMCs. In order to make a creditable one-off bank recapitalization policy, Bonin and Huang (2001) raised two principles: the first is to make SOBs become independent in decision-making from both the state and their bad clients. Second is to allow AMCs to develop into financial institutions that will eventually provide competition for the commercial business of the big four SOBs.

It is absolutely right and important to make SOBs independent in issuing lending, especially to SOEs. However, with the existence of the SBC problem and SOBs and SOEs sharing the same owner, the independence of SOBs can never become a reality since SOEs always have the incentive to apply for loans from SOBs and it is hard to turn their application down. Privatising and restructuring the SOEs is a method to cut down the policy loans and another method is to reform the SOBs involving cooperation with foreign banks and investors.

Due to the SBC problem it is impossible for government to make a credible commitment to stop transferring new NPLs from SOBs to AMCs in the future. As we see in the US case, the RTC is a temporary institution which finished its work in five years. Without a prohibition on new NPL transfer, an AMC's work can never be finished and it may turn out to be permanent. Therefore, the moral hazard problem mentioned in Section 8.2 would be

continuous and AMCs would become a NPL disposal department within the banking system. This is harmful for bank reform and SOE reform.

Combining the data for 2004, 2005 and 2006 (see Appendix 3), we showed the accumulated disposal of Chinese NPLs in Figure 8.4.2 below:

Figure 8.4.2   Accumulative disposal of NPLs (RMB100 million)
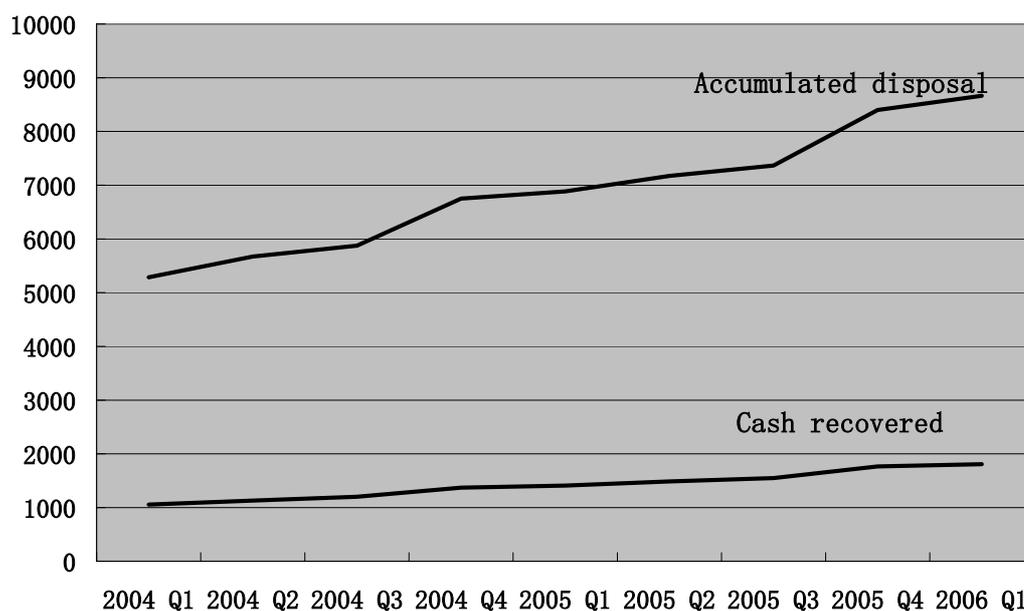
Source: Source: calculated based on the data published by CRBC[72]

From Figure 8.4.2 above, we could find the AMCs' NPL disposal proceeded decently in the last a couple of years. However, the growth in cash recovered was at a much lower level.

In the US and Japan's experience, we found institutional buyers playing an important role in the recovery of NPLs. Wholesale power makes institutional buyers more favourable to their AMCs, and the AMCs would like to offer a high discount rate. This makes investing in AMCs a lucrative investing opportunity.

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[72] CBRC website: http://www.cbrc.gov.cn/chinese/home/jsp/docView.jsp?docID=2456;
http://www.cbrc.gov.cn/chinese/home/jsp/docView.jsp?docID=1331

However, in the Chinese case, a lack of institutional buyers increases AMCs' operational costs and risk. High cost makes it difficult to offer a tempting discount to attract investors. Another thing is that there is a lack of a secondary market for the trade of NPL packages. The thin capital market needs to be deepened and broadened to facilitate the eventual disposal of the AMCs' assets. Furthermore the legal system is imperfect at protecting investors and small investors are very vulnerable in the frequent fraud cases in the stock market.

A possible suggestion for boosting NPL disposal is to boost competition in the financial market. According to other countries' experience, allowing competition from foreign banks is an effective way to encourage competition. After the entry to WTO, China's market is gradually opened to foreigners and China promises to totally open its financial market to foreign investors in 2006.

Another possible suggestion for cutting down the new NPL transfer is to attract foreign investors into the AMCs' management which could keep the independence of AMCs to some extent, such as monitoring NPL transfer, NPL pricing and sale etc. On 29 Aug, 2006, Huarong, one of the four big state-owned AMCs opened its new joint venture, Rongde Asset Management Company, in Beijing. Rongde AMC is the first Sino-foreign asset management company focusing on the purchase, management and disposal of non-performing assets. China Huarong holds a 51% stake in Rongde, which has a registered capital of RMB1.788 billion ($223.5 million). Cathay Capital Co, a joint venture between Deutsche Bank and the American International Group, owns a 35% share in Rongde. And the International Finance Corp (IFC), the private arm of the World Bank, holds the remaining 14% (see China Daily, August 30, 2006).

China Huarong said it began to seek foreign investors from September 2005 and received approval for the joint venture in the first half of 2006. Zheng Wanchun, vice-president of China Huarong, chairs the new venture, which shows the status and expectaion of Rongde in the reformers' mind. China Cinda set up a fund management joint venture in July of 2006 with Colonial First State Group (CFSG), a subsidiary of the Commonwealth Bank of Australia, to expand into other financial services.

The establishment of Rongde AMC shows the preference for involving foreign investors to improve efficiency and limit the SBC problem caused by the AMCs' state-owned nature. "For Huarong, the establishment of Rongde AMC is an important step to explore new asset management models and to transform into a more commercial-oriented business,"[73] said Ding Zhongchi, president of China Huarong. "China Huarong has established a nationwide network, accumulated a wealth of experience in dealing with non-performing assets and built a professional team, while our foreign partners will bring us advanced experience in management, investment and risk control[74]", he said. Analysts say Rongde will help attract capital investment in the disposal of non-performing assets in China and build a unified non-performing assets market.

Additionally a prospective development might be to develop AMCs into investment banks. This can be seen from an example of Cinda AMC, which is discussed below.

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[73] China General Chamber of Commerce website:
http://www.cgcc.org.cn/english/detail.asp?IT_ID=DTID06072411352226804%20%20%20%20%20%20%20%20%20%20&ID_ID=IDID0608301633313772895
[74] ibid

Future development of AMCs: an example of Cinda

Although AMCs were established initially as temporary institutions only for recovering NPLs, investment banking means have been used to improve the technical integration in asset disposal. We can see that from the development achieved and the further plan of Cinda AMC:

Securitization: First, Cinda has successfully achieved membership of both the SHSE and SZSE, and improved its procedures for IPO sponsoring, underwriting relevant securities, and signed agreements with securities companies. Secondly, Cinda has contracted with a number of enterprises for listing sponsorship and securities underwriting as part of their debt-equity swap and corporate and asset restructuring deals. Thirdly, some assets have been identified for a proposed asset pool as a preparation for asset securitization (see Cinda's website[75]).

Foreign capital: Foreign capital has been utilized for tapping the asset disposal markets. (1) Over 200 projects have been promoted for foreign investment by meetings, trade fairs, route shows, and internet, and extensive business relationships have been set up with dozens of overseas investment bodies. (2) Foreign capital has been positively employed for disposal of NPLs. Joint Venture agreements have been signed with Lone Star Fund from America and Deutsche Bank. (3) There has been substantial cooperation with foreign strategic investors.

Future plan: Cinda plans to continue actively participating in the restructuring of cooperative SOEs and deepening debt-to-equity swaps. In the

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[75] http://www.cinda.com.cn/cindaen/index.jsp

international market, Cinda will keep attracting foreign investors to dispose of NPLs in a broader field such as asset transferring, development of financial instruments, risk management, investment consulting and marketing etc. Regarding the NPL disposal issues, Cinda will set up an integrated and intensified disposal system through setting up a new debt management system and improving training and recruitment. Specialization and concentration are two tendency of further development, which means Cinda will establish separate departments with expertise concentrating on particular business segmentation, such as capital market operation, law and policy, finance and management etc (see Cinda's website[76]).

Cinda is not the only example of development of investment banking. According to a recent report ICBC is planning to securitize its bad loan portfolio by issuing domestic bonds to be backed by its non-performing assets. The bond interest will be paid by income from the recovery of the NPL portfolio. According to the plan, the bonds would be offered only to Chinese companies and investors, but banks and insurance companies would be barred from buying them. If the securitised bonds prove successful, they could offer another avenue for Chinese financial institutions to resolve their NPL problem in a speedier way.

However, meanwhile as the rapid development and diversification of the AMCs' business proceeds, legislative constraints have become a bottleneck for further market exploration, since current legislation does not permit AMCs to take deposits, and this to some extent ties AMC's hands and leaves little scope for their management.

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[76] ibid

8.5 Conclusion

To summarize the main point of the chapter, we have demonstrated that policy loans and the inefficient credit allocation accumulated a large amount of NPLs in the Chinese banking system and the opaque accounting standards and information publishing mechanism make the exact figure inaccessible. However, both the government and researchers have been convinced that the NPL ratio is high and as a result four AMCs were established in the late 1990s.

With the government sponsorship, four AMCs purchased the NPLs from the four parent SOBs and tried to dispose of them through enforced bankruptcy, debt-equity swap, trade in the capital market, and so on. Meanwhile, however, some problems appeared during the NPL disposal process, such as lack of capital, moral hazard caused by the state-owned nature of enterprises, banks and AMCs, and lack of expertise in restructuring SOEs.

With regard to these problems, we have examined the NPL disposal experience in the US, Hungary and Japan, whose experience may provide useful insights for China. For instance, at the beginning stages, financial and legislative support from the government is crucial in initiating the NPL disposal process. Afterwards, proper pricing of the NPLs in purchase and sale guarantees the market stability, while negotiation helps moderate the conflicts among the government, banks, AMCs and investors.

Furthermore, different from the temporary role of AMCs in the US, in China, it is not easy for AMCs to dispose of the NPLs quickly in the capital market. Therefore, the restructuring of AMCs to investment banks integrated in the universal banking system, is an important way to dispose of NPLs in a longer

period with less loss. Additionally, attracting foreign competition in the financial market helps SOB reform and the involvement of foreign investors in the AMCs' management helps limit the transfer of new NPLs from SOBs. Limiting NPLs in the future is partly a matter of clearing the relationship between government, SOEs and SOBs. However, it is also a matter of developing efficient risk-assessment procedure for loans to private companies.

In the next chapter, two case studies will be given to show the exact credit practice in ICBC and the banks in a particular medium-sized city. Through the two case studies we will see how credit policy is made in a SOB's head office and practiced in the local branches. We can also horizontally examine the various methods of credit risk assessment and NPL recovery of the banks in the medium-sized city, and justify the importance of qualitative methods in credit practice.

Chapter 9   Case Studies

In Chapters 6 and 7 we discussed both quantitative and qualitative methods in the credit risk assessment in the Western and Chinese banks. We also examined the NPL disposal in current China with reference to the experience in the US, Hungary and Japan in Chapter 8. Bearing this general information in mind we will look at two case studies in this chapter.

Case study (I) focuses on Industrial and Commercial Bank of China (ICBC), the largest state-owned commercial bank in China, with a vertical view including policy making, policy execution, internal monitor, and the practice in local branches. The purpose of this case study is to find out how the credit policy is made in ICBC's head office, how it is practiced in local branches and whether there is any inconsistency between these two.

Case study (II) focuses on a banking system in a medium-sized city (City A) in north China. City A is taken as a small economy and the credit risk management through different banks is analyzed with the regional characteristics taken into account. The purpose of this case study is to horizontally examine the various methods of credit risk assessment within City A's banking system and justify the importance of qualitative methods in credit practice.

Due to the nature of evidence and lack of academic literature, my research findings largely rely on the interview data, which have their limitations in terms of generalizability. However, they, to some extent, reflect the current situation and thus may shed some light on the practicalities in China.

9.1　Case study (I) – credit risk management in ICBC, the largest state-owned commercial bank in China

ICBC very kindly agreed to provide information on how a major state-owned commercial bank in China actually manages its credit risk[77].

1.　General profile of ICBC

The Industrial and Commercial Bank of China Limited (ICBC) is a leading financial institution in China with an outstanding customer base and multi-dimensional business structure. In 2005 ICBC successfully completed financial structuring and international audit and officially transformed from a state-owned commercial bank into a share-holding company and renamed as Industrial and Commercial Bank of China Limited. The new entity has a registered capital of RMB248 billion and 248 billion shares. The MOF and Central SAFE Investments Limited are its two shareholders, each holding 124 billion shares respectively[78].

Through financial restructuring, ICBC has substantially improved its asset quality such that by the end of 2005, ICBC's net assets was RMB311.844 billion, net weighted venture capital were RMB3,152.206 billion, core capital adequacy ratio was 8.11%, and the capital adequacy ratio was 9.89%[79]. In 2006, ICBC was awarded by *The Banker* as the "Best Emerging Markets Bank" based on its good performance in 2006, which was granted to a Chinese bank for the first time, and ICBC was also picked for the title "Best Bank of China" for the fifth year.

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[77] For confidentiality reason, the names of the contacts in ICBC are disguised.
[78] ICBC website:
http://www.icbc.com.cn/e_about/index.jsp?column=About%2BUs%3EBrief%2BIntroduction
[79] ibid

2. ICBC's general policy in credit risk management

ICBC was established to satisfy the financial demand of state-owned industrial and commercial enterprises in urban areas. During the reform period, besides the existing business, ICBC tried to explore their market share and enter other sectors, such as foreign trade and financial derivatives. Through over 30 years of business with industrial and commercial areas, ICBC has accumulated plenty of information and experience, which let them enjoy the advantage in the development of industry and commerce. Historically ICBC's perception of credit risk originated from the business with SOEs and developed with the rapidly expanding private and joint stock enterprises.

In ICBC's official document, *Handbook of Credit Management (2002)*, it can be found that the general principle in ICBC's credit risk management is to pursue *security*, *liquidity* and *profitability*. Unlike following instruction from the government to facilitate planning as before, maximizing profit has been regarded as the main target of ICBC's operation and written in the official document. Considering the principle of maximizing profit and minimizing risk, ICBC compiled a handbook containing all the regulations and procedure, and distributed the copies to all the branches and expect credit officers to follow it.

In general, ICBC takes on enterprises registered by Bureau of Industry and Commerce and the natural persons with PRC nationality, who have full capability for civil conduct as the targeted customers. Some basic requirements for borrowers are listed below:

1. The borrower should have the ability to repay principal and interest in time

2. Besides the requirement of proper citizenship, the borrowers should have passed the annual examination by the administrative institution of industry and commerce.

3. The borrower should have a current or saving account in ICBC

4. The borrower should have a satisfactory ratio of debts to assets.

Besides the basic requirements, ICBC's procedures also pay attention to the personal quality of the entrepreneur, such as whether he takes drugs, gambles[80], has a non-married lover or has other bad habits. This information was found in the internal document and confirmed by the ICBC staff. The credit officer in ICBC's head office interviewed in I1 said, "We apply both qualitative and quantitative methods on credit ratings. Qualitative analysis includes ownership background, financial status, history, even leader's quality etc." The particular interest in the entrepreneur's personal habits appeared through their experience. It is a common phenomenon that China's enterprises lack complete internal financial regulations or these regulations are not properly followed. The direct consequence is that the head of the enterprise could use his power to abuse the capital and this usually leads to a default on the bank loans. Banks subjectively build a correlation between entrepreneurs' habits and default on loans. They assume the entrepreneur's personal habits could reflect his nature and this could be used as a signal to estimate risk.

Although the effectiveness of this method is doubtful, it has been presumed by the policy makers in ICBC to be able to reflect a borrower's default risk. The problem is that, through the contacts with Western world, Chinese people gradually realize the necessity of protecting privacy and respecting

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[80] Gambling rather than the state form lottery is illegal in mainland China.

people's life style. Therefore, it becomes more and more difficult to collect this kind of private information legally.

At firm level, associate guarantee and mutual guarantee are not welcomed, especially for family enterprises where the main heads have a close blood relationship. Whether the entrepreneur has a foreign passport or a foreign permanent residence is also taken into account, especially for enterprises with frequent cross-boundary capital flows. This term has been taken into account since the large amount of capital outflow in the late 1980s and 1990s. Banks are required to monitor loans carefully in case they are transferred abroad. A few fraud cases in the 1990s and early 2000s led to more careful examination of capital flow.

However, besides the consideration of privacy, it is becoming very costly and difficult to monitor these in a global integrated market. After the 1980s, more and more foreign companies opened their branches in China and the number of joint-stock companies increased rapidly. The development of international trade greatly increases the cost of monitoring.

Besides the general requirement for all borrowers, ICBC also has favourable lending policies for the borrowers with low risk, which has some main requirements as below:

1. full amount collateral of domestic or foreign currency deposits,

2. paid 100% caution money[81]

3. use bills, drafts and bonds issued by SOBs and other joint-stock commercial banks as collateral

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[81] It is an amount of deposit a borrower has to pay to the banks to secure the loans. This deposit is redeemable when the borrowers meet the contract terms satisfactorily.

4. the enterprises' credit ratings in Moody's and Stand and Poor's are A and over (A1, A2 and A3 in Moody's and A+, A, A- in Stand and Poor's).

5. Ranking top 500 in *The Fortune* magazine

For the borrower who meets one or some of the above requirements, ICBC could lift the restrictions on ceiling credit allowance according to the collateral. Because of the frequent bill fraud cases, ICBC developed multiple methods to guarantee the authority of the bills submitted by borrowers.

According to the interview with a head of the credit department in ICBC's head office, ICBC is trying to be fair and open to all kinds of borrowers instead of the old system which had a strong preference for SOEs that "the principle to SOEs loans is trying to be based on commercial consideration" (see I1 in Appendix1.2). With this instruction, innovative methods are applied to screen borrowers, among which quantitative methods are becoming popular with credit policy makers.

3. Quantitative methods in use

Credit rating is an important tool to help manage credit and currently S&P's rating system is applied in ICBC. The customers with the rating of A and above are the basic customers. The customers with the rating of AA are the main marketing target customers, and the loans to them are expected to increase at a rate around 3% to 5%. The loans to the customers with rating of A- should be controlled and for the customers with the rating BBB and below should be gradually reduced. ICBC also require credit officers to clear the lending

relationship to the customers with the rating of BB and below. The loans to the new customers who do not have credit ratings should be reported to the level-one branches[82] for examination. This kind of rule could be found in an internal bank handbook on credit risk management.

According to I1, quantitative models used in ICBC are usually based on the past 3 to 5 year's data. The head office is encouraging branches to use quantitative models more to control credit risk and "Now quantitative methods are more and more preferred. All borrowers are required to pass quantitative assessment" (see I1 in Appendix1.2).

However, the interview with a vice-president in one of ICBC's local branches shows that quantitative models are not quite welcomed in their credit issuing process. Although the head office distributed the handbook to local branches, the local credit officers do not closely follow the guidance in the handbook. Only a few local enterprises have credit ratings and for most cases, banks need to hire experts to assess risk based on the documents submitted by the borrowers and the local administrative agencies. The interviewee in I2 emphasised the dominant role of the expert system in their credit risk assessment and the importance of experience in decision-making. He further elucidated the composition of experience that "Experience consists of the judgment of government's policy changes, judgment of macroeconomic information, judgment of the particular customer, and the integration of these three things. Experience is very helpful in scrutinizing these details".

Through the contradiction between the two interviews, we could find that although ICBC's head office is trying to apply quantitative methods in assessing

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[82] Usually the level-one branches are provincial branches.

credit risk, in lower branches, subjective methods still dominate decision-making. Because of the characteristics in the transitional period, there are too many subjective factors needed to be taken into account and these factors are impossible to be quantified.

4. Government intervention in ICBC's credit business

As discussed in Section 7.4, government intervention is the most striking problem which undermines Chinese banks' performance perceived by the interviewees.

In the documents distributed by ICBC's head office, preference for SOEs is hard to find and policies are made according to market and economic factors. However, the concerns of government intervention could be seen in my two interviews with ICBC's staff. ICBC used to be a specialized bank in the industrial and commercial sector and this gave it more advantage and information in the booming trade and industrial development. The communication between ICBC and the SOEs not only let the former enjoy the informational advantage but also let the latter generate over-reliance on the former as a main financial source. With the SOEs restructuring, it is difficult for ICBC to withdraw from the business with SOEs although the latter are not profitable anymore. Compared with other SOBs, it is unavoidable for ICBC to take more pressure from the government.

5. Summary

This case study on ICBC shows a representative SOB's working mechanism on credit management during a transitional period. On the one hand, ICBC is trying

to introduce Western banks' market based mechanism where "pursuing profitability guides the practice"; on the other hand they have to consider some special characteristics in transition economies, such as a recently opened country with an imperfect legal system and regular government intervention.

The inconsistent attitudes to applying quantitative methods in credit risk management between the head office and the local branches show the limitation of quantitative models in transitional economies where inconsistent data chain let traditional subjective methods dominate the decision-making in issuing loans.

9.2 Case study (II) – credit risk control in the banking system of a medium-sized city (City A) in north China

This case study was based on the three interviews in the summer of 2005 and nine local banks and financial institutions' reports of the first-three months in 2006, including Industrial and Commercial Bank of China (ICBC), Agricultural Bank of China (ABC), Bank of China (BOC), China Construction Bank (CCB), City A Commercial Bank (CACB), Agricultural Development Bank of China (ADBC) and Rural Credit Cooperative (RCC). The local branch of China Bank Regulatory Committee (CBRC) very kindly provided information on the institutions within the banking system of City A, especially the information about risk control. They also helped me arrange interviews.

1. Overview of City A and its banking system:

City A is a medium-sized city in north China. The population of City A's district including eight counties (xian) is around 4 million, and the city region covers around 40,000 square kilometres. Its main economic lifeline is energy including coal, water, and various mines. Agriculture is also an important sector. There are around 90 large and medium size enterprises which composing a complete industrial system. The city was opened to foreign investor in 1995 by the permission of China's State Council.

City A's banking system is composed of the big four state owned commercial banks (ICBC, ABC, BOC and CCB), a joint stock commercial bank (CACB), a policy bank (ADBC) and a rural credit cooperative (RCC). The general situation could be seen from Table 9.2.1.

Table 9.2.1   General situation of the banks in City A

	Total assets (RMB bn)	Growth rate p.a	Total debts (RMB bn)	Growth rate p.a	Branches	Staff
ICBC	13.456	8.80%	13.481	6.90%	66	1512
ABC	7.03	11.90%	7.89	11.44%	n/a.	1361
BOC	8.646	14.08%	8.556	15.34%	48	721
CCB	8.479	21.12%	8.449	50.28%	38	911
CACB	4.284	36.39%	4.178	37.43%	32	608
ADBC	1.96	13.29%	1.89	10.53%	15	331
RCC	20.564	3.18%	19.821	4.61%	434	2395

Source: calculated from the annual reports of the banks in 2006

Figure 9.2.1 Distribution of Total Assets (RMB bn) in the banks of City A
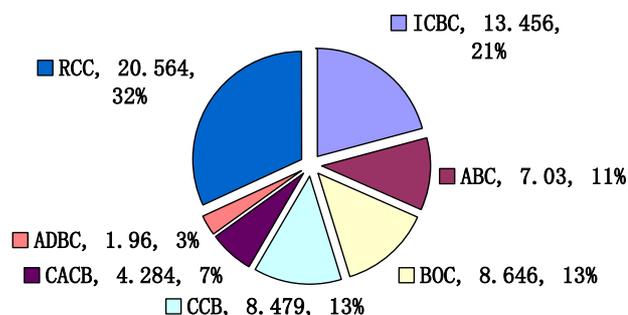
Source: calculated from the annual reports of the banks in 2006

It can be found from Figure 9.2.1 that most of City A's financial resources are in the big four SOBs and the RCC. As a central city in a large rural area where agriculture is the traditional main economic sector, the RCC here plays a more important role in finance than the RCCs in large cities.

2. Credit business and credit risk assessment in RCC

Geographic mobility of financial institutions in rural China was highly restricted until the late 1980s, with regulated RCCs dominating local markets for deposits and loans to rural households and enterprises (Park *et al*., 2003). As City A is located in a mountainous region, the transport system is less developed than other areas. The rural area's financial structure has not been changed through the 1990s. RCC is the most preferred or the only possible external source for rural borrowers to get financed. Additionally, ABC branches do not reach many townships and

they lend significant amounts to state agricultural marketing companies. Although the total assets of City A's RCC is the highest of all the financial institutions, its capital has been scattered by the over 400 branches and it is only able to finance household and local TVEs (Township and Village Enterprises). The larger amount of financial demand has to look for help in ICBC and other SOBs. As a result, RCC could enjoy a monopoly over deposits and lending in rural areas.

Furthermore, the nature of RCC's credit business lets it enjoy better information and less risk. As discussed in Chapter 2, because the issue and repayment of credit loans do not happen simultaneously, banks have to make a decision on loan applicants' risk types before granting loans. At this time, the degree of uncertainty determines the interest and potential default risk. In the rural area of City A, the RCC's branches could reach the village where the borrower lives and the enterprises located. The traditional "gossip" mechanism discussed in Section 7.5 works very well to let RCC know the nature of both the borrower and his business which needs to be financed. Besides the convenience, the regular businesses with households and TVEs help build conventional knowledge for this financial channel which greatly decreases the uncertainty.

RCC's growth has its own disadvantage in that it heavily relies on the rural area's agriculture and mining. This develops not as fast as private enterprise in the city and agriculture heavily relies on the climate. We can see the growth rate of its total assets is the lowest, only 3.18% in Table 9.2.1.

Figure 9.2.2   Bank Employment Distribution in City A
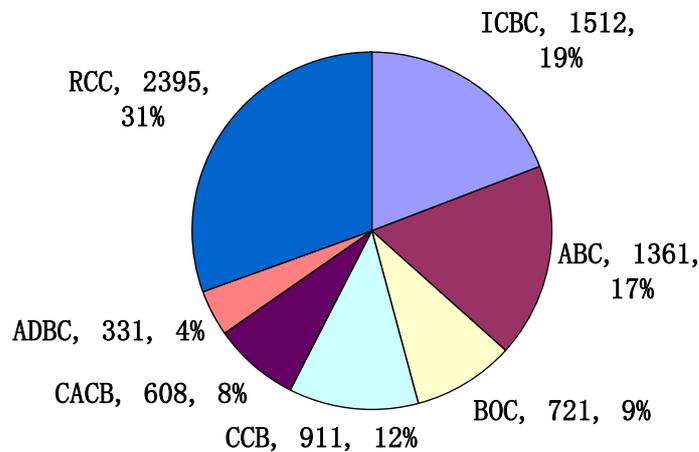
Source: calculated from the annual reports of the banks in 2006

And concerning human resources, these five banks have employed most of the banking staff, about one third in RCC and 60% in the rest four SOBs (see exact figures in the Figure 9.2.2). This picture is similar to the banking structure in the planning period where state-owned agencies controlled most of the resources. Although the market share of CACB, the joint stock bank in City A, is much smaller than the RCC and SOBs, its development in the last 10 years is much faster than the SOEs. This is confirmed by the interviewees and the Figure 9.2.3 provides quantitative evidence.

3.   Development of CACB

From Figure 9.2.3, it can be found that City A Commercial Bank (CACB) developed rapidly in the last year. The growth rate of its total assets is 36.39%,

which is the highest of all the banks in City A. Compared with SOBs, as a joint-stock bank, CACB's credit issuing process is much simpler. Unlike the other SOBs that have to submit large corporate loans to higher branches up to the head office, CACB is responsible to the local government with the aim to finance local investment. The authorised maximum loan in branches is RMB100 thousand and the larger loans should be reported to the head office which is located in City A. CACB have totally autonomy to allocate their capital. The fewer tiers of bureaucracy make the examining process of credit loans much more efficient.

Figure 9.2.3   Growth Rate of Total Assets in the banks of City A
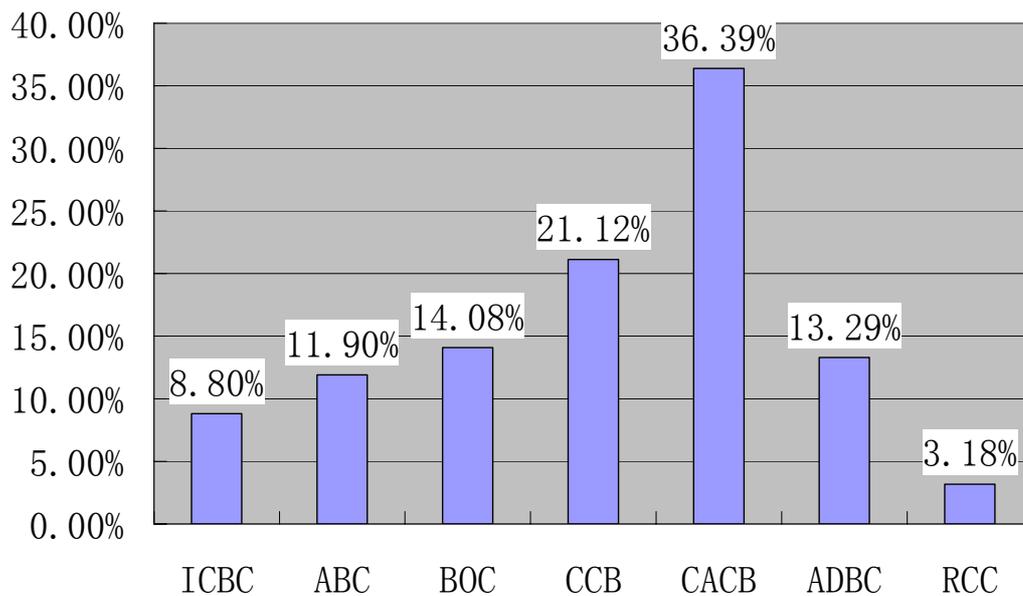
Source: calculated from the annual reports of the banks in 2006

On the other hand their qualitative methods are more efficient than the SOBs'. As discussed in Chapters 2 and 7, the transmission and quality of information has a strong influence on the estimation of credit risk. As CACB mainly deal with local finance, it is much easier for them to examine local

enterprises' credit record, business nature, and market situation etc., through the accumulation of "gossip" (see Section 7.5) and onsite surveys. The CACB interviewee mentioned the importance of experience in their credit management that "(experience is) very important especially in examining credit applications. Experience help us differentiate information, and find details and extra information between the lines". Compared with the SOBs, the business nature and working environment make CACB enjoy better information and lower risk.

CABC's advantage could also be seen from deposit growth and rate of NPLs. In Table 9.2.2 it can be found that the growth rate of CACB's deposit is the highest of all the banks' which is 20.64% and its NPL rate is one of the lowest which is 10.41%.

4. NPL distribution in City A's banking system

From the China Banking Regulatory Commission (CBRC)'s report we can find that the NPLs mainly stay in the ICBC, ABC, ADBC and RCC. See the distribution of NPLs in City A in Table 9.1.1 and Figure 9.2.4.

Table 9.2.2   General information about deposits and NPLs in the banks of City A

	Total deposits (RMB bn)	Growth rate[83]	Total loans (RMB bn)	Growth rate	NPLs amount (RMB bn)	NPLs/Total loans
ICBC	11.781	1.04%	5.806	-33.30%	1.29509	22.31%
ABC	7.62488	9.25%	5.27407	4.71%	2.74949	52.13%
BOC	7.4414	-2.75%	5.47372	17.10%	0.26333	4.81%
CCB	8.397	n/a	5.239	n/a	0.26603	5.08%
CACB	4.12736	20.64%	2.58657	18.18%	0.26918	10.41%
ADBC	0.34262	n/a	1.8172	n/a	1.24438	68.48%
RCC	13.805	0.43%	9.135	-1.47%	1.313	14.38%

Source: calculated from the annual reports of the banks in 2006

Figure 9.2.4   Total Loans and NPLs in the banks of City A (RMB billion yuan)
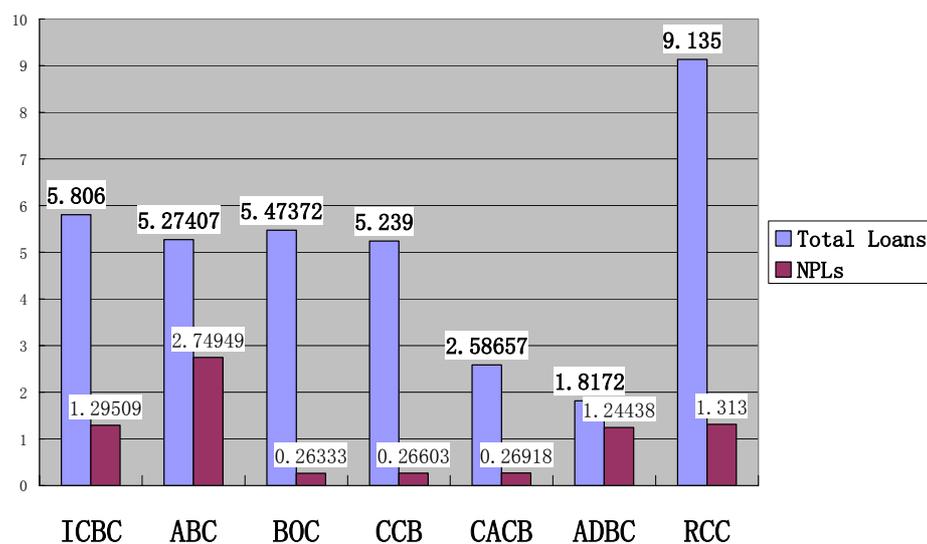
Source: calculated from the annual reports of the banks in 2006

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[83] The growth rate is compared with the figure at the same time of 2005

From Figure 9.2.4 we can find that the RCC issued the most loans and most of them are used to finance the rural household and TVEs. Because of the nature of its business, it could keep a relatively low NPL rate at 14.38%.

BOC kept the lowest NPL rate. Most of BOC's loans were given to the power, highway, manufacturing and pharmacy sectors. In the old system before transition, BOC was mainly targeted to finance foreign trade. Therefore, BOC does not have the compulsory burden of SOEs finance and it also does not have to finance poor agriculture. Without these considerations, BOC has more flexibility to choose customers, which lets them enjoy the privilege over other SOBs.

As in the area where agriculture is the main factor, the NPLs of ABC and ADBC are large and the NPL rates are 52.13% and 68.48% respectively. ABC is assumed to mainly finance agriculture. Its NPLs were caused by the policy loans in the past and concentrated on the system of supplying and marketing, TVEs, and the grain system. Aim-the-poor loans oriented by the government narrowed the banks' flexibility of choosing customers and this also led to a large amount of NPLs. After several years of NPL collection, the easy parts have been collected with the hard parts left. The debt collectors described their work as "break the bones to withdraw the marrow". ADBC is a policy bank established in 1994 which is supposedly responsible for non-commercially oriented loans to agricultural sector. It started to take over the agricultural policy loans from ABC and ICBC from its establishment. The NPLs in ADBC are more regarded as subsidy to agriculture sector in CBRC's documents.

ICBC is another bank with a large amount of NPLs, which were mainly caused by the previous loans to SOEs, such as the local beer company and pharmacy company. These SOEs kept consuming most of the ICBC's corporate

loans, although the situation has begun to change after reform. Concerning the collection of NPLs, in the first season of 2006, ICBC collected RMB80.34 million: cash 15.04 million, cancelling (off set) 57.61 million, transferred by other method 7.68 million. We could find that only 18.7% of the collected NPLs are in cash and most of them (71.7%) are cancelled out from the balance sheet. This NPLs collecting situation could not help improve bank's capital power.

5. Summary

Case study (II) shows a picture of a banking system in a medium size city with a large rural area. The volume of loans in the rural area is not big where households and TVEs are targeted as the main customer group. The traditional channel of "gossip" helps banks collection borrowers' credit information and the business environment helps reduce the credit risk. Few banks in City A use quantitative methods often and the credit officers prefer to use the traditional expert system since they cannot use the quantitative models with lack of data and the variety in borrowers make it difficult to use a uniform method to predict risk.

In City A, the loss caused by policy loans undermined the profitability of the banking system dominated by SOBs. Besides ADBC, a policy bank, other SOBs are also under the pressure from local government and they have to allocate loans to unprofitable SOEs.

9.3 Conclusion

In this chapter we studied two cases, one focusing on ICBC with a vertical view and the other on the banking system in a medium-sized city (City A) in north China with a horizontal view. We have found that although the high officials in the Chinese banks try to introduce Western banks' market-based mechanism in credit allocation and advocate the application of quantitative methods imported from Western banks, they have to consider the characteristics of transition economies, such as lack of a stable data chain, a recently opened country with an imperfect legal system, regular government intervention and so on.

The inconsistent attitudes to applying quantitative methods in credit risk management between high officials and local branches imply the limitation of quantitative models in transitional economies. In addition, the traditional channel of "gossip" still helps banks greatly in collecting borrowers' credit information, especially in rural areas. The argument developed in Chapter 7 is confirmed that, with the accumulation of data and the improvement of techniques, quantitative models will play a more important role in small-amount corporate loans and personal loans, while for large-amount loans and unique projects, banks still prefer traditional expert systems since there is always some individual information which cannot be accommodated in the quantitative models.

Chapter 10   Conclusion

The principle purpose of the present study is to explore the issue of assessing credit risk in Chinese banks through the discussion of Soft Budget Constraint (SBC) and the universal nature of uncertainty for risk assessment. The study is especially interested in suggesting some effective mechanisms for the practice of credit officers in Chinese banks to properly manage the risk. We have taken a different approach to other studies, focusing on the source of uncertainty in a transitional environment, and its implication for risk assessment. In this study, novel material is developed, e.g. on Chinese banking history, and new evidence based on interviews.

Using the Post Keynesian approach, this study investigated credit risk management in Western and Chinese banking through publications and interviews with both Chinese and British bankers. The theories and practice of modern credit risk models are also examined. We wanted to show the dominant role of qualitative methods in assessing credit risk in banking. Taking Chinese banking as a case study, we also wanted to explain the evolutionary development of the Chinese banking and credit risk management, especially the credit practice in the transition from a planned economy to a market economy. Below we will briefly summarize the main findings and the conclusion of the study.

We started the discussion with the relationship between financial development and economic growth, which suggests a very important influence of the former on the latter. Investment is the key to generating economic growth and banking, a traditional main financial source, to a great extent fuels investment especially for emerging countries including China, although in some other

countries, such as the US, it is also importance to obtain finance through the capital market.

As major financial institutions, banks can operate as financial intermediaries, collecting and dispersing capital as NBFIs do, and enjoy informational economies of scope, which allow them to pool different liquidity preferences so that they can borrow short and lend long. On the other hand, when we talk about the importance of banks, it is necessary to relate banks to their unique function - financing investment by credit creation on the basis of deposits being used as money. It means banks can attract surpluses by issuing their own debts, which pays interest or a return in some other form, for lending to deficit units at a charge. The intermediary is motivated by seeking profits as the difference between what is paid to savers and charged to borrowers. In another word, banks can create credit and finance investment before savings because their liability is used as money.

This proposition is based on an important argument in the Post Keynesian approach that money is non-neutral. In mainstream economics, money is neutral, in that it is just applied to the real economic model to see the effects on nominal variables. Therefore, money has been treated as a veil which does not directly generate growth, and banks only have an ancillary role while the impetus for economic growth is generated in the real economy. The neutrality of money is partly based on the idea that investment is financed by one's own or others' previous savings.

However, we have shown that the view of money in the Post Keynesian approach starts with the examination of the money's nature. In the pre-banking time, money was confined to commodity money, such as gold and silver coins. At

this stage, it was impossible to finance investment ahead of savings. Consequently, it has been found in economic history that money and interest are developed at the same time and money not only operates as a medium of exchange but also acts as a unit of account to provide a measure of wealth. Meanwhile, with the accumulation of experience, banks establish confidence among depositors that a proportion of the deposits created as a by-product of these loans will return as new deposits. Then banks could increase credit by a multiple of new deposits. Thus the money will keep circulating between current accounts. This high rate of redeposit enables banks to create loans with less worry about losing reserves, and furthermore banks can hold even less reserves when central bank supplies reserves as demand to maintain confidence in banks.

Therefore, in this sense the Post Keynesians take the money supply to be endogenous. Banks would issue more loans if they feel optimistic about the economy, and apply severe credit examination if they feel pessimistic about the economy. Bankers' expectation of the future is greatly influenced by the uncertainty in their perception.

The term uncertainty is introduced to mean unquantifiable risk while risk is reserved to mean quantifiable risk. The subjective perception of uncertainty determines liquidity preference and banks' credit policy. According to the former experience, only very limited social events are repeatable that we can calculate the probability through frequency distribution. But it is impossible to form such a frequency distribution if we take uncertainty into account. It is impossible to obtain the frequency distribution as well as calculate the possibility. Under the situation with uncertainty, people have to make decisions based on whatever knowledge they have. Post Keynesians use the term "knowledge" to describe the

understanding of the past activities and information on facts is a subset of knowledge. The range of potential knowledge is not known in advance or even in retrospect. Therefore, it is absolutely impossible to form a frequency distribution to calculate the probability in order to obtain relatively precise prediction. This could be understood in another way that the future is not like the past in ways which cannot possibly by predicted.

We have shown that if we take the view that there is uncertainty attached to credit risk assessment, whenever we carry out an act with future consequences, it is always the case that we have to take decisions without precise knowledge of these consequences. It is also impossible to forecast or estimate them accurately. Therefore, we can say that the lack of information (or knowledge) is one of the important sources of uncertainty and this makes it impossible for agents to have resource to the probabilities themselves.

However, in mainstream economics, full information is assumed to be obtainable and the mainstream economists treat the credit risk problem as a principle-agent problem where asymmetric information between lenders and borrowers is the cause of inability to assess risk. In their approach credit-rationing is the optimal choice for banks.

Credit rationing is the situation where the credit market does not clear that there is excess demand at the going rate of interest. Rather than raising interest rates to clear the market when the demand for credit rises, or when rising bank costs push the supply curve up, banks must allow some demand to be unsatisfied, either quantitative rationing or type rationing. Because if banks were to raise interest rates, lower-risk, lower-return borrowers would drop out of the market, leaving the banks with a higher-risk portfolio (adverse selection); or borrowers

may continue to borrow at higher rates, but switch activity from lower-risk, lower-return projects (moral hazard).

In the mainstream approach, because the borrowers hide their risk types, banks have to ration credit to protect them. However, as we just argued uncertainty is universal and neither the borrower nor the lender can precisely predict the future of the project to be financed, which means due to uncertainty the credit risk assessment can never be perfect. In the case of great difficulty in getting information, it is attempted to deal with information more in terms of the concepts of uncertainty and convention than in terms of precision. Conventions are closely determined by history. In this study we have examined the Chinese banking history from when the modern banks appeared in China in the late 1890s, taking an evolutionary view.

In the examination of the Chinese banking history before the communist period, we have found that the appearance of modern Chinese banks was driven by the credit demand of industrialization in late 19th century and the quick economic growth from 1927 to 1937 generated the 10-year golden age of the Chinese modern banking. During this period the modern Chinese banks not only achieved a quantitative expansion but also improved qualitatively. In 1935, the National government initiated the reorganization of the CBC to make it the only central institution to hold the reserves of the banking system, acting as a depository of all public funds, and providing centralized rediscount facilities. Chinese banking evolved to the fourth stage in Chick's (1992, 1993) seven-stage model of banking evolution that the central bank appeared as the "lender of last sort facility". This is the situation to which the system returned in the 1980s.

Concerning the methods of credit risk assessment, we have shown that in the piaohao and qianzhuang in the old Chinese financial system, loans were made on the basis of mutual trust, such that a borrower with good reputation could obtain loans without any material guaranty and enjoy low interest rates. The efficiency of credit management based on mutual trust is not compatible with the modern economy and the modern Chinese banks have discarded the old management style and changed the basis of their loans from personal credit to material collateral. This method has also been used through the transition to the present. Currently, according to the evidence we have found, collateral is a necessary part for almost all the loans made by Chinese banks and the valuation of collateral has been a very complicated challenge for the banks,

From 1949 when the Communists took power from the Nationalists, to 1978, the start of China's transition, Chinese banking was integrated in the planning system to allocate capital to facilitate planning. Within this period, we have shown that money did not play a central role in the economy and credit was also allocated by order from the central planning committee. In this sense, the methods used to assess credit risk became unnecessary and the convention of credit risk management was broken. The problem of the SBC took place in the planning period, such that the SOEs are not allowed to go bankrupt while they keep suffering losses and they are bailed out with financial subsidies or other instruments. It is understandable and reasonable if this kind of bailout is confined to the ex post cases. However, if the managers of SOEs have the expectation that their enterprises will be bailed out in a crisis, there would be a distortion on their ex ante decision-making that they might be careless when they choose investment.

The low efficiency caused by SBC is exposed in the transitional period that most of the subsidies to SOEs, which used to go through the MOF, changed to go through the banking system. Following the order from government, the SOBs had to make loans to the SOEs on a non-commercial consideration. Therefore, as a consequence, a large number of NPLs accumulated in the banking system. The SOBs were not quite responsible for this kind of NPL.

However, with the growth of the private sector in the transition, the SOBs have to make loans to private enterprises or joint-stock enterprises. Due to lack of experience of dealing with credit risk, during the early transitional period, banks cannot properly manage credit risk and this partly contributed to the large amount of NPLs accumulated. Under this situation, Western models have been introduced into the credit practice in Chinese banking. As we previously argued, these Western models based on quantitative research on past data do not take uncertainty into account and they always have particular requirements for data. Additionally, the passage of time, particularly during a period of structural change, continuously makes evidence from the past irrelevant to the formation of rational business expectations in the present. Therefore, as we have seen in the interviews that in practice credit officers' experience is more helpful than any other quantitative methods, although this experience does not mean banks can have access to 'true' risk which is unattainable. Credit officers are always needed to make judgments based on conventional knowledge and intuition. The conventional judgment is inherited from the former manager and the intuition is hard to tell and transmit. Banks have a comparative advantage of knowledge in the credit market and they have various confidence based on knowledge and convention. According to the evidence we found, when bank branches deal with

local borrowers' loan application, they can always obtain useful credit information through informal channels, such as gossip. And this information is more helpful than the official documents.

Qualitative methods work better than quantitative methods, but quantitative models are still useful in credit risk assessment. Firstly, quantitative models could to some extent give an estimation of the borrower's default risk and the use of these models could greatly reduce the time and the banks' cost in credit assessing process. Secondly, quantitative methods improve the transparency of credit management which helps reduce fraud and allocate responsibility. Thirdly, in the long run, with the development of data collection, information publishing, and the improvement of techniques, banks could rely on quantitative models to screen borrowers. Finally, it is the strategic importance of the trade-off between the need to keep control of risk and the role of credit expansion for banks' market share. In personal loans, SME loans and a small amount of credit loans, quantitative methods can help improve efficiency in terms of staff time.

As well as improving the efficiency in assessing credit risk, we also need to consider the dealing with the existing NPLs. After examining experience in some other counties, we analyzed the AMC method adopted by Chinese banking reformers. Four AMCs were established to manage and dispose of the NPLs acquired from four SOBs, which were directly funded by China's MOF. The NPLs from the four SOBs were transferred to the AMCs at a discount of the face value. They were transferred at current book value rather than the valuations set by reference to the market, which means that there might be large losses incurred when the AMCs eventually divest the assets

The founding of these four AMCs is an important measure to dispose of SOBs' NPLs based on law, and is of great significance to take precautions against and dissolve financial risks, and enable SOBs to move forward with fewer burdens. AMCs have been fully engaged in debt recourse, asset leasing, transfer, and restructuring, debt-equity swap and temporary equity holding, sponsoring for listing within the scope of asset management and underwriting relevant bonds or stocks, financial and legal advisory services, asset and project evaluation. Rather than acting as a temporary financial institution only for recovering NPLs in the US case, we suggest a prospective development that is to develop AMCs into investment banks. Legislative constraint is a problem for the development of AMCs, as current legislation doe not permit AMCs to take deposit.

By the end of the thesis we studied two cases, one focusing on Industrial and Commercial Bank of China (ICBC), the largest state-owned commercial bank in China, with a vertical view including policy making in the head office, policy execution, internal monitor, and the practice in local branches; another focusing on a banking system in a medium-sized city (City A) in north China, and horizontally examine the various methods of credit risk assessment within City A's banking system and justify the importance of qualitative methods in credit practice.

We have found the supportive evidence that although the high credit officials in the head office try to introduce a market-based mechanism in credit allocation and advocate the application of quantitative methods, the credit officers in local branches still prefer to rely on traditional systems to assess risk. The evidence confirmed that the traditional channel of "gossip" still helps banks greatly in collecting borrowers' credit information, especially in rural areas.

Furthermore, the banks have to take into account the characteristics of transition economies, such as lack of a stable data chain, a recently opened country with an imperfect legal system, regular government intervention and so on.

Limitation of the study and implications for further research

One of the main shortcomings of this study was that it concentrated only on the domestic banks in China and the UK banks' business in the UK. This means that a number of interesting and important issues in the credit practice in the foreign banks' branches in China could not be discussed here. This especially refers to the adaptation of foreign banks' techniques and experience in Chinese context, such as how they modify their procedure to fit Chinese customers, how they collect data to built quantitative models, how they use experience, how they manage human resources regarding foreign and domestic employees. Since after China fully opened its financial market from 2006, more and more international banks will enter China and they all will face the difficulty of different credit culture and business with huge geographic features and thus studying these issues will hopefully be our next challenge.

Now as far as the implications are concerned, by emphasising the role and importance of qualitative methods in assessing credit risk, this research shows that instead of relying on publications, interviews help us understand people' perception of credit and banks more thoroughly, and read and interpret the publications between the lines to a better depth. In this sense, this qualitative method of analysis might be used in further studies to examine the evolution of

the Chinese banking and the credit risk assessing methods in a fully opened

Chinese economy.

Appendices

Appendix 1A   Interview Transcripts 1 (I1, English)

Corporate loan interview with a head of credit department of ICBC head office

(1pm-2pm, Aug, 2005, with an officer in Credit department of ICBC in the lounge of head office of ICBC)

Q: How do you categorize enterprise borrowers?

A: We categorize corporate borrowers mainly according to (1) their ownership background, state-owned and non-state-owned; (2) which sector they are in, promising sector or declining sector; and (3) which area they are located in, mainly considering the situation of the area's economic growth. The government has corresponding policies for particular areas. In addition their credit rating is also taken into account.

We apply both qualitative and quantitative methods on credit ratings. Qualitative analysis includes ownership background, financial status, history, even leader's quality etc. quantitative analysis concentrates on capital. We are using Standard & Poor's rating system. Concerning the information in the past 3 years, ordered from high to low: 3A, 2A+, 2A etc. We don't have levels higher than 3A+.

Considering economic growth and government's requirement, we also encourage SMEs loans. In this part, higher profit coexists with problems, mainly because of the local branches' poor execution of rules and regulations, and also fraud bills. Generally, the benefit is more than loss in SMEs loans.

Q: How do you categorize loan volume?

A: We don't have clear categories of credit amount. Any amount is allowed. This involves the authorization problem. A basic regulation is that the amount authorized cannot exceed 10% of borrower's total capital. The authorization of credit to SMEs is controlled by secondary branches, with a principle called "one authorization per loan", in order to make sure that every loan issued is based on the latest information. The amount of authorization power to local branches is measured according to branches' annual performance, market status, sector and regional characteristics etc.

Q: What are the attitudinal differences to different categories?

A: Generally, we encourage loans to SMEs, but restrict assessment must be applied, especially the further investigation of the information provided by borrowers.

The principle to SOEs loans is trying to be based on commercial consideration, but the pressure from local government can never be excluded. Therefore, the authorization power of branches is very important. The loan, more than authorization amount, must be reported to provincial branches or the head office. The loans concerning government's macroeconomic adjustment must be reported to the head office.

Q: What are the main factors in quantitative model? How to weigh these factors? What kind of sample?

A: Present quantitative methods are based on the previous 3-5 years' data, mainly financial information. Because of the inconsistence of regulation and measurement, there is unlikely to be a long data chain. And sector and regional characteristics are also intensively considered.

The loan stock before 1999 is more problematic and it is better with the new issued loans after 1999.

Q: What is required nature of collateral? Prefer land and real estate?

A: The main requirement to collateral stays in some estates, such as land, house, machine and equipment etc. Machine and equipment have two types, universal and special. Special equipments have lower values. For collateral evaluation, ICBC always ask external agencies for help, such as KPMG, E&Y, ETT.

Q: What is the requirement for loan guarantor and the relationship between borrower and guarantor?

A: Generally associate guarantee and mutual guarantee are not welcomed. Guarantor is the second source of repayment, so it is very important to assess its quality. At present we have a set of special functions to calculate the guarantor's guarantee ability. In the past, the examination of guarantor was no more than a process. Now we examine guarantors and borrowers equally. The government has

special act concerning the guarantee relationship between parent companies and subsidiary companies (i.e. parent companies may provide guarantee for their subsidiary companies, but subsidiary companies may not provide guarantee for their parent companies.)

Q: How do you use subjective judgment to help issue credit? Such as experience, intuition etc.

A: At present ICBC is trying to reduce the subjective assessing components gradually. In the past many loans were issued on experience, which caused many problems. Most SOBs abusively issued loans to "good companies" and fell over each other to issue loans to them, which led to vicious inter-banking competitions. Now quantitative methods are more and more preferred. All borrowers are required to pass quantitative assessment. When Western quantitative model is introduced, China and ICBC's particular situations should be considered as well. There has to be a period from experiment to spread up.

Q: How do you hedge against default risk? And incentive problem

A: The new loans issued after 2000 does not have default rates. Default rarely happened. If happening, it will go to legal process and be solved in court. For the problems staying in old NPLs stock, we apply bankruptcy, restructure, debt-stock-swap etc. In restructure side, we are still in the exploring stage and we are trying to reduce the cases of debt-stock-swap.

The more market based consideration made loan issuing much easier in that we could totally rely on legal system to repossess. Negotiating with investors, auction collateral etc. For some liquidity problem of the "good customers" we also adopt reducing interest rate, applying discount etc. to help enterprises survive.

Concerning the encouragement and punishment to credit officers, ICBC applied more punishment and fewer bonuses. We examine credit issuers' performance every year and a set of system has been established, which enabled us to track the tendency and status of each loan. The head office sends bills to branches every day to give feedback and advices on the loans.

Q: What do you do if the result of quantitative method is not accurate?

A: The problem must be caused by the credit officers, such as inputting inaccurate information, fraud etc.

Q: How do you measure borrower's repay willing?

A: More and more commercialization of banks is a warning to borrowers. If borrowers cannot repay the loan in time, it is a breach of contract. It can be total solved by legal process. Most borrowers will try their best to repay the loan in order to protect the reputation of their enterprises. At the moment a credit-reporting system is in experiment in Shanghai. This system will be applied to the whole country afterwards, so banks can share every borrower's credit information.

Q: Is there any repossessing rules and methods? Is there any support from government for compulsive repossess?

A: The current legal system can totally guarantee the repossession of loans or a high repossession rate. For some borrowers who have special background, we will negotiate with them. The NPLs caused by "bad borrowers" could be solved through court, and the difficult thing is that some "good borrowers" always make troubles. They always refuse to provide relative materials to banks for risk assessing in the name of confidentiality. Considering the inter-bank competition, sometimes we cannot get all the necessary information. For this case we have to negotiate in order to obtain mutual understanding and their cooperation.

Appendix 1B　　Interview Transcripts 2 (I1, Chinese)

对中国工商银行总行信贷部某负责人关于公司贷款的访谈

问：您怎么给借款者分类？

答：给贷款人分类呢，我们主要根据企业的所有制背景，就是国有非国有，企业的规模，

所在的行业，是夕阳行业还是朝阳行业。还有就是区域，主要看该区域的经济发展状况，

特定区域国家可能有相应优惠政策。还要看他们的信用度。

关于信用度这点分定性和定量分析。定性的就包括上面提到的背景，财务状况，历史甚至

领导人的素质；定量的主要集中在资本金上。我们现在采用的主要是"标普"，也就是标

准普尔的方法，采取过去三年的信息，从高到低，从 3A，2A＋＋，2A＋等，我们没有 3A

＋以上的等级。

按照经济发展和国家的要求呢，我们也是鼓励中小企业信贷的。在这个领域信贷的利润

多，问题也多，主要还是地方行在规章制度的执行上，客户票据作假等方面，总体来说，

鼓励中小企业信贷还是利大于弊的。

问：您怎么给借款金额分类？

答：我们并没有明确的贷款金额分类，想贷多少都行，不同的情况采用不同的分析方式。

这里牵扯到一个授权的问题，即贷款的授权不能超过企业资本的 10％。中小企业的授权集

中在二级行[84]手里，并采取一贷一授权的原则，保证每笔贷款的授权都是基于最新信息。

对于地方行的信贷授权主要是根据该行的每年的业绩，市场状况，行业地域特点等做出

的。

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[84] 总行，一级行（省级），准一级行（直辖市及特区），二级行（省会以及中心城市）

问：对待不同的类型，有什么贷款态度上的区别？

答：对于中小企业原则上是鼓励支持，技术上要严格，尤其是对于借款人所提供信息的核查。

对于国有企业原则是上是尽量基于商业考量，来自地方政府的压力在是难免的，贷款的权限就非常重要。大于所授权限的一定要上报省行或总行。涉及国家宏观调控的一定要上报总行。

问：在使用计量方法的时候，什么因素是重点考虑的？取什么样的比重？取什么样的样本？

答：现行的计量方法主要是基于过去 3 到 5 年的数据，主要是财务上的信息。由于规章的不连续以及数据的缺损，不可能有太长的数据链。还有行业，地域，也是集中考量的。

99 年以前的存量贷款问题比较多，99 年以后的新增贷款好一点。

问：对待贷款抵押品的要求，有什么倾向？

答：对于抵押品的要求主要是一些不动产，比如土地、房屋、机器设备等，机器设备分通用和专用设备，专用设备的抵押价值相对就低一些。在估价上，工行雇佣外部评估单位来评估抵押品，比如四大会计师事务所等，贷款的抵押率是工行自己定的。原则上每笔贷款都要抵押。

问：对贷款担保人的要求，对借款人和担保人关系的认定和要求

答：原则上是不喜欢关联担保和互相担保。担保人是第二还款来源，所以对其资质的认定非常重要。目前有一套专门的公式可以计算出担保人的担保能力。过去的担保人审定有敷

衍搪塞的成分，或者是走走形式。现在担保人和借款人同等审查。国家特别规定了子母公司间的担保关系，即母公司可以给子公司担保，但子公司不能给母公司担保。

问：如何运用主观判断帮助放贷？比如经验，直觉等

答：目前工行正在逐渐减少主观判断的成分，过去很多是凭感觉凭经验，问题比较多。对印象中的"好企业"乱放贷，抢着放贷，还有银行间的恶性竞争在里面。现在计量方法越来越受重视，要求一切企业必须走计量审查程序。西方的计量模型应用到中国的时候，也结合国情，行情，有一个由试点到推广的过程。

问：怎样规避赖帐风险？比如贷款回收和银行放贷人的工资收入挂钩

答：2000年以后的新增贷款中，赖帐的成分并不大，很少有赖帐的。如果发生，就走法律程序，由法律解决。问题主要还是旧有的贷款，那就采取破产，重组，债转股等方法。重组方面，我们还在摸索经验；另一方面，我们在尽量减少债转股。
更多的商业化使得贷款简单了，完全可以依法处置，直接找投资人，拍卖抵押品等方式。对于个别的周转不开的，过去的"优质客户"，我们也采用降利率，销帐等方法，帮助企业度过难关。

对于信贷员的鼓励和惩罚，工行现在还是奖励的少，惩罚的多。我们对信贷员每年都进行业务考核。我们现有一套系统，可以跟踪每一笔贷款的走向和情况。天天出单子，反馈给分行。

问：如果计量的结果不准确怎么办？

答：问题的源头还是在信贷员身上，比如提供的信息不准确，作假等。

问：怎么衡量贷款人的还款意愿？有无惩戒和激励

答：越来越商业化的原则本身就是惩罚或者激励，一旦贷款人不能按期还款，就是违约。完全可以走法律程序，用法律来解决。贷款人出于保护企业形象，对银行贷款的依赖等考虑还是尽量还的。目前在上海正在试点一套征信系统，争取全国联网，这样可以在银行间共享每个贷款人的信贷信息。

问：强制追回贷款的操作规程和方法，有无政府的特别支持（包括正负支持针对不同的贷款人）

答：现有的法律框架可以保证贷款的顺利收回或者比较高的回收率，对于有关系背景的企业，我们也采用协商的办法。对于坏的贷款人我们不怕，直接上法庭。怕的是一些优质客户，往往以资料保密等理由拒绝提供相关的信息，影响了放贷的准确性。出于银行竞争的考虑，我们又不能过分的要求以免客户流失。还是采用协商的办法要求客户尽量积极配合，互相理解。

Appendix 2A   Interview Transcripts 3 (I2, English)

An interview with a vice-president of ICBC's branch in a medium-size city of North China, (10am-11am, 14 April, 2006, his office)

Q: How do you categorize corporate borrowers?

A: We categorize them into large/medium enterprises and small enterprises, according to enterprises' size, including borrower's net fixed assets, saleroom, profit margin, and net annual profit.

We also categorize them into normal flow borrowers and project borrowers, according to loan term and loan purpose. We call the borrowers with short-term loans and aim for goods purchase/daily operation "normal flow borrowers" and call the borrowers with long-term loan and aim for fixed assets investment/equipment purchase "project borrowers".

About ownership background, we tend to disregard ownership difference and prefer to be fair to all customers. The aim is earning profit. The preference for SOEs is also based on this consideration. The loans to SOEs are always with good guarantor which makes things easier when default takes places. For instance the loans to some monopolized sector, road construction, fees of passing is always used as collateral. These kinds of loans have relatively greater chances of being guaranteed.

At the moment, our branch does not offer loans according to credit history without collateral. The higher branches might do it, but these loans are only restricted to the monopolized sectors.

Q: How do you categorize loans according to volume? What is the limitation of credit volume for certain kind of borrowers? Any difference in decision making?

A: It is not suitable to control loans by applying amount limitations to all borrowers. The current controlling mechanism of corporate loans, through credit authorization, is more reasonable, because the amount of credit authorization is calculated according to large volume of customer information and both quantitative and qualitative analysis is utilized. The loans issued to enterprises are controlled through the loan authorization to banks. In practice, we usually keep the "normal flow loan" at a lower level.

In spite of high or low credit risk, we must operate within the limit authorized lending capacity by the management with particular levels to control financial components. Large amount of loan not only concerns borrower's external credit risk, but also concerns internal capital risk.

Q: How do you estimate borrowers' credit rating? Any internal rating or external rating?

A: We have a complete system to give internal rating to borrower's credit, which is still at the development stage. In our secondary branches, we don't use ratings from external rating agencies.

The estimation of borrower's credit rating is based on: (1) quantitative information: for the principle of fairness and avoiding operational risk in estimation. (2) The accumulation of experience. (3) Professional morality: it is necessary to consider people's character, relationship to borrower etc when appointing inspector, estimator, and examiner etc. → *subjective?*

Q: What is the credit application procedure?

A: The preliminary examination is based on written documents. We need to consult with local government planning committees such as Development and Reform Committee and Bureau of Environmental Protection etc. We also need to consider information from the relevant industrial development institution instructing the borrower and other economic information. We also invite experts to help evaluate the project and the cost of evaluation is paid by the borrowers.

Q: What kind of quantitative models do you use to help making decisions?

A: Credit rating: such as calculating enterprise's ratio of debts to assets, cash flow etc. Currently a nation wide credit-reporting system has been set up including a fundamental data base (PCIS/PCIM). All the borrowers have to

provide required information to join the database before applying loans. Problems still exist, such as who have access permit and privacy protection etc.

We also use model for credit authorization to borrowers to calculate the maximum amount of possible credit loan to a particular borrower.

Q: What is the role of experience in decision-making?

A: Experience consists of the judgment of government's policy changes, judgment of macroeconomic information, judgment of particular customer, and the integration of these three things. Experience is very helpful in scrutinizing these details.

Q: What are the requirements vis-à-vis collaterals?

A: The principle is the collateral should be easy to move and store, with high liquidity and be easy to be disposed.

The collateral of SOEs to SOBs has the problem of nullity in practice. Both SOBs and SOEs share the same owner and banks always win in the court but cannot get repayment is a phenomenon caused by this problem. → **crucial/ link with s.b.c**

Q: How to ensure that the credit officers have proper incentive to guarantee credit quality scrupulously?

A: Although there is a close relationship between credit officers' work and credit quality, due to various reasons there might not be a causal relationship. It is important to keep this in mind.

The mechanism we use are motive mechanism, test mechanism, incentive mechanism, bonus/punishment mechanism

Q: How do you measure borrower's willingness for repayment?

A: The principle is to use more quantitative information: installment repayment rate in the case of borrowers in good management situation; loan recovery rate, with respect to borrower's whose management is in fairly all right situation, this is the last chance for bank to recover the loan; discharge willing and discharged rate, applying to the end of borrower's management. We need to see how borrower's discharge willingness is, and whether it's on time. We also need to see the condition of property, rights and interests, and the desire of guarantor/third party.

Q: How to utilize the legal system and the support from the government?

A: The ultimate method of repossessing loan is the legal system, but this might involve the local government. Banks almost have 100% confidence to win in the court, but repossessing enforcement will bring a series of problem to borrowers. In this case, the borrower, usually the enterprises with relatively large sized operations would ask the local government for help. The latter will use their

power to settle the conflict, which always lead to the failure of enforcement. Therefore, banks have to be very careful before they apply for a repossessing enforcement, especially for enterprises with relatively large size. Considering the reality, banks have to take government intervention into account in order to avoid the outcome of "win lawsuit but lose money".

Appendix 2B   Interview Transcripts 4 (I2, Chinese)

对中国工商银行北方某地级市分行主管信贷副行长的访谈

问：作为国有银行，您如何给商业借款人分类。

答：按企业规模分两类：大中型，小型。分类依据是借款人固定资产净值、销售额、经营利润率、年净利润额。

按借款情况分两类：一般流动借款人、项目借款人。分类依据是借款期限、借款用途——把期限较短、用于采购商品及经营费用地借款人称为一般流动借款人，把借款期限较长、用于固定资产建设及设备购置的借款称为项目借款人。

原则上是淡化所有制差异，注重公平。宗旨是以盈利为目的，着重于国有企业也是出于这个考虑，对于国有企业的贷款，出了问题好解决，担保比较完善。比如对于一些垄断行业的贷款，例如公路，可以用收费权作为抵押，对于这一类的贷款是比较有保障的。

目前我分行还没有信用贷款，高层有，但也仅限于极端垄断的行业。

问：您如何根据贷款的额度分类？对不同类型的借款人，有没有额度的限制？在审批过程有什么不同？

答：对所有借款人的贷款额度不宜以一个绝对的数量额度来掌握。现行的通过授信额度来掌握企业贷款额度的做法就比较好。因为，授信额度是建立在客户大量信息基础上的科学计算结果。通过定性定量的分析来核算出授信额度，通过授信额度来掌握企业的贷款额度，在分项授信时把"一般流动贷款"的授信额度控制的低一点。

不论贷款风险大小，对借款人审批中必须实行级别、额度相对称的授权管理。对融资成分实行控制，因为大额度的贷款，不仅关系到借款人的外部信用风险，也关系到借款人的内部资金风险。

问：您如何估计借款人的信用度？有无内部评级，或者利用外部评级单位的评级？

答：我们银行有比较完整的对借款人信用度进行内部评级的办法，并在不断完善。但，目前，二级分行没有利用外部评级单位的评级。

对借款人信用度的估计建立在以下基础上：（1）量化信息：保证公平的原则，避免评价中操作的风险。（2）经验的累计（3）职业道德：在选配贷款各环节中的调查人、评估人、审查人、检查人时，要考虑其品质、与借款人的关系等。

问：商业贷款的申请和审批过程是什么？

答：初步审查是基于文字材料，要看地方政府、计委、发改委、环保局等单位的意见，要考虑产业导向，还有一些经济信息的材料，然后聘请专家组进行评估，这部分成本由企业支付。

问：您使用什么样的计量模型帮助信贷审批?

答：信用等级评定:如计算企业的资产负债率、现金流量等。目前已经初步建立全国联网的征信系统，基础数据库（PCIS/PCIM）。所有借款者在借款前必须提供必要的信息以加入数据库。在使用环节上还有问题，比如谁有权使用，隐私权保护等问题。客户授信：计算企业的最高授信度，贷款审批

问：经验在决策过程中经验起了什么作用？

答：经验的内容包括：对政府政策变化的判断经验，对宏观经济信息的判断经验，对单个客户信息的判断经验，以及如何将这三方面结合起来。经验尤其重要在发现细节。

问：对抵押品有什么要求？

答：对抵押品的原则是"四易"："易执行，易变现，易移动，易保管"。国有企业向国有银行贷款出具的抵押品存在无效的问题。在合同纸面上是双方事实上权利人是一个。事实上，银行贷款案胜诉率很高但执行率很低很能说明问题。

问：如何保证信贷员有动力尽全力保证贷款质量？

答：信贷员的工作质量与贷款质量有密切关系，但由于复杂的原因影响，两者之间未必有必然的联系。对于信贷员工作的定性很重要。
机制：目标机制，考核机制，激励机制，惩罚机制。

问：怎么样衡量借款人的还款意愿？

答：原则是尽量用量化的原则：贷款到期日还款率，适用于借款人经营情况较好时；贷款回收率，适用于借款人经营情况一般时，这个时候是银行贷款正常回收的最后时间；清偿意愿和受偿率,适用于 借款人经营终结的 时候。要看借款人经营终结清偿的意愿强不强，也要看其清偿决定是否及时，还要看对财产，权益等是否保护的完整。还要看担保等第三人的履职意愿。

问：在不良贷款的 强制回收过程中，如何运用政府以及法律的作用？

答：贷款强制回收中银行运用的最终手段是法律，但这又不可避免触及当地政府，因为一旦进行法律诉讼，银行几乎是百分之百胜诉，胜诉后如不强制执行收不回来，强制执行则必然引起企业生产经营的波动等一系列问题，一般情况下，企业会找当地政府。这时，政

府会运用手中的权力，进行协调等动作，协调的最终目的是使你难以执行。因此，银行运用法律手段强制回收一定要慎重，特别是在当地比较大一点的企业。面对现实，充分考虑政府的因素，才能避免"赢了官司，收不回钱"的结果。

Appendix 3A   Interview Transcripts 5 (I3, English)

An interview with head of credit department of ABC's branch in a medium-sized city of North China, (3pm-4pm, 14 April, 2006, his office)

Q: How do you categorize corporate borrowers?

A: Generally, there are two categories, personal loans and corporate loans. For corporate loans, we see their effective total assets. We prefer the enterprises whose assets over RMB30 million to the enterprises whose assets less than RMB30 million. The latter usually obtain finance through local commercial banks, rural credit cooperatives or informal circle of family and friends. Although in principle we don't think a lot of ownership background, we still prefer the well-operating enterprises with State-owned background. For the SMEs, which are the focus of profit growth, we apply different policies to different areas. In the early stage of primitive accumulation of capital, SMEs' financial demand is always satisfied through family or friends.

Q: How do you categorize loans according to volume? What is the limitation of credit volume for certain kind of borrowers? Any difference in decision making?

A: There is no limitation of loan amount and we use similar application procedure to all borrowers. Concerning corporate loans, we prefer to see enterprises' capital, payout, record of capital flow, and enterprise size etc. Our deposit stock is another

thing to be considered when issuing loans, besides the consideration of the instruction from planning committee. At the moment, the cost of attracting deposit is low, and our fix-term deposit is more than flexible-term deposit. All of these lead to a stable deposit base. On the other hand, the proportion of interest over enterprises' cost is relatively low. The current nominal interest rate is 3.19% and 2.16%, where the interest gap is only 1.03%.

I think, our examining and approving system is working and most part of the NPLs is caused by the pressure from the local government. About 52% of the current NPLs are policy loans and most stay in the food supply system. At the moment, there is also the phenomenon that policy loans are issued through commercial banks, not policy loan banks. The pressure from the local government is too high that we have to issue some policy loans.

Q: Is the situation possible to be changed, when the foreign banks are able to compete on a level playing field in the end of 2006?

A: Answer: I don't think so. The local government and we have not been worrying about the entry of foreign banks, since we are in a relatively far rural area and foreign banks will not come here in a short period.

Q:How do you estimate borrowers' credit rating? Any internal rating or external rating?

A: We have internal rating system and we can have a changing band of 30% based on the benchmark interest rate. The ability and power of credit authorization is authorized level by level, and this is changing with the quality of loans annually. The responsibility is clear when over-authorization happens. At the moment, we don't use external rating and mainly rely on the experts' help in internal rating.

Q:What kind of quantitative models do you use to help making decisions?

A: We ABC have Credit Management System (CMS). I don't know many details about its working mechanism, and actually we don't use it often. The experts' opinion and the data we collected play more important roles. Data collection includes onsite collection and offsite collection. Offsite data regards reports, introducing materials, and forms etc and onsite regards the information collected by credit officers on the site of the project. Customer managers are usually responsible for particular sectors they are familiar with.

Currently the personal credit system has established a national wide database and shares the record of defaults. In the future this will be more important in decision making.

Q:What is the role of experience in decision-making?

A: Although we mainly make decisions based on data and the information we collected, experience are absolutely necessary. Experience help eliminate the false

information and retain the true, and also improve the ability of investigation and analysis. The country is in transition with always changing policies, which makes data collection more difficult. In addition, the interpretation of data is also changing. Experience help understand these changes and make decision. The new credit officers need the help from old with "teach" "help" and "lead". The reform, such as staff lay off, has negative influence on the take-over process.

Q:The requirement of collateral?

A: Currently, every loan needs collateral. Regarding collateral, we prefer to securities with high liquidity, such as deposit receipt, insurance slip, P.O. etc. It also can be vehicle, machine or real estate such as house or land-use permit. These need the evaluation from corresponding agents, such as Real Estate Administration Bureau, Environment and Lands Bureau, and Bureau of Industry and Commerce etc. Our credit officer can do it and also hire external agents to help evaluate.

Q:How to let credit officers have incentive to guarantee credit quality?
A: Every NPL has its responsible credit officer. It is easy to apply punishment for bad but less bonus for good. Therefore, punishment is used as negative bonus.

Q:How do you measure borrower's repay willing? [willingness for repayment]

A: Not many people default with intent. Most of them have liquidity problem and can repay with an extension. We also help borrowers survive liquidity problem with three methods: lend new and repay old, repay old and lend new (to avoid bad record), give an extension (give extra time, but need new application).

Q: How to utilize the legal system and the support from the government?

A: In principle legal process could provide guarantee the security of loans, but it is hard to execute the court's order. The resistance from local government and the pressure from various relatives make it very troublesome. It is always the case that the court judge banks win but can not be executed. Therefore, we always try to solve the problem through negotiation and for most cases are working, and try to avoid using legal methods.

Appendix 3B　　Interview Transcripts 6 (I3, Chinese)

对中国农业银行北方某地级市分行信贷部负责人的访谈

问：作为国有银行，您如何给商业借款人分类。

答：首先是公司和个人，公司下面要看其有效总资产，我们一般倾向于 3000 万以上的企业，2000 万以下的则一般通过地方商业银行、农业信用社、民间借贷等融资。我们虽然原则上不看重所有制背景，但倾向于效益比较好的有国有背景的企业。对于中小型企业，的确是利润增长点，地区不同，也有不同的相应政策。原始积累阶段的融资需求一般还都是通过民间借贷的。

问：您如何根据贷款的额度分类？对不同类型的借款人，有没有额度的限制？在审批过程有什么不同？

答：额度上没有什么限制，审批过程也都差不多。公司贷款比较看重企业的资本金，现金支出，资金流动记录，规模等。还要考虑存款额，量力而行，也有计划指导的因素。 现在存款的成本比较低，而且定期多活期少，稳定性强，利息占企业的成本也比较低。现在的名义利率是 3.19％和 2.16％，利差 1.03％。

我感觉，我们的审批过程还是有效的，不良贷款主要还是来自政府方面的压力。现有不良贷款的 52％为政策性贷款，大部分集中在粮食系统。目前还存在政策性贷款由商业银行处理的现象。来自地方政府的压力太大，不得不发放一些政策性贷款。

问：2006 年对外资银行的全面开放会不会改变这种局面？

答：当地政府和我们银行目前还不担心外资银行进入，因为我们这里比较偏僻，短期内外

资银行还不会进入。

问：您如何估计借款人的信用度？有无内部评级，或者利用外部评级单位的评级？

答：关于信用等级，行内是有评级的，按照基准利率可以浮动 30％，授信能力、权限通过逐级授权，根据贷款质量一年一变。一旦出现违规授权，责任清晰。目前还没有外部评级，主要是请专家组协助内部评定。

问：您使用什么样的计量模型帮助信贷审批？

答：行内有《中国农业银行信贷管理系统》，简称 CMS，具体工作原理我不太清楚而且我们在工作中运用也不多，主要还是看专家的意见以及各方面地数据。关于数据的采集分为现场和非现场，非现场主要基于报表，介绍材料等，现场则指信贷员到达项目现场进行实地调查。客户经理一般按行业各管一片。

目前的个人征信系统已经全国联网，将不良记录实现共享。以后这方面地作用可能更大些。

问：在决策过程中经验起了什么作用？

答：关键是看数据和收集到信息，经验也绝对是不可或缺的，经验帮助去伪存真，提高调查分析能力。而且现在国家处在转型期，政策在变化，资料采集的困难就比较大，对于数据的理解也在变化。经验帮助理解这些变化，并做出判断。新老交接也有传帮带的必要，机制改革,比如裁员对顺利交接也有一定影响。

问：对抵押品有什么要求？

答：现在基本上每笔贷款都要求抵押，关于抵押品，倾向于有价证券，存单，保单，汇票等易变现证券。也可以用汽车，机器或者房屋土地等不动产。这些则需要相关部门的估价，比如房管局，土地局，工商局等。我们的信贷员会做，也会聘请外部的相关机构来帮助估价。

问：如何保证信贷员有动力尽全力保证贷款质量？

答：每笔损失的贷款都要追究相关责任人，追究责任比较容易，力度比较大，但奖励很少。惩罚也是一种激励手段。

问：怎么样衡量借款人的还款意愿？

答：现在很少有故意拖欠的，大部分都是确实有困难，缓一缓都能还。我们也会帮助企业渡难关，主要采取三种办法：贷新还旧，还旧借新（以消除不良记录），展期（延长还款日期，但要重新办理手续）

问：在不良贷款的 强制回收过程中，如何运用政府以及法律的作用？

答：原则上，法律手段完全可以保证贷款的安全，但实施起来困难重重。政府的阻力，各种关系的压力，处理起来很麻烦。经常是法院判了，但执行不了。因此我们还是尽量协商解决，大部分情况下都可以解决，尽量不走到法院这一步。

Appendix 4A   Interview Transcripts 7 (I4, English)

An interview with head of a district branch of local joint-stock commercial bank in a medium-sized city of North China, **(1pm-2pm, 15 April, 2006, his office)**

As a local joint-stock commercial bank, our credit application is simpler than state-owned commercial banks and out head office is in this city. The main procedure is let branch have preliminary examination and report to higher branches and head office. We are local banks and under the control of local government, operating under the rules of joint-stock company and Basel agreement. We hedge risk according to State policies and the characteristics of sector, issuing more credit in the up-turn and less credit in the down-turn. We don't have close relationship with macroeconomic policies, since the amount of loans are not large. We send credit officers to enterprises and do onsite investigation, concerning ratio of debts to equity, the trend of growth etc. Generally to say, the loans to private borrowers perform better and have better credit record. For SOEs, there are the phenomena of "New heads don't care old debts".. The authorization power of our branch is RMB100 thousand and requiring collateral. The loan over RMB100 thousand has to be reported to the head office, which is in this city.

We don't use any rating system and mainly rely on our subjective judgment, which is based on the information of customers and projects. For the projects under the control of government, we follow the government's instruction.

Compared with SOBs whose authorization power is bit weak, our joint-stock banks are more flexible. → subjective again

The serious thing is the intervention from local government, who are responsible for issuing loans but not for repayment. For most cases, it is just a call from the local bureaucrat. This administrative intervention undermined banks' performance. Considering commercial profit, we prefer to private borrowers with collateral requirement of real estate. We don't use any quantitative methods and mainly rely on reports and other materials.

Experience are very important especially in examining credit application. Experience help us differentiate information, and find details and extra information between lines. During the reform and transitional period, new experience is forming with the old fade away.

Currently, people's credit is increasing and the credit cheating cases are decreasing. We still require collateral or guarantor for every loan, and we don't offer credit loan without these. Regarding the evaluation of collateral, we hire accounting agency or other financial institution with expertise to evaluate. Such as the loan with real estate as collateral we will transfer the collateral under the bank's name in Real Estate Administration Bureau. Banks can dispose or auction it when borrowers default. Generally borrowers can repay the loans, and some might repay gradually. We consider borrower's character when issuing loans. We all live in this small area and know each other or could be know from other channels. (Personal guarantee see Bhatt). Currently credit demand exceeds supply

and customers always initiatively provide the required information. We have a 50% fluctuation band on the benchmark interest rate set by the state. We offer a discount for good customers, especially a big discount for some monopolized sector, such as the loans to Communication Bureau for road construction.

We don't offer bank card services, and deposits rely on enterprises deposits including a large amount of deposits from relative enterprises . We have many sub-branches which help attract citizen deposits. At the moment we have not felt the pressure of the entry of foreign banks and in the future they might enter with joint-stock cooperation. We do have the advanced ideas they have but we cannot apply them in practice. The representatives of foreign banks would be helpful for the application of these ideas.

The current main problem is the intervention of local government and little incentive mechanism. Some designs of operating style are very good but not practicable, such as the lay off of staff is hard to execute. The heads of banks make profit tasks but offer little bonus which undermine staff's working enthusiasm.

About the repossessing enforcement, in principle we are trying to avoid this. For most cases we can win in the court but court's order cannot execute. Such as the SOEs' default, if the workers make troubles government has to intervene to keep social stability. For individuals' default, they always jeopardize the auctions. In this sense banks normally try to solve the problem through negotiation, to avoid legal process.

Appendix 4B   Interview Transcripts 8 (I4, Chinese)

对北方某地级市地方股份制商业银行某地区分行行长的访谈

作为地方股份制商业银行，我们的信贷申请程序比国有商业银行要简单些，而且总行就在本市。主要程序是由支行进行贷前调查，然后报分行，再报总行。我们属于地方性银行，由地方政府管理，按照股份制章程和巴塞尔协议的有关规定经营，根据国家政策以及行业特点防范风险，上升期多一点，下降期少一点。我们的贷款由于数目不大，与宏观经济政策关系不大。我们要派信贷员去企业调查，资产负债，行业发展趋势，回报率估算等。总体来说，个体的信贷好一点，信用也较好，国企存在新官不理老帐的现象。我们支行的信贷权限就是 10 万元，而且要求抵押，超过 10 万的报总行，总行就在本市。

我们没有使用任何评级系统，主观判断很重要，当然也要基于客户以及项目的信息的。其他在政府管辖范围以内的，就听政府的。国有银行的权限比较小，管的也比较死，我们股份制银行就灵活一些。

政府的干预还是比较严重的，经常是一句话的事儿，管放不管收，行政干预影响了银行的经营。出于商业考虑，我们倾向于个体经济体，多要求以房屋作为抵押。我们不使用计量手段，主要还是看报表，看材料。

经验是很重要的，尤其是在贷款手续的履行中，经验指导我们甄别信息，发现很多文字材料中体现不到的东西，帮助我们发现细节。现在处在改革变迁的时期，旧经验也在逐步淘汰，新经验也逐步形成。

现在，人们的信用度也在提高，骗贷的少了，但我们还是要求每笔贷款都有抵押担保，没有信用贷款。对于抵押品的估价，我们聘请会计师事务所等专门机构进行评估。比如以房屋作抵押的贷款，我们要拿房产本到房管局换证，过户到银行名下，一旦发生拖欠，银行

可以马上进行拍卖或者处置。一般情况下都能偿还，有的慢慢还最后也能还上。我们发放贷款也考虑贷款人的人品，本乡本土的，基本上都有个认识，也可以打听的到。贷款现在是供不应求，客户也都主动提供我们需要的信息。利率还是国家定价，我们可以有 50％的浮动，好客户就降点，一些垄断行业的贷款则可能降的比较多，比如给交通局修建公路的贷款。

我们还没有任何银行卡的业务，主要是企业存款多，有不少拉关系的成分，网点比较多有助于吸收居民存款。目前还没有外行进入的压力，以后可能也多以参股的形式进入。他们的先进理念我们也具备，只是搞不好，外资银行的代表有助于这些理念的执行。

目前的问题主要是政府干预太多，激励机制太少。很多运作方式设计很好，行不通，比如人员精简就很难执行。银行没有完全发挥作用，制约了生产力。比如矿山贷款，前景很好，但没有抵押就是贷不出去。上面经常定利润指标，但奖励很少，使得员工的积极性不高。

关于贷款强制回收的问题，我们原则上是尽量避免强制回收的。多数情况下，官司能赢，但不能执行。比如国企，工人一闹事，政府出于社会稳定，就要干预。个人，则经常阻挠拍卖或者其他处置方式，甚至耍无赖。银行一般也不走法律程序，尽量通过协商也解决。

Appendix 5A   Interview Transcripts 9 (I5, English)

Interview transcript (Edinburgh, early September, 2006)

Q: How do UK banks categorize corporate borrowers?

A: Interviewee: The first way they categorize them is by their capital size. Because the capital size of the business determines which part of the bank will do with the corporate borrowers. There are different levels, so the bigger firms will go to separate department, then the medium sized and the small firms. So the first categorization is on capital size, but after they split them by capital size, they will then categorize them by the business type. So agriculture, retail, manufacturing, the bank can manage its exposure to particular segment. They wouldn't want to be lending too much money to one industry, because if there is a problem in the industry, they are over exposed. They will do multiple categories, but firstly capital size, then by industry.

Q: To diversify the risk?

A: Yes, to diversify the risk, exactly**.** You know, you can understand, of their entire 100% of their corporate lending they wouldn't want 90% in the property market. So they want to keep a good spread risk across different business areas, and they always keep them split like that.

Q: Is there any preference for certain category?

A: No, no preference. Obviously, older and more established firms are easier to lend to.

Q: Like coca cola?

A: Exactly, so where there is very little risk, it's very easy to lend to, but it is not a preference for that kind of risk. It's just the new firms find it harder to get borrowings from banks. Because in reality many UK banks are quite risk averse. So small startup business might find it difficult to get money from a bank and would maybe have to go to a venture capital company instead of a bank.

Q: Is there any state-owned borrower or borrower with state-owned background?

A: The government borrowers?

Q: Yes.

A: The government borrows on the market. The government issues bonds to the market, normally with a guaranteed interest rate. Anyone can purchase the bonds. So they issue the bonds called "treasury stock." They issue treasury stock at 5%. And it got a fixed payment day, so maybe 12 years or something, but these bonds can be traded on the market. You can sell them before the fixed payment day for a discount. They are very very high quality bonds. They are called "gilt edged",

because they are so good. So the government raises the money it needs to be raise via the bond market.

Q: With high liquidity?

A: Yes, hugely high liquidity

Q: As you said it is a bit difficult for SMEs to borrow from bank.

A: Yes, unless they have got collateral or security, but if they don't have a history the bank can look at, and if there is no collateral, then it becomes very difficult for them to borrow.

Q: Is there any loan to SME borrowers according to credit history?

A: Yes, I mean, there are lots of loans to SME borrowers, but they have to work harder to get the money. They have to provide a business plan and they have to provide a projection. Quite often the owners of the business, the directors or the owners, will give personal guarantees to support the borrowing of the SME.

Q:Use their own houses?

A: Yes, that's quite normal. All sorts of companies can borrow. You can be a very small company.

Q: So collateral is not absolutely necessary?

A: Not absolutely necessary, but it helps and if you have collateral, the loans are different, because a lot of banks use what we called risk-based pricing, so if you have collateral, the banks take less risk, so you pay less for your loan.

Q: So the interest rate is not fixed?

A: No, no it's not the same for everyone, no, the interest rate differs. At the main rate in the UK is the Bank of England base rate and then each bank adds a certain amount onto the Bank of England base rate, so the lending is on that base rate plus 5, base rate plus 6 and if Bank of England base rate goes up then your rate goes up because you are always borrowing at base rate plus something, not normally a fixed rate but it's floating its fixed over the Bank of England and Bank of England base rate moves. It is possible to arrange fixed rate borrowing, but floating rates are common.

Q: As you just said collateral helps and it is important, is there any special requirement for collateral or preference?

A: Not really, property is always good collateral, because the UK has a strong property market, but stock, in agriculture, for example, the animals would be collateral, and in manufactory the materials would be collateral, machinery, anything can be collateral.

Q: Is it difficult to value these collaterals?

A: Yes, it is really an accounting issue how you value collateral, but if the bank is going to use, for example, your property as collateral, they would insist and get a valuation, but they then take a proportion off the valuation. They will be very conservative. They would write it down a bit to give themselves even more of a margin, so just in case property bases go down or the value of the stock goes down, whatever, they do value it but then take a bit off.

Q: They value it themselves or they hire some agency?

A: They would hire an expert, an external expert and the customer pays the valuation.

Q: We just said the categorization. Is there any limitation of the loan's amount to certain category?

A: Not really, there are fixed rules and it varies from bank to bank, but obviously, for example, if they are looking at a company, one of the measures they will look at is the accounting turnover. It's the same amount of money which is going through the business every year. And obviously, they would not want the company's debt to be more than a sensible proportion of the amount of money going into the business. I mean, what the banks check is the repayment of the debt is manageable from the profit they can see the firm is making. So they don't just look at the company as an account entity. How much the shares worth, how much

the property worth, what they are very interested is the profitability of the business, because the bank's repayments need to be met from their ongoing income. So even if the company had a lot of fixed asset unless it's got profits it's not going to be able to meet the monthly payment. So the banks take a lot of account of the actual profit of the company and whether or not there is enough profit to repay the loans installments. That is a separate view from what the company looks like, how much the company is worth, How many assets they've got, that is a sort of ongoing view of how much profit they are generating from the assets they've got. So once they've looked at the business itself then they look at the profitability of the business to see if they can afford the loans in terms of the monthly payments.

Q: Is the decision-making process more complicated for small borrowers or for big borrowers?

A: It is not really more complicated for smaller or bigger, in some respects the decision-making is often automated in the UK using credit risk models. In that circumstance it will be the same type of model. Once the loan gets above certain amount, then the model will not be the only thing used and the company of the loans would be examined by an expert in the area. So the decision-making process is broadly the same, what you want to establish is the value of the company, the profitability of the company, and the amount and the purpose of the loan.

Q: How do the UK banks estimate the borrower's credit rating? Internal rating or external rating?

A: It is quite sophisticated in the UK, they use both. External credit rating bureaus, the credit bureaus have information for personal customers and business customers. They can give a credit rating for the firm,

Q: For all the firms or for most of the firms?

A: Most of the firms, a new firm won't have a credit rating. For established firm, there is an external credit rating, but in combination with the external rating the bank will use a credit risk model to build an internal credit rating. This is for the customers who are known to the bank. You've got the external rating and you've got the internal rating. The way they build the internal ratings is by using models that look at the probability of default. They will get a credit score using the internal model. For an existing customer of the bank, not a new customer, they will get the external rating model but they will also have a behavior model that is built using the performance of the account status, and they will combine the behavior model with the external scores. What they are dong is they are combining the behavior model with the external scores, what they are doing is they are combining external and internal data, if they have internal data, to come out with an overall risk assessment model. It is quite well established in UK now. Credit risk and credit scoring techniques, models are used not only to predict whether or not an account will default but predict what we think the loss will be for a given default. There is a European initiative, which allows lender to use models to calculate the capital adequacy, banks have got to work out whether they have got adequate amount of capital to cover the loans they are making. I don't

know if the capital adequacy is fixed to 8%, but they've changed the rules with Basel that Basel is not flat 8% any more, because now banks can model what the capital adequacy cover is by taking it into account the probability of default and the loss for a given default. So now lenders are good at risk models that had different level of capital adequacy they have to get approval for the models and the models all have to be signed off. Because using these very sophisticated models is going to reduce the amount of capital they've got to hold to cover the loans. All of the banks become very interested in risk model, and build even more sophisticated models, because it all helps not only in predicting default but it will be more profitable if they have less capital to cover loans. Because they can use the additional capital to invest to generate more profit. So they use both external and internal rating associated to create risk models.

Q: Are the models different for different customer?

A: Yes, not different for different customer, but it can be different for different business areas. For example, for each product, credit cards will have a range of models, loans will have a range of models, mortgages will have a range of models, and then you can have models for loans of different amounts. So you will be modeling small loans different from bigger loans, and you can have different models by sector. The number of models really is determined by the amount of data the bank has at the start when they try to build the models. Because when you are building a credit score model, you try to segment the data to give you the more powerful models. So if you just have one very general model, it will be less powerful possibility than have more specialized models. But they come to a point

when you just don't have enough customers in that segment. If you have got enough, for example, if you did a lot lending to the agriculture sector, then you would have good data to build good models for that group of people. It really depends on how much data you've got because the restricting feature when you are building a model is how much good data you have got. Because all you are trying to do is looking at the loans before, seeing which one were good or bad, and trying to identify what characteristics the bad loans shared. So you need to have enough bad loans to enable you to build a model.

Q: Is the information of defaulters shared between banks?

A: Yes, they share. They send monthly reports to the credit bureau, and not all the banks do that, but most do send monthly reports, which means the way the credit bureau works is, the principle is called "reciprocity", which means if you send your data, you can see everyone else's data, but if you don't share data, you can't see other people's data, so most of banks report the status of each account every month. If you look at the credit bureau's data you can see the account up to date, you can look at the account's history and you can see the status of all loans every month,

Q: Do they need permission from customers?

A: On the terms and condition on the application form, it says, yes, the customers have to give permission, but by saying on the application form, they have given permission, because they are printed in the terms and conditions of the application

form, it says the banks will look at credit reference agency's data, the bank will share with the credit agency, so they know it's happening, people in the UK are very aware of credit bureaus and credit ratings. you can contact the credit bureau ask to see if they have a copy of your own file, so people are becoming very aware of that. You can see what the lenders are reporting about you. Banks who send data and can look at the data for someone who sends the application. If someone applies loans to you, you can look at his credit history. Most of the banks send the data to the bureau. When a customer applies, you ask the bureau to see his history.

Q: We just talked about the model; we used to use expert system, now we prefer to use quantitative model, so do banks collect data themselves?

A: For example, if you apply a loan from me, I will send off your name and address, your date of birth, your application details to the credit bureau. They will send me back electronically a couple of files. I will be able to see if you have loans from other UK banks e.g. Clydesdale bank, Bank of Scotland, I will be able to see how much the loans are, how much the repayments are, whether you have ever missed the payment, whether you closed it early, when it's going to finish, I can see all the information about each one of your loans with other lenders.

Q: The principle of this model is trying to find the main character of defaulters?

A: What happened in the credit bureau, they are not building a model and they are just holding the information about your performance. I will bring back the information from the bureau into my system, and then I will build the model. The people went bad maybe have two defaults in the last 12 months, so they'll be looking at everyone who has two defaults in the l2 months, and other characteristics in the modes. The models are usually built using a technique called multiple regression and they are just regression models. What you do is you put all the information you have got into the model: say I've got 50 or 60 pieces of information about you, the size, the age of the business, industry sector, maybe the number of employees. Then I will pull back the information: the number of loans they have, the total value of the loans, the purpose of the loans, and all that information. When she runs the model I will pull back the 12 or 14 things they are most predictive of default. Then you do very sort of thing contribute, What is important is all the customers, you when you are building the model, you got to have a good set of data to build a good model. What's difficult initially is getting a good data set,

Q: For Example, a customer goes to your banks and say I don't have this information or just they are not willing to provide this information. What can banks do?

A: Nearly all the credit information I can get from the credit bureau anyway. I don't need to get from them, because I know how many loans they've got. I can see from the credit bureau. What we can do which is very undressing. When the customer fills the application form, what you sometimes find is what the customer

has told you is different from what you can see from the credit bureau, and in fact that very difference could itself be predictive of default, if you find people lie on the application form, you can actually know that difference may actually come into the credit scoring model and something is predictive of default. For example, someone said he has 4 credit cards, but you can see he's got 7. That itself might be predictive, but they are statistic models. It's up to you and you have to decide. The outcome of statistically significant is not judgmental, but that is statistical fact. You can think about it and you can then work out why.

Q: So is it possible for the same result, different credit officers might give different interpretation.

A: The credit officers are involved in UK banks, but they don't have much discretion to change the result of the model. If they key in an application into the system and the system declines it. They can't just overwrite the system, and what they can do is to make a request. They can make an appeal and most banks have got an appeal unit, so you can appeal against the system's decision. In that circumstance you usually have to provide some additional or exceptional information to explain why the system's decision is wrong. Because you have to remember the system has taken everything into account, all the internal data and external data. It takes into account everything relevant. But there may be something you know is additional information. For example, if a company hasn't been doing very well but it recently has secure a big order. You knew this will be coming and they have evidence that this will be coming. The credit score system cannot see the future, and it looks back all the time. You can provide additional

information and they will review it. You can't just say I don't like the system's decision. You have to have something else. It doesn't really matter if the individual doesn't like the system's decision. The banks mainly are managing their complex exposure via the risk models. Because when they set up the models they set it up in the expectation that these models will let banks take on fixed amount of bad debt, So if you don't accept the model's decision, then you are going to change the amount of bad debt. The bank doesn't want that kind of surprise. They use the model to predict the bad debts' figure. So generally speaking, the decision when you get a very very big corporate loans, very unique project, for example, building the Channel/Tunnel, you can't model that because you don't have enough similar data. Anything very unique, or very specialized, or in a completed new market, then at that stage that will not be modeled, and in the same way that will go to expert lenders who are in expert lending teams. Tehey will use the same sort of data, but they will use subjective methods, like adding their own experience to the information, to come up with a decision. The limitation is that if something is new, or unique, or very different, then you can't have built a risk model for it. Because it's too different from anything you've seen before.

Q: How long is the data chain needed?

A: If you are building a risk model, you only usually look back 24 months.

Q: Is the data enough for certain sector? Is the data chain long enough for particular business? Some business is short term, some is long term.

A: It depends on the sector and the number of models you got. If you have enough customers in a particular sector with a long term that is fine. The problem is what you are worrying about is it is very hard to model whether someone is going to default in 20 years time. What you worry about is what you can get from the decision point. Totally unpredictable things can happen. People tend to not try to project not too far out, but with mortgages, for example, house mortgages normally have a term of 25 years, and they are modeled by looking back only 4 or 5 years. Because the perception is it's too difficult to model 10, 15, or 20 years away. What you can do is working out the breakeven point at which, if you make a loan, even there is a 20 year term, you probably planning to break even about a year, 8 or 9, and after that you are going to make profit. You can just try to model forward to your break even point. So if someone, it is hard to say, but if you know you will break even in the year, all you want to know is if it will go bad before your beak even point, in which case you will lose money. After that, it's all profit. If you think about it like that time line of the loan, you won't try model to achieve your profit, you just try model to not to lose money, and that will bring much close to the decision point.

Experience is used for large loans, if you are making those kind of large loans, you really want more relationship with the customer, you want to understand business, you want to go in to see the premier, and you want to get more feels for it. With smaller loans, there is more anonymity. You don't need to know the people very well, but with big loans, you really want to have a relationship, that is

for understanding their business, but also hopefully for getting more business from better customers.

For this case, some special expertise might be needed. They still keep experts in the big corporate department, they have very very strong relationships, and have experts to do big loans time and time again, and they work in teams to do special. Although for the small loans using modeling now, for the really big loans, they use quite a lot expertise.

Q: What do the credit officers do now? They just key in the information?

A: Yes, in the lower level, the credit officer just key in the application stuff into the system, and it will come back saying accepted, declined, this is a rate etc. The system determines whether it is approved to be declined or accepted. It gives yes or no usually, if there is insufficient data you may have to put something in. Or there are some models, depending on banks corporate sometimes, they have a margin around yes or no. If the rating system gives 650 points, what the banks will do is set level If you set the cut off point at 630 points, then every hundreds customers will
Are we happy with that?
Some banks will
Bu the margin around that is a bit difficult

Q: In the margin level, do the credit officers prefer to lend to get commission?

A: No, they do not get commission. I don't know if it's same for all the banks. In the banks I have worked in they do not get commission on loans directly. They used to get commission directly. More recently banks have moved away from that and credit officers' salary is partly based on the profitability of the bank. For example, you will get 10%, if the bank makes a certain amount of profit. You maybe get 20% more of your salary, and that comes from both the bank's profitability and your individual performance. You will get a grade from being wonderful to being rubbish, If you are a loan officer, you sell a lot of loans, then you have better chance to have a higher grade. But it wouldn't be the only thing. Your relationships with other employees, your timekeeping, you efficiency etc. All sort of things would fit in you grade and then your grade combines with bank's profit determine what your salary is. Now I don't know anyone who gets direct in sense of just based on giving people loans.

Q: Is there punishment to credit officers due to bad loans?

A: No, no punishment for loans going to bad. The only punishment would be if you haven't stuck to the bank's procedures. If the bank has set down procedures and you don't stick to them then you maybe get a warning, and then it would affect your overall grade. As long as you follow the procedure, the performance of the loan has nothing to do with you at all. You don't need to worry about that.

Q: Will the bank verify the information?

A: Yes, they often verify, for your address by looking at the public record. In the UK most the people over age of 18, who want to vote, could be found in the public record. To verify income, banks can look at your bank statement, They can also look at your credit performance. If you said you have 20 thousand savings, they might need evidence. In other cases, for consumer credit, credit card, or small loans, not everyone verifies income. Sometimes they just take what you put in the credit application form.

Q: Is it possible if credit officers give loans to relative and get money back from them? They pretend to verify, but actually they don't.

A: It's possible. In the UK it will called fraud. Because most of the information is checked externally, either credit bureau or public records, it's harder to make those kind of fraud.

Some kind of fraud would never work in the UK because you have to verify against the public records to see the person definitely exists. This is slightly separate from credit rating, very strong rules about knowing who you are dealing with. So it's nearly impossible to create or fabricate even address or application form. You could do it, but it's really very difficult. If your relatives give, for example, name and address, but you accept its income is 100,000 a year and you pretend you have verify it but you didn't. You can give them a loan as long as it passes the system. The trouble is the people who build the models know what's in the model and they don't work with customers. The people who are face to face to customers are not given access to how the models work.

What I was explaining to you is that the bank officers, the credit officers who actually take loans applications and meet customers don't get told how the system works. They don't know what the system is doing precisely. There is elemental secrecy between the model developed and the people who meet customers and that makes it harder for the credit officers to defraud the bank. But it's possible and there are quite a few cases, where a bank manager has created loans and, you know, stolen money from the bank, but the banks do pursue them through the courts. Typically if pursed through courts, staff could be imprisoned for quite a number of years because of fraud.

Q: So the working mechanism of the model is confidential?

A: Yeah.

Q: Who designed it is strictly separated from who meet customer.

A: The people who design it work in the credit risk department, which is like the head office department. And there, they would deal with the models. But the bank staff has a different reporting structure there. There are like a completely separate part of the bank.

Q: They might know each other?

A: They may know each other. Yes, I mean there are lots of possibilities to defraud banks. It's quite difficult, but people do it.

Q: The designers of the models, are they told to be kept as strictly confidential?

A: Yeah. Definitely.

Q:So if someone gets this information, we can track who gave this to outside

A: Yeah. The thing is, I mean the credit officers began to guess what's in the models. For example, one of the things is quite predictive in a model is the length of time that someone who has stayed at their address. It's quite predictive, because if you stay for a long time at your address, normally that's the sign of stability. If they put in short times, then that … you know, few months in the job or few months at the address, then less possibility to accepted it. So they might in the future just put many years instead of months, because they think that will help.

Q: This happened to my wife.

A: Really?

Q: Yes, because my wife tried to apply for a credit card. She only stayed here for six months, and the credit, you know, the guy just put in three years.

A: O! Shocking!

Q: I told my wife: don't take that credit card.

A: Yeah, but that's what I mean it's important that the banks have got audit departments. They will check a portion of the application forms against what has been input into the system. So it's important that there is a regular audit process, so you are trying to avoid that. The other thing for the banks is that the systems are built and the credit officers can't go back and change things. Say they put in the information and it's declined, they are not able to open that and input again and change information. And again that's trying to stop them just changing things to make it accept. So if they have genuinely made some kind of keying error, if they have genuinely made a mistake, that there will be a separate procedure, whereby they can get that back to file but they won't be able to change themselves at all. And again, the banks have become wise to this because they know that people do try and get loans accepted not always because they are trying to improve their own performance, but some credit officers just don't like saying "no". You know they don't like saying "no" to people, or they think the system is saying "no" and the system is wrong. So it's not always that they're trying to defraud the bank or make a personal gain. Sometimes they genuinely think the system is wrong, and they'll just think "I'll try and correct things".

Q: Sometimes in the keying process, they just made a mistake, the key error… sometimes it's deliberately.

A: Absolutely, yeah.

Q: Is it difficult to tell this, even for the audit department?

A: Yeah, it's difficult to tell, but banks track their systems quite extensively, and they can track individual credit officer. You know, they all have statistics that says like - the branches are trying to have statistics and they will say: here's all your credit officers, here is the number of loan applications each processed this week, and here is the number of all applications that were accepted this week. And they probably accept most of them, you know, 2 out of 10 will be declined, so if you were a loan officer and you have always got everyone accepted. That will ring your alarm bells, because someone will be thinking: how come he is always getting ten over ten when the average is eight out of ten. So the senior officer is looking at the statistics and trying to track performance against expectations. So if anyone is too good, they will have a look at it, just like anyone is too bad, they'll have a look at it.

Q: So the job is a bit easy for the credit officer – they just follow the procedure and then get their bonus and wage.

A: Yeah. That's it.

Q: The bank cannot cut down their wage if they made mistakes

A: No, if too bad, no.

Q: OK. And then we go back to the borrower.

A: All right.

Q: Yeah, ok. If they deliberately default, I mean, the borrowers have the money, but they don't want to pay back.

A: You get people who do that. There are different categories. There are group of customers called "first payment defaulters". They get their loans, and just never pay. Never ever pay. And they can be treated or examined almost like fraud. You need to see whether they had any intention of paying. If you lend them money and they never ever pay your penny back, they are treated as a separate group, and they might be dealt with differently. Someone defaults at the first payment is a big problem. And you have collections processes that might prioritize first payment defaulters. After that, some people who delay paying – if they are very rich, and the amount you want is very small, they see that as so unimportant, like "why are you bothering me for this tiny amount of money". Sometimes people don't pay because they think this is just a ridiculously small amount and don't worry about it. But they are treated just like any of the other defaulters. What happens in UK system is like - again, the collections procedure when you are following up defaulters is all dealt with by models, and depending on the amount of the loan, the number of repayments that are still to be paid, and whether or not the customer has previously defaulted or not. Then the collections procedure - the procedure you follow the default will be different. So for example, to a first

payment defaulter you might have a strategy that says "right, I will telephone them straight away". So you might telephone within 7 days of the payment being due. A customer that has been a good customer for two years. He might have not been able to make this payment, but he has never defaulted. You might send a quite nice letter. So it depends on different strategies applied in the same way as there are different strategies applied to customers when they apply. The default strategies differ depending on the bank's exposure and the amount of risk

Q: For certain borrowers, they might have some liquidity problems. So banks can't let them go bankrupt, directly send the borrowers to court. They might need to refinance them to help them survive this.

A: Yeah.

Q: How to tell which is true, which is …

A: Well, when they went to default, they will have definitely get contact from the bank, either a letter, or a telephone call. If it's a letter, the letter will be saying "contact us". Now, until the customer contacts you, you have no idea whether there is a liquidity problem or a genuine failure. There might be an emergency that could be bereavement in the family: somebody may have died, someone may have become unemployed, but you are really reliable on that you knew that information, and once the customer has told you the reason of the default, then at that point you can decide how you want to progress things. If you send your default letters, and the customer just doesn't respond at all, then you'll just

progress the default, you'll just say "there's your first letter, there's your second letter, right, we are going to court now", and you just push on - I mean, if they won't come and tell you what's the problem, then we'll just get progressed to court.

Q: For example, if the borrower said – I hsve liquidity problem, can you lend me more money? And then I can survive this. I'll pay you back …

A: Yeah.

Q: How can you know this is true or not?

A: Well I mean what you have the customer's whole account history and you know what sort of money usually goes to the account – you can see the account performance. Now if he says this liquidity problem, it's going to sort itself out. What you want from him is a financial projection of the next 12 or 24 months so that you'll see his present position, and you'll see how it looks in the future, but then what you are going to have to get is evidence of where this proved the liquidity is going to come from. If, for example, he says: I'm owed money from this person, and because I did a job for someone else and he hasn't paid me yet. Then first of all you want to see the invoice that he sent the customer. But then you would also want to check the credit rating of the people's debtors, because – if he says: well, I sent our invoices for 100 000 pounds, and these people haven't paid me; but when they pay me, I wouldn't have a liquidity problem. What you want to know is the probability of the people who owe him money will be able to

pay him. So you wouldn't just say: "Oh well, you send us the invoices for 100 000 pounds. That's fantastic." You would say "OK. Give me the name and address of the one who is going to pay you, and tell me how much they owe you, and tell me how much business you have done in the past". And then you would make an assessment on the credit quality of the people that are going to pay him. If they were all good customers of his, and if they owed him 100 000, and he wanted you to extend a credit for a proportion of that, then you might do it. But again, that's why an expert comes in, because the system is not going to do that kind of refinancing if you are looking at invoice payments, and things like that. The system will do refinances of personal loans but there aren't very many – I don't know any systems of refinance corporate borrowings, where there are credit problems.

Q: OK. Thank you. And if the defaulters never pay after several letters – they never come back to you, so you can send them to court, or send them to a debt collector.

A: Yeah. The very thing you can do, I mean, essentially what's happened is that they have breached a contract. They have an agreement with you, then that's a contract between you both. So if they don't pay the loan, they simply breached the contract. You will pursue them through the court system to enforce your contract, and that is just your normal legal right. If at the end of the day, they can't pay, then they will be made bankrupt by the court system. But for small loans banks can sell the loans to debt collection agency. So say you have got a million pounds worth of unpaid loans, then you will sell it very cheaply to a debt collection

agency, because the amount of cost and effort for you to try and recover the loans along with the likelihood of recovery is just not worthy. And especially - remember the way the banks work that they are expecting a level of bad debt. Bad debt is not seen as a bad thing. Bad debt can be quite a good thing. Because if you have got no bad debt, it may mean your lending policy is too tight. So you do expect to have a bad debt, and there would be. If the bank has no bad debt, that will be very heavily criticized in the market and it could affect the bank's share price, because your lending policy must be such that you have a managed amount of bad debt. So no bad debt is bad. Too much bad debt is bad. But the predicted amount of bad debt – if you run with a certain amount of bad debt as long as it doesn't start going crazy, as long as you have got some explanations for the bad debt, then that's OK.

Q: In Chinese banks, there are a lot of bad debts. Most of them are loaned to the enterprises with government support. They issue the loans under the pressure from the government. In the UK, is there any pressure from the government?

A: Not really. The government does not generally interfere with the banking system in the UK. There are occasional initiatives, but really they want to make sure that everyone has got access to the banking system, and that's like private individuals, so they want to make sure that everyone has got the access to the banking system. And for that reason, they have monitored documents which have been required if someone goes in to open an account, because previously, the banks always wanted a passport or a driving license. But by insisting on those

documents, the banks were excluding a lower socioeconomic group of people: they just don't have a passport, because they don't go on holiday. And they don't have driving licenses because they can't afford cars. So the government, they didn't intervene with legislation but they worked with the banks to make sure that the banks go with the idea that everyone should have access to the banking system. But now in terms of influencing who the banks lend to, they don't try to do that.

Really in the UK there are various government agencies, enterprise agencies that work to support new businesses and start up businesses. There are government agencies that are helping new firms by giving them grants and giving them assistance, and that's completely separate from the banking system. The banking system … I mean, the government, they review things, for example at the moment they are reviewing the banks, whether they are lending. What they want to find out is whether or not the banks are taking into account of people's ability to repay loans. Previously what banks were focused on, they just built models to predict whether you go bad. They didn't actually look very closely at your abilities to repay. The government are now … they sort of put pressure on the banks just by working with them and working participation. They are trying to make the banks agree to things. You know, the government tries to get agreement in order to avoid legislation, and generally give it. But they don't influence who the banks lend to.

Q: If the head of the local government has a relative to run a company, the head cannot give pressure to local bank?

A: Absolutely not! Absolutely not! Banks are very independent from the government. You know, they are running for profit. They don't do anyone favors. If the prime minister applied for a loan, it even goes through the same loan process as anyone else. There are a couple of posh banks that deal with the royal family and other very rich clients, but they have lending criteria just like everyone else. So no, your status doesn't affect your ability to borrow money. It's really a quite objective issue. It's all about your ability to repay, you know, the collateral you've got, and people don't influence people to lend money. Different with you, is it?

Q: Yeah. It's different from China. That's why China is trying to become a market economy.

A: Of course, yeah. But there are so many things. I mean the whole risk assessment and objective modeling just developed over the last 25 years. Until the 1980s, it was really, you know, about a person sitting, talking to another person and making an individual assessment without any external data. They would just use their judgment: thinking about what kind of job they had, whether he looked like a nice guy. It was really just since about 1980. It doesn't take very long when she gets started on this sort of modeling decision making. It doesn't take very long to make a huge change.

Q: As we know, when we make models, we need a data chain – could look back maybe 2 years or 3 years.

Yeah.

Q: Does it take into account of the structural change, like the 9-11?

A: Not really. Anything like that will shift the data. Then you know, that would skew the data and you won't use that data. You need some kind of consistency about the data. If it has got extreme events in there, then that would spoil that data to build a model. But before you have data, what you can do – you can try and build a model, just looking at the loans that went good and bad when people were making their own decisions, and you can try and take out the ones where you think there is influence, or pressure, or wrong decisions was made for the – I mean, you have to start from somewhere. Currently UK banks are working in China and they will have to start the modeling process there. If you go into a region or country where there are no risk models, they just have to build models based on the loans that went good and bad. These won't be good models because some of these loans will have gone bad, because they should never have been granted. You know, maybe the person who granted the loan was influenced in a way you say – so the prediction rate in the first models will not be very good, because you know, there is all sorts of influences on almost every loan made by private individuals. But once you get your model and your system in place, after that you are going to go and improve it, because you are going to take into account of credit policy, you are going to see in future you will do with the model like this. After that, it gets better and better and better.

Q: So at the moment it's like a fluctuation between some points. And later they'll find this point and stick on that?

A: Yeah, exactly. Historically, you know, keeping good quality data is now hugely important in UK banking. I mean data is the most valuable resource that they've got, because it allows them to identify who the customers are, they are good customers or bad customers. They build their strategies on the data. They target customers based on the data. I mean data modeling in banks is used for just everything in the UK. And I mean that will be the same in the future in China, because it's such a valuable resource that you just can't do without it now.

Q: It saves time.

A: Oh, mass of time. It's just excellent. I mean if we are doing a new marketing campaign, for example, then it's the same data that the risk models use. They would run and say: OK, who know the customers there? What rate did they get the loan out? OK, we are going to target these people. Or if they are doing some kind of an invitation to people to refinance the loans, then they'll look at the people who are – maybe just going on a little bit, but - they are not bad, but they are not perfect. Because the most profitable people are the one to go a little bit bad sometimes, you know, because you get extra income from there and charges at additional interest, and things like that. People, for example, who take a credit card, use it and pay it off every month. There is no profit in that, none at all. So what you want is that people who take a credit card, shop with it, don't pay it off every month, carry the balance, get a bit short of cash, get a cash advance, even

more money from a cash transfer and shopping. So you are going to be quite sophisticated about not just good and bad, but profitable and non-profitable. And that's a whole difference. The initial risk models were just trying to avoid the people who would go bad. But increasingly people are building models looking for profitability. So the question is then not "will they go bad", but "when will they go bad". And this is like if they go bad after the broken even, then I'm not so worried about it. But not everyone is doing that. Those are quite sophisticated models. They are called proportional hazard models.

Q: When foreign banks go to China and a new market, they don't have the data. So will they send the most experienced credit officer there, to use the experience there?

A: Not really. They might send people who know how UK banking systems work. But they are really relying on the experience of the credit officers who are there. But they all know what kind of system they want them to build. What they want to do is to extract information from the credit officers, so you can use that information and build the models. They won't understand how things work in the new market. The models will be built based on what they are told when they are out there – but they won't normally send UK credit officers out there to do the lending. No. They will send UK risk people out there, because it's the risk assessment people who understand how the models are going to be built, that are going to be the future of China, because in the future the decisions will be made much more by the risk models than the people. But initially you have to

understand how they work. But no, they wouldn't normally send UK credit officers and they would prefer to use the experience of the local bank officers.

Q: How do they extract this experience? Because experience is formed through a couple of years.

A: What they are trying to do is to look at the processes that are in place, you know: if a customer applies for a loan, what's the process. And they want to know, just what you've asked me: what pieces of information will you get from these customers? What pieces of information will you verify? Are there any occasions when you might ask this and you might not ask that. So they are trying to understand the loan process. And then they'll work at the history of the loan portfolio there. They'll just take all of the loans for granted in the last 5 years or however many years, and see which ones are good and which ones are bad. And they look very closely at the bad ones. They will see, well, they get all the information, and then they'll just use the good and bad loans to build their risk model. So they are trying to understand the process, to understand the credit officers, you know – what they are trying to do is take the questions they asked, and build them into the model. But I mean, at the end of the day, you are just going to take all of the application data and any other data that they gather, and build into the model. But if for example, data can't account things like relationships, you know, who is so-and-so's cousin, who is so-and-so's brother, then that will just never go into the model. The banks are not very interested in who knows who. So we only deal with, you know, completely objective data that is, you know, sort of repeatable in the future and they make the loan decisions on

this. That we make loan decisions on... because we don't have a bad debt problem and we think we know how to do good loan models, so we really know what to ask but I mean they will take on board everything that the credit officers tell them because maybe there is something unique, but – I mean – in actual fact there is actually not likely to be anything unique about the Chinese market. It's the same one as anywhere else, you know. What you need to know is what are the people like, how much money have they got, are they in a stable job, are they in a stable environment, and that's it. So it really doesn't matter if there is somebody's aunty or granny. That will not help them repay the loan. Unless of course, they want to have – I mean, I'm saying you never take into account relationships – you can take into account relationships, but only after the person is willing to act as a guarantor. So it's wrong to say if there is someone's aunty, or someone's granny – if someone has a relative that's willing to be the guarantor, then the reliability of the guarantor would affect the credit decision, if the guarantor is a good credit borrower person. But just the fact of the person is not enough. The person has to then come into the lending, you know, commend to the credit agreement and department officer and say: well, if my niece does not repay you, I will repay you. So I mean they can do that.

Q: OK. I think I've got all the answers. Thanks a lot.

Appendix 6   Bank and Credit Survey in Beijing, China (autumn, 2005)

OBJECTIVES

The overall objective of this survey is to gain a understanding of bank's role in Chinese economy, especially it's function of issuing credit loans, including people's understanding and attitude to credit loans.

Specifically, this survey was designed to . . .

- Find out people's understanding and utilizing of bank

- Find out people's borrowing habit though their experience of credit loan

- Find out people's preference of bank types in depositing and borrowing

- Find out people's attitude to the entry of foreign banks

- Identify the areas where the SOBs have advantage and the areas where they can improve

METHODOLOGY

- 200 questionnaires

- 2 interviews

Around 200 questionnaires were distributed in 5 areas around Beijing, as follows:

Areas	Area Characteristics	Questionnaires Goal	Questionnaires Actual
Xidan	Business street	50	50

Wangfujing	Business street	50	50
Guomao	CBD	50	46
Gongzhufen	Traffic joint	50	30
Xizhimen	Traffic joint	50	30
Total	**Total**	**250**	**206**

- The areas of Gongzhufen and Xizhimen were fast flowing crowds, and we suffered from lack cooperative respondents at these two points. Despite efforts, we were not able to find an better location easily enough to complete the quota

- "Randomly choosing" is my aim. My method is finding a starter and choosing the next passerby as soon as I finish the starter. Another method is picking one resting area and questioning all the people in the area except children.

- Although a sample of 206 in Beijing is not big, this survey gives hints of research methodology and direction of further research..

- Respondents were stopped and asked to complete questionnaires. This procedure met more rejections but assured quality and understanding of questions. Generally, response was good in young people.

- The questionnaire required approximately 8-10 minutes to complete.

- Because of the constraints of time we only did two interviews and both of them were with officials in SOBs. Without recording permission we could not take down the whole interviews word by word. Only key points are reviews in the summary after the interviews

- A copy of the questionnaire (Chinese and English) and a copy of the

interview outline (Chinese and English) utilized in the research are presented

in the appendix.

FINDINGS

1. **Age distribution of questioned sample**

   Respondents showed a spindle distribution of ages concentrating on

   20s and 30s, partly because people in these two intervals are more

   cooperative and have interested in this topic.

   It was difficult to let 60s people understand my questions, which

   should be interpreted in more simple language with less academic

   terms.

Your Age?	
	Total (n=206)
Under 20	11%
20-29	31%
30-39	26%
40-49	18%
50-59	11%
60 and over 60	3%

No answer	0

2. Income level

Respondents' income distribution showed strong concentration on two intervals, lower than 1000 and 1000-3000.

- Lower than 1000, which is commonly regarded as low paid population in Beijing, counted 1/3 of the sample. The impression of this group is that most of them just left schools.

- About half of respondents' income dropped in the level of 1000-3000. This class is called "Gong Xin Jie Ceng", (Wage earners Class), concentrating on 30s and 40s

- Income as a common privacy taboo, 6% of them refused to answer this question.

Average monthly income?	
	Total (n=206)
Lower than 1000	30%
1000-3000	47%
3000-5000	17%
5000-10000	0%
Over 10000	0%

No answer	6%

3. How volatile is their income

About half of respondents (46%) have stable monthly incomes, which is coincident with China's present stage, a transition from planned economy to market economy. People's income is still relatively fixed, while in general *"Iron rice bowl"* system started collapsing since 1978.

Nineteen percent (19%) stated very stable income, partly because they are students with no income.

Volatility of income?	
	Total (n=206)
Very stable	19%
Stable	46%
Volatile	22%
Very volatile	9%
I don't know	4%

4. The percentage of enterprisers

Majority of respondents (58%) do not have any business or shared business. This could be interpreted as 25-year decentralization history

has not moved people's discriminating attitude to business or

cultivated common business skills, market etc...

About a quarter of them (24%) are trying to establish their own

business

- Among these people (63%) regard banks as their first outer

  financial resources.

- 70% of them are prohibited from the requirement of collateral

- 32% of them think the interests are too high.

Do you have your own business?	
	Total (n=206)
I have my own now	7%
I had before	5%
I'm trying to establish now	24%
I have a business shared with other people	6%
No at all	58%

5. **Willing to establish own business**

Attitudes for establishing their own business concentrate on three choices

- Roughly one-quarter (23%) said they do have such plan.

- More than one third (31%) do not have such plans.

- A quarter (25%) of them will make decision basing on their financial situation, which implies it is not easy for them to use outer financial resources freely.

- Only 8% of them need to care business opportunities. A new enterprise is always being established by certain business opportunities, but my survey showed little care about this. It implies project's quality does not help much for the application of credit loans.

Do you plan to establish your own business?	
	Total (n=206)
Yes, I will	23%
No, I won't	31%
It depends on my financial situation	25%
It depends on business opportunity	8%
I don't know / no answer	13%

6. **The preferences of outer financial channels**

Outer financial channels are those resources except own previous savings and wages.

- Respondents report high first preference for banks (67%). 93% of those chose banks as the first, only or equal (who did not mark 1, 2) outer financial channel.

- NBFIs played the complementary role (25%), which is coincident with the development of NBFIs in China.

- 29% of them chose relatives and friends as their alternative financial channel with banks. When I further asked these people, most of them clearly told me they did not expect to borrow too much and only for emergency, such as illness and liquidity problem.

The best two outer financial channels (mark 1, 2)?	
	Total (n=206)
Banks	67%
NBFIs	25%
Capital market	28%
Illegal FIs	4%
Relatives and friends	29%
Others (give details below)	0
I don't know / no answer	5%

7. **Business loans experience**

Business loans which we mostly concerned are seldom successfully applied, while house loans are popular. Consuming loans are still in the original stage.

- Only 7% of respondents have successfully got business loans granted and 5% have repaid or will repay properly, while 2% of them will try to delay or default. Because of the honesty problem (I was always standing beside when they filled in the form), the actual default rate or default willing rate will be higher than calculated figures here.
- It is a potential market, as over half of the respondents (52%) have willing to borrower later.

Have you tried to apply business loans from banks (multi choices)?

	Total (n=206)
Successfully borrowed and repaid or will repay properly	5%
Successfully borrowed and will try to delay or default	2%
Yes, but it is declined	5%
I will apply later	52%

No at all	33%
I don't know / No answer	3%

8. Previous credit loan experience

Roughly more than one-third (35%) have applied house loans and 23% got granted. This is partly because government's policies of encourage house loans regarding accommodation reform.

Only 5% of the respondents have applied consuming loans, mainly concentrating on vehicle purchase, but all of them were declined. I randomly asked some people about purchase cars by using bank loans and most of them regarded this as a luxurious and risky behavior. They preferred to use their own savings.

The feedback of business loan in this question doe not exactly match Q6, partly because respondents' inconsistency or confusion.

What kind of loans have you applied (granted or not)?	
	Total (n=206)
Business loan (Granted)	0
(declined)	6%

House loan(Granted)	23%
(declined)	12%
Consuming loan (Granted)	0
(declined)	5%
Others (Granted declined)	0
No at all	43%
No answer	9%

9. Borrowing resources preference

SOBs dominate the banks' credit market, as nearly four-fifths (83%) gave their preference of SOBs.

Few people realized they have opportunities to borrow from foreign banks.

Illegal FIs (Underground Qianzhuang) do exist and could satisfy some people's financial demand.

The bank I prefer to borrow from?	
	Total (n=206)

SOBs	81%
Joint-stock or private banks	10%
Foreign banks	5%
Illegal FIs	3%
Others (give details below)	1%
Borrow from relatives or friends	1%

10. Obstacles for bank loan application

Collateral - the most important requirement of issuing a bank loan is customers' biggest obstacle of bank loan application.

- According to interviews with bank officials, in present procedure almost every bank loan needs collateral, although the collateral rate is flexible.
- 51% of the respondents regarded "collateral required" as the first biggest obstacle.
- Bureaucracy (40%) is another big obstacle, mainly existing in SOBs, which could be understood as unreasonable delaying, complicated process, excessive information/certificates requirement

- High interest (38%) is also concerned. I further asked some of them how high interest rate is. They could not tell, and always compared it with the free loans from relatives and friends, which let them regarded "paying interest to banks" is kind of "wasting money".

Biggest two obstacles for bank loan application? (mark 1,2)?	
	Total (n=206)
Bureaucracy	40%
Collateral required	51%
No good credit record	8%
High interest	38%
Others (give details below)	0
I don't know / no answer	3

11. The amount of non-house loan experience

The dominating majority (80%) do not have business loan/consuming loan experience.

Because of privacy, 11% of respondents refused to answer.

The amount of latest non-house loan (give types, business, , consuming etc.)?	
	Total (n=206)
0	82%
0-4999	0
5000-9999	2%
10000-50000	3%
Over 50001	2%
No answer	11%

12. Customers' knowledge about banks' differentiating ability

Over half of the respondents (52%) believe capable banks could know default probability. Skills and experience are regarded as crucial in assessing.

15% of respondents realized the influence of uncertainty.

25% of respondents regarded borrower's honesty as crucial factor in risk assessing.

Do you think bank can know whether you will default?	
	Total (n=206)
Never know, because they don't really know me or my project	14%
Never know, because too much uncertainty	15%
It depends on my honesty	11%
It depends on their skills and experience	52%
I don't know / No answer	8%

13. SOBs's advantages

Government support (62%) is regarded as the first advantage, as the state will never let SOBs down. SOB's confidence (22%) is supported by the confidence in the government.

Existent nationwide branch network (20%) gave SOBs natural advantage in providing convenience services.

Although some SOBs' officials confessed the lack of capital and large amount of NPLs problems, there are still 10% of respondents who

believed SOBs's have advantage in capital base.

What are the first and second advantages of SOBs? (mark 1,2)?	
	Total (n=206)
Huge branch network	20%
With high confidence in people	22%
Government support	62%
Abundant capital	10%
Others (give details below)	0
I don't know / No answer	2%

14. Deposit preferences

Ninety-four percent (94%) considered SOBs as one of their first two deposit preference. Among these people who picked SOBs, all of them chose SOBs as the first, only or equal (who did not mark 1, 2) deposit preference.

NFBIs (29%) and foreign banks (23%) have similar proportion. 23% of the respondents chose foreign banks, mostly beside SOBs as second choice.

You first and second deposit preference (mark 1,2)?	
	Total (n=206)
SOBs	94%
Joint-stock or private banks	12%
Foreign banks	23%
NBFIs	29%
Illegal FIs	0
Somewhere at home	3%
No answer	2%

15. Attitude to depositing in foreign banks

28% of the respondents showed apparent interests in depositing in foreign
banks, while 35% of them chose to hold and make decision basing on
foreign banks' performance.

Only 8% of respondents showed no interest in foreign banks.

Will you deposit in foreign banks?	
	Total (n=206)

Of course I will	28%
No interest	8%
Having deposit there	2%
Hold and watch their performance	35%
I don't care	13%

16. Main negative obstacles for the entry of foreign banks

- The biggest obstacle for foreign banks is Chinese people's lack of knowledge about them, as 46% of the respondents chose "I don't know them" as a possible reason for disliking foreign banks.

- Nobody chose "I don't trust foreigners".

- Foreign banks faced the strong competition from SOBs. Although foreign banks have advantage in innovative business and financial product, 31% of the respondents feel their financial demand could be satisfied by SOBs.

What are the main reasons, if you don't like foreign banks?

	Total (n=206)

I don't know them	46%
SOBs can satisfy my financial demand at all	31%
patriotism	12%
I don't trust foreigners.	0
I don't know	9%
No answer / refused	5%

SUMMARY

Banks play the most important role in financial market:

- Respondents reported high first preference for banks (67%) as their best outer financial channel.

- 93% of those people chose banks as the first, only or equal (who did not mark 1, 2) outer financial channel.

- NBFIs played the complementary role (25%).

- Relatives and friends also played an important role (29%).

- Generally, about one third of respondents could not give any example of other bank types except SOBs.

Respondents reported exceptionally strong preference for SOBs:

- Considering "the bank I prefer to borrow from," nearly four-fifths (83%) gave their preference of SOBs.

- Ninety-four percent (94%) considered SOBs as one of their first two deposit preference. Among these people who picked SOBs, all of them chose SOBs as the first, only or equal (who did not mark 1, 2) deposit preference.

Business loans which we mostly concerned are seldom successfully applied, while house loans are popular and easier to get granted. Consuming loans are still in the original stage.

- Only 7% of respondents have successfully got business loans granted and 5% have repaid or will repay properly, while 2% of them will try to delay or default.

- Roughly more than one-third (35%) have applied house loans and 23% got granted.

- Only 5% of the respondents have applied consuming loans, mainly concentrating on vehicle purchase, but all of them were declined..

Collateral - the most important requirement of issuing a bank loan is customers' biggest obstacle of bank loan application.

- According to interviews with bank officials, in present procedure almost every bank loan needs collateral, although the collateral rate is flexible.

- 51% of the respondents regarded "collateral required" as the first biggest obstacle, while bureaucracy (40%) and high interest (38%) were also concerned.

Few respondents gave negative feedback to the entry of foreign banks.

- Considering "deposit preferences", 23% of the respondents chose foreign banks, mostly beside SOBs as second choice.

- 28% of the respondents showed apparent interests in depositing in foreign banks, while nobody chose "distrust foreigners". 35% of them chose to hold and make decision basing on foreign banks' performance.

- The biggest obstacle for foreign banks is Chinese people's lack of knowledge about them, as 46% of the respondents chose "I don't know them" as a possible reason for disliking foreign banks.

- Foreign banks faced the competition from SOBs. Although foreign banks have advantage in the area of innovative business and financial product, 31% of the respondents feel their financial demand could be satisfied by SOBs.

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