Workout management of non-performing loans

A formal model based on transaction cost economics

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Received July 2006
Accepted October 2006

Abstract

Purpose – The German banking sector has recently been facing high real estate loan default rates resulting in the accumulation of a high volume of distressed real estate debt in the banks' balance sheets. As a consequence, German banks are confronted with the workout of their non- and sub-performing real estate loans to proactively solve the problem. When doing so, banks have to decide whether they want to conduct the loan workout in their own workout departments (integrative approach) or whether they prefer to outsource the workout to a third party servicer or even sell their bad loan exposure to an external investor (disintegrative approach). This paper aims to investigate this issue.

Design/methodology/approach – A bank's decision to employ an integrative or a disintegrative approach can be transferred into a make-or buy-decision as described by the transaction cost economics. The transaction between the bank and the workout manager is analysed by the transaction characteristics of the transaction cost economics. The specificity of the human capital required for the loan workout of real estate loans is a key consideration for answering the question of integration or disintegration. Assuming highly specific investments for both, the workout manager and the bank, a formal model compares the aggregated pay offs for the bank and the workout manager to determine the optimal control structure for the specific assets.

Findings – Following the assumptions of the transaction cost economics, the specificity of the investment of the workout manager (and also the bank) is crucial for the decision of integrating or disintegrating the workout of real estate loans. The degree of specificity required to perform the workout tasks depends on the status of underlying credit engagement and the characteristics of the collateral (the real estate). The formal analysis shows that the bank and the workout manager both under-invest in integration and disintegration scenarios. However, if the degree of specificity of the investments is equal, nonintegration is superior to integration. Forward integration is superior to nonintegration, if the bank's investment is more specific than the workout manager's investment.

Originality/value – This research paper approaches the problematic from an academic stand point, integrating both the banking and the real estate perspective and aims to provide a recommendation for banks on the integration or disintegration of the workout unit for a certain real estate secured loan portfolio.

Keywords Banking, Germany, Real estate, Loans, Default, Transaction costs

Paper type Research paper

1. Problem environment and aims of the study

While non-performing loans are a phenomenon that is permanently present in the balance sheets of banks and other lending institutions, the significant rise of non-performing loans in banks' balance sheets and the emergence of a non-performing

Journal of Property Investment & Finance
Vol. 26 No. 1, 2008
pp. 59-79

1463-578X
DOI 10.1108/14635780810845163

loan (NPL) market are a temporary phenomenon. Several economies have experienced such distressed debt cycles. In the USA, the non- and sub-performing loans resolution was embedded into the savings and loans crisis from 1989 to 1994. In Japan, the NPL cycle began in 1997 and China and the rest of Asia deal with NPLs and SPLs since 1999. In Germany, the first publicly known transaction occurred in 2003 (compare to Figure 1).

To estimate the magnitude of the NPL-problem to be solved in order to lead the market back into a healthy environment, the following rule of thumb might apply to Germany: If the sum of all German bank balances equals EUR 6.400 billion and the default ratio of loans typically lies around 5 percent, this leads to a market potential of NPLs of around EUR 320 Mio. Approximately 50 percent of these loans are secured with real estate, so the maximum potential of a German real estate NPL-market lies around EUR 160 billion. Other estimations with regard to lending volume as basis show even lower figures.

It has to be kept in mind though, that not all of real estate NPLs will be sold as some credit relations or their underlying real estate are too specific in order to achieve an acceptable market price. Thus, the potential might even be a little lower than the afore-mentioned figure.

A market generally builds up an amount of NPLs over time. The structural reasons for the upcoming of such markets vary for every country. German banks suffer from a low return on equity. There are several reasons for this phenomenon which lead to efforts in cost savings and concentration on core competencies and consequently to the necessity of an active management of non- and sub-performing real estate loans. The following reasons are the origin of the emergence of a non-performing loan market in Germany:

- German banks are affected by the current recessionary environment and feel the consequences of the volume-, but not a risk-oriented aggressive lending policy of the last decades.
- The banking sector itself is over banked. Consolidation and restructuring becomes necessary.
- The expiration of state guarantees for banks governed by state became effective in June 2005. Therefore these institutions have to clean up their balance sheets in order to increase their profitability.

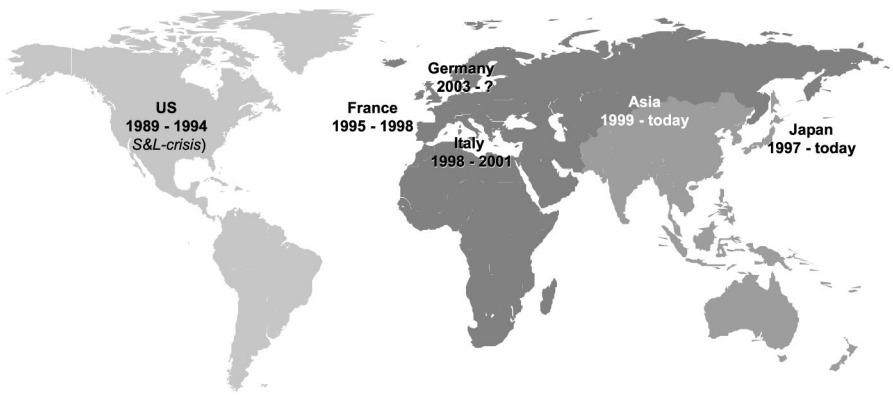

Figure 1.
Temporary worldwide non-performing loan markets

- The New Basel Accord (Basel II), which will become effective in January 2007, defines risk-sensitive capital requirements according to the underlying debt. Therefore, for the high volume of non-performing loans, an increased risk provisioning is required.
- Furthermore, personnel cost in the workout department rise.

For the above-mentioned reasons, German banks have to focus on cost savings and concentrate on their core business.

Therefore this research study focuses on the optimal management of non- and sub-performing loans. In order to judge the question of optimal management, transaction cost theory will be used as efficiency criterion to give advise which type of non- and sub-performing real estate loans should remain in the bank balance and be managed by a bank itself, should be outsourced to a servicer or should be sold to an investor.

2. Literature review

Literature on the transaction cost economics started with Coase (1937) who raised the question why transactions take place within and outside the boundaries of a firm.

Based on Coase's research findings, two main approaches have been developed. The first approach mainly pursued by Alchian and Demsetz employs cost consideration as explanation for internal or external structure emphasising the existence of economies of scale and marginal cost and productivity a of transaction in different control structures (see Alchain and Demsetz (1972, pp. 777-95); see also Demsetz (1968, pp. 33-58)).

Williamson represents the governance structure approach, in which transactions are described by the following three transaction characteristics:

(1) uncertainty regarding process and the value of the transaction;

(2) specificity of the investments; and

(3) frequency of the transaction.

Based on this, Williamson focuses on the question of hierarchical integration or market solution for transactions (in later publication, he also includes hybrid governance structure) as well as the optimal size of a firm and the optimal internal organisation (see Williamson (1967, pp. 123-38); see also: Williamson (1965, pp. 579-607; 1973, pp. 316-25, 1975, 1976, pp. 369-77, 1979, pp. 233-61)). Hart and Moore (1990) as well as Grossman and Hart (1986) and Erlei and Jost (2001) have proven specificity as most important transaction variable. For the purpose of this paper these formal approaches on hierarchical integration versus non-integration decisions serve as starting point the formal analysis.

The German NPL market is still young in comparison to more mature markets in the US and several Asian countries. To date, academic papers and journal articles are rare. The existing academic literature on the examination of resolutions strategies of NPLs for German banks can be clustered into two groups. The one encompasses academic literature on the factors and the circumstances leading to the NPL crisis in Germany as well as the status quo. The other group of literature deals with structural and organisational resolution and workout strategies in more mature distressed debt

markets, especially in the USA where the NPL-crisis lasted from 1989 to 1994 and Asia. Japan's banks struggle with distressed debt problems since the 1980s, China's financial institutions have started with an active NPL resolution in the late 1990s.

A make, buy or sale decision of NPLs and its workout can be seen as a question on the outsourcing potentials in the loan granting process. This was analysed by Lautenschlager *et al.* (1998), who discuss the inclusion or exclusion of the workout unit into a bank's business and balance uncertainties related to this potential organisational transformation of the lending institution.

Hardymon and Lerner (2003) argue that large German banks are the biggest group holding distressed assets in Germany. This is due to the bank's strong business relationship with the Mittelstand, a sector strongly hit by the recessional environment. Further on, they visualise a matrix of distressed investment targets concerning internal/external workout and whether it is resolvable/irresolvable by a fund.

In the context of the ongoing crisis, Garthe (2004) discusses recent developments in the German banking and real estate sector. She points out three factors – the restructuring in the German banking sector, the economic slowdown and the atypical real estate cycle – causing the actual non-performing loan problems. Garthe (2004) argues that German banks have to solve the distressed debt issue during the next three years aiming to comply with the Basel II regulations and successfully restructure the over-banked sector with the result of a "more sophisticated and innovative real estate lending in the future". Hellauer (2003) deals with non-performing real estate loans and strategies for debt and real estate workout. Lieber *et al.* (2004) analyse differences of the German and the US distressed debt market and determine market potential and country-specific problems through a questionnaire survey. The German situation differs from other distressed debt markets especially in terms of the legal framework. Anders (2004) discusses that aspect as well as the legal uncertainties concerning non-performing loan transactions, respectively open questions on data protection and banking secrecy. The implication of banking secrecy and assignment of debt in non-performing loan transactions is also addressed by Cahn (2004).

While academic literature is rare, the German distressed property debt market is comprehensively covered through practitioners' opinions and market reports (see Ernst & Young, 2004, 2006; Kroll and Mercer Oliver Wyman, 2005; The Boston Consulting Group, 2004).

The spectrum of international academic literature is broader, especially in region of more mature distressed debt markets.

The US non-performing loan cycle is embedded in the Saving and Loan Crisis from 1989 to 1994. Distressed real estate debt can be regarded as a sub-problem within the biggest banking crisis in the USA. In this context Cooper and Brown (1992) concentrated on the valuation of complex distressed real estate and real estate loans and derived a valuation methodology that is especially designed for that asset class. The Federal Deposit Insurance Corporation (FDIC) (1997) published the probably most distinguished collections of associated publications on the Saving and Loan Crisis and distressed debt resolution. Focus is the complex combination of causes that led to and fostered the banking crisis including the role of commercial real estate lending and real estate cycles. FDIC (1998) concentrates on the role of the governmental institutions, the FDICs and the Resolution Trust Corporations (RTCs), and their experiences in the

resolution of troubled banks as well as the asset management and workout of distressed assets.

The renegotiation and restructuring of distressed debt is subject to a pay-off-model of Harding and Sirmans (2002). They determine the different reaction of borrowers (under-investment/over-investment) with regard to the different workout strategies and identify renegotiation strategies regarding the maturity being most efficient to the debtor due to an decreasing risk profile.

Berger and DeYoung (1997) analyse the relationship between cost efficiency and NPLs in an ambivalent way. The higher the NPL-volume the lower the cost efficiency; nevertheless, mismanagement also lead to a rising amount of bad loans. Gibler and Black (2004) analyse outsourcing potentials of real estate function with respect to the agency problem related to that. Those findings may have important implications for the outsourcing of servicing and workout of real estate loans.

Peiser and Wang (2002) analyse the resolution strategy of distressed debt in China through the foundation of state-owned asset management companies for the four biggest state-owned banks. They also identify the country specific problems of China by comparing the situation to the USA, where the RTC was established to foster a quick workout of the engagements. The financial and real options associate with the transfer of distressed debt to the asset management companies are explored by McIver (2005), focussing on the real option of an asset management company to become equity holder of a distressed asset via debt equity swap.

A study on the securitisation of NPL in China was conducted by Chen (2004). His examination of the legal and economical framework concerning securitisation of non-performing loans results in a call for government participation via policy adjustments and debt restructuring plans, which are crucial for successful large-scale securitisation.

For Japan, Herr and Miyazaki (1999) address the NPL problem and suggest securitisation as solution by transferring the distressed debt into securities and therefore achieve a positive balance sheet effect. As result, they also mention the necessity of the involvement of politicians who can foster the scheme of securitisation on the private banks side and in the Ministry of finance. The Japanese market of non-performing loans and the role of Governmental intervention are also subject of Barseghyan (2004). He identifies a link between the Japanese government's reluctance to solve the bad loan problem and the economic slowdown. He opines that the Governments behaviour deteriorated the economic situation of Japan and affirms this hypothesis by a normative study.

A more general comparative study on the structuring of asset management companies was undertaken by Klingebiel (2000). She analyses and compares the use of asset management companies in the resolution of a banking crisis in a cross-country comparison and identifies success stories and drivers for different types of asset management companies of distressed debt.

3. NPLs

3.1. Definition of non- and sub-performing loans

In Germany, neither a legal nor an academic definition of NPLs exists. There is a lack of a regulatory framework, which defines criteria for a precise loan classification (see Hellauer, 2003, p. 1). In fact, a wide scope of definitions and interpretations of an NPL

can be found. In the industry there is a general distinction between a narrow definition of NPLs and a broad definition of the expression. The narrow approach equals to the criterion stated in the regulations of the New Capital Accord of Basel II and understands NPLs as loans that are past due and unpaid for more than 90 days (usually equally to three dates of payment) (see Bundesbank, 2003, pp. 12, 13; Hamberger and Diehm, 2004, p. 182f). This classification approach resembles to the standard used in most G-10 countries (see Cortavarria *et al.*, 2000, p. 11).

The broad definition of the term "non-performing loans" is also encompassing sub-performing loans. That loan type is already defaulted but has not met the Basel II criterion. Further more, the broad approach contains watch list loans which are still performing but have a certain probability of default in the near future and an internal bank rating of B − and worse (see Kroll and Mercer Oliver Wyman, 2005, p. 6).

In terms of NPL transaction, loan portfolios may also contain sub-performing loans, watch list loans as well as non-strategic loans; non-strategic loans are neither distressed nor disturb debt but do not belong to the core business of the selling bank. As a result of internal restructuring and concentration on core competencies in the banking sector, non-strategic loans are put into distressed debt packages for disposal (see Hypo Real Estate Group, 2004a, pp. 1-2, b, p. 15).

In contrast to other NPL markets such as the USA and several Asian countries which encompass loan portfolios of banks and financial institutions as well as publicly-traded corporate bonds, the German distressed debt market primarily consist of loans of banks or other financial institutions (see Schalast and Daynes, 2005, p. 1).

Since the distinction between non- and sub-performing loans is not essential for the purpose of this analysis, in the following, the expression NPL will be used as a synonymous for all loans which are approached by resolution and workout strategies and are potentially traded in distressed debt transactions.

3.2. Introduction to major non-performing loan markets

NPL markets are temporarily and regionally limited to an economical or political framework. Before analyzing the emerging of the current NPL wave in Germany, this paper gives an insight to former distressed debt crises in countries, as in the USA, China and Japan.

3.2.1. USA. Non-performing real estate loan resolution in the USA in embedded in the Savings and Loan Crisis from 1989-1994 (see FDIC, 1997, p. 3). Volatile exchange rates, pressure of oil prices and deregulation in the banking sector as well as higher competition due to the abolishment of intrastate banking restriction had formed an unstable and competitive banking sector. Banks had to take more risks and commenced aggressive lending, especially in the commercial real estate sector. "As a percentage of total bank assets, total real estate loan rose from 18 to 27 percent between 1980 and 1990" (FDIC, 1997, p. 26). The commercial real estate boom of the 1980s was partly tax driven, since the Economic Recovery Act of 1981 gave tax incentives on real estate investment (see FDIC, 1997, pp. 26, 38). Nevertheless, due to the cyclical development of the commercial real estate markets combined with the high risk of that asset class, the real estate activity exceeded demand by far. The burst of the bubble caused a decline in values with the consequence that the collateralisation of loans and mortgages was no longer secured (see FDIC, 1997, pp. 26, 38). This real estate crisis was part of an overall savings and loans default which was originally attributed

through the over-lending activities of the financial institutions and boosted by adverse economic conditions and the development of a brokered deposit market (see Curry and Shibut, 2002, p. 27). A total of 1,600 banks received financial support by the Federal Deposit Insurance Corporation (FDIC) or were closed between 1980 and 1994. As a reaction to that, Congress established the RTC in 1989 as a federal agency to act as a conservator and a receiver as well as to provide "preservation and disposition of available affordable housing". During the Saving and Loan Crisis approximately US$705 billion.in total assets were transferred to the FDIC and RCT, of which about US$305 billion were sold. "The remaining US$400bn. in assets was disposed through a variety of methods including, but not limited to, auctions and sealed bids, securitisations, equity partnerships, the use of asset management contractors, and especially through the significant efforts of the FDIC and RTC in-house staff" (FDIC, 1998, p. 30)

3.2.2. China. China evidences active NPLs resolutions since 1999. The origin of the Chinese NPLs crisis is a political matter. During the centrally planned economy from 1949 onwards loans were granted by state owned banks to state-owned companies without proper credit due diligence at predetermined standardised conditions by the government. Especially, in the overheated economy of the 1990s domestic credits extended enormously and grew by 30 percent per year between 1992 and 1995 (see Peiser and Wang, 2002, p. 119; Chen, 2004, p. 19; Sprayregen *et al.*, 2004, p. 38). With China's transition to a market economy, former stated-owned companies failed to compete in the new market conditions (see Peiser and Wang, 2002, pp. 119-21)[1]. Because of the lack of professional proof of the loan disposition as well as the absence of risk adjustments at loan granting, many project failed and banks had to sustain financial losses.

In 2002, China's banks hold more than US$ 500 billion of distressed debt. Due to the economic transition to an fully integration into the World Trade Organisation (WTO) by 2007, China committed to improve efficiency and credit rating of the major banks as well as to reduce non-performing loans to an average level of 15 percent by end of 2006. China's four state-owned commercial banks (SOCB), namely Industrial and Commercial Bank of China, Bank of China, China Construction Bank and Agriculture Bank of China, are the most important players in the domestic banking sector having combined an average non-performing loan ratio of 26 percent equalling assets of US$ 226 billion in total (see Ernst & Young, 2003, p. 4). For resolution of the distressed debt the government put in place four asset management agencies in 1999; until the end of 2003, SOCBs have already transferred US$ 168 billion to the four state owned agencies, which are in charge of the whole workout process in favour of the banks (see Ernst & Young, 2004, p. 13; Chen, 2004, pp. 21-3). The first non-performing loan transaction between the asset management companies and Angle-Saxon investors has taken place[2]. The workout of the entire portfolio shall be terminated by 2009 (see Peiser and Wang, 2002, p. 116).

3.2.3. Japan. Japan's non-performing loan market is the biggest distressed debt market in Asia amounting to US$ 1,200 billion in 2002. A generally high leverage in the country shown by a debt/gross domestic product (GDP) ratio of 146 percent may be an indicator for the problem (see Ernst & Young, 2001, p. 2). High leverage could also be observed in the real estate sector, especially during the rise of the Japanese real estate bubble in the 1980s. With the burst of the bubble in the 1991 and the dramatic

economic slowdown, real estate values declined tremendously. As a consequence, many borrowers defaulted on the debt service and lenders had to sign big losses. Lacking regulations and tax incentives by the Japanese Government and Ministry of Finance as well as insufficient equity reserves of the bank to compensate write-offs of distressed debt, banks tried to deal with the problem by a wait-and-see approach (see Herr and Miyazaki, 1999, p. 1; Barseghyan, 2004, p. 29; Frey, 2002, p. 1). In 1999, the RCC, a government operated agency, was established for the acceleration of distressed debt workout and recovery (Callen and Ostry, 2003). As a consequence, Japanese banks could reduce their non-performing loans in the balance sheets to US$ 330 billion. Until the end of 2004, 13 percent of all non-performing loan disposals were transactions with the RCC, the remaining 87 percent account for acquisition and resolution by investment banks and opportunity funds (see Ernst & Young, 2004, p. 23).

3.2.4. Reasons for the rise of NPLs in Germany. The emerging of a NPL wave is embedded in the economic cycle and the macro-economic and fiscal coherences. The strongest and most comprehensive indicator for a countries economic performance is the GDP growth. The German economy was market by a strong and steady GDP growth from the Second World War to 2002[3]. In that strong economic environment, banks tended to an extensive loan granting (see Garthe, 2004, pp. 38-9). Banks built up strong business relationships with the "*Mittelstand*" in times of the German miracle in the 1950s as well as after the German unification, when tax incentives for real estate investments in Eastern Germany drove high demand for commercial real estate debt.

In 2003, the economic upwards trend in the economy was interrupted by a decline in GDP of 0.1 percent (see Statistisches Bundesamt Deutschland, 2006a). Since then, the German economy shows a weak performance; the outlook is only slightly positive. The economic weakness was evidenced by an enlarging number of company failures. A total of 115,700 bankruptcy cases were registered in 2004. Especially the German *Mittelstand* was hit sharply; many bankruptcies hit small and medium-sized companies, mainly family businesses (see Creditreform Wirtschafts- und Konjunkturforschung, 2004, p. 7)[4]. This economic downwards trend in the beginning of the twenty-first century resulted in an increasing unemployment rate in Germany. The actual numbers amount to 12.5 percent (as in March 2005) compared to a rate of 7.2 percent in 1990 (see Statistisches Bundesamt Deutschland, 2006b).

This development had several implications on the real estate market.

First, company failures and high scope lay-offs reduced the demand for office space. Whole sector failures (e.g. the New Economy) as well as high scale layoffs and restructuring as in the banking sector, are causing increasing commercial vacancy rates and resulting in declining rents. Frankfurt exemplifies a vacancy rate of 16.7 percent[5] in 2004, while the corresponding rate equalled 2.6 percent in 2001, prime office rents declined from app. 50 EUR in 2001 to around 30 EUR at the end of 2004 (see Jones Lang LaSalle, 2004, p. 2).

Second, high unemployment and insolvencies mean a lower disposable income of society and result in weak residential demand and rent decline in several segments.

Third, after the German unification in 1990 tax incentives for real estate investments in Eastern Germany attracted many private investors to develop or buy properties in Eastern Germany. Next to the lacking experience and professionalism of many investors, the performance of real estate investments in Eastern Germany was poor due to structural problems.

The weak economy and the suffering real estate market had a strong impact on the emerging of distressed debt. On the one hand, unemployed individuals face problems to service their debt. Company failures and firms on the edge of insolvency create non-performing corporate loans since initial investments financed by debt cannot be repaid.

On the other hand, the recessional real estate sector was an essential driver of distressed debt. High vacancy rates and a decline in the rent level generally led to lower rental income of a property. The debt service coverage ratio of several real estate investments fell below 100 percent meaning cash inflows were insufficient to service he debt. More over, real estate values were declining to under-collateralisation.

The New Basel Capital Accord (Basel II) defines risk-sensitive capital requirements according to the underlying debt. As non-performing loans are a high-risk asset class, the bank is required to hold an increased proportion of capital (equity) against this risk. Equity is tied at a low and risky return decreasing the overall return on equity of the bank. In the actual situation in the banking sector, German banks face additionally strong global competitions and are pushed to foster profitability and concentrate on the core business. As the German banking sector counted 2,232 banks in 2003 it is called "over-banked" and will be subject to tremendous restructuring and consolidation over the next years (see Garthe, 2004, p. 38)[6]. These aspects visualise the acuteness of the problem which non-performing loans pose to German banks at the moment.

Next to the large commercial and mortgage banks also *Landesbanks*, the savings and cooperative banks central institutions, face the problem of distressed debt in the balance sheets. Because of the abolishment of the AAA rating as well as state guarantees by EU, these type of financial institution loses its competitive advantage and experienced the need for restructuring and consolidation (see Garthe, 2004, p. 43).

The above-mentioned reasons lead to a vicious circle which foster the increase in non-performing real estate loans (Figure 2).

This vicious cycle can be interrupted by active resolutions strategies of opportunistic investors, who acquire non- and sub-performing loans and pursue value-added strategies. Value added strategies include discount deals and financial engineering at acquisition, redevelopment, performance management and turnaround management during the holding period and discount deals and financial engineering at the exit of the investment.

Through this, on the bank's side there is a relief on the regulatory capital and therefore there is a resumption of profitable new lending activities. This has a positive impact on the economic environment and so on.

3.2.5. The banks' option to deal with the problem. The deterioration of the real estate value market, especially in Eastern Germany combined with an overall recessional environment let to the accumulation of large amounts of NPLs in the balance sheets of German banks. The high competition in the baking sector and the necessary restructuring due to the regulation of Basel II from 2007 onwards make banks realise the call for action. For the reasons above German banks are forced to search for resolution strategies of the NPL problem.

This paper aims at giving a recommendation of how German banks should address the problem of NPLs and translates the problem into a question on the vertical integration of a workout unit into the lending institution. From a transaction cost-based perspective, banks have basically following options, namely:

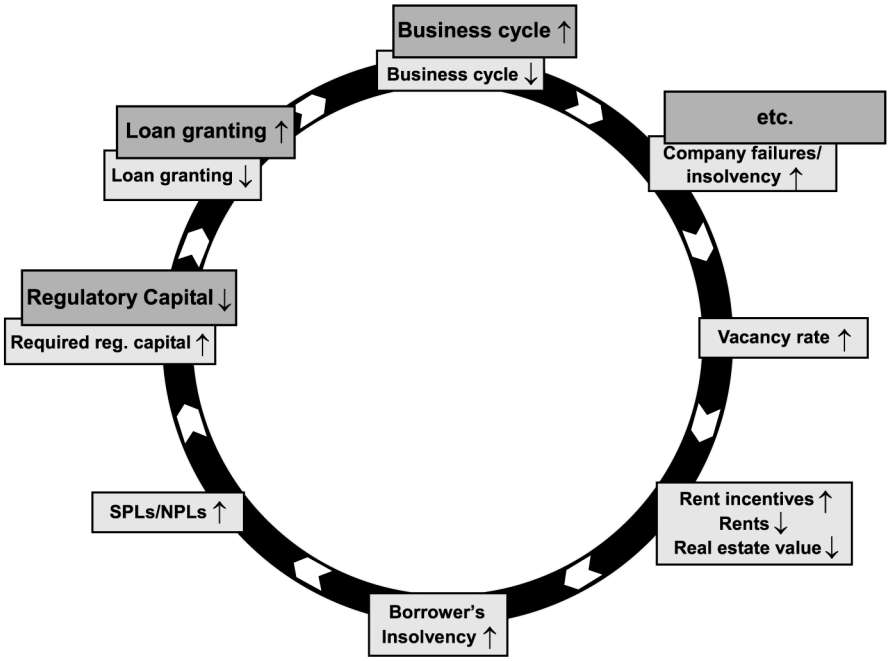

Figure 2.
The German NPLs/SPLs cycle

- *Make*. The bank's in-house restructuring department makes the workout of the distressed debt itself. Therefore, it requires the necessary knowledge and expertise in form of human capital.
- *Buy*. The lending financial institution buys the competency for the loan workout. A form of this option is a joint venture structure in which the bank acquires or co-operates with the relevant skills, experience and capacities for the debt servicing.
- *Sell*. In a true or synthetic sale transaction the entire portfolio is transferred to investors, which are mainly opportunity funds or investment banks. This option also encompasses the transfer of the distressed debt to an external (private or public) servicing platform as well as the sale of the loans portfolio to a bad bank.

In the following, these options are analysed under consideration of the transactions cost theory and the degree of specificity of the different option. The aim is to recommend the selection of an alternative corresponding to the given assumptions and conditions.

4. Transaction cost theory as decision tool for the organisational structuring of NPL workout

4.1. Fundamentals of the transaction cost theory

Transaction cost theory has proven a essential framework for decisions on the vertical boundaries of a firm. In that context, this research paper analyses under what

conditions workout of distressed real estate debt should be done as an internal service of the bank or rather externally by an external loan servicer.

Transaction costs are the costs associated to the division of work. According to Williamson, a transaction occurs when a good or service is transferred across a technologically separable interfaces. One stage of activity terminates and another one begins (see Erlei and Jost, 2001, p. 11).

Variables that describe a transaction are, among others:

- the specificity;
- the uncertainty; and
- the frequency of the transaction (see Erlei and Jost, 2001, p. 12).

For the research purpose of this study, a focus is set on the specificity, which describes whether an asset or a service are only or much more valuable in the context of a specific transaction. In the following, human capital specificity (the workout managers), the asset specificity (on loan and real estate level) and the site specificity (the location of the collateral) are taken into account.

Goods and services are of a high specificity, if the supply is limit and unique and if there is no comparability. A threat to breach the contract can be seen as untrustworthy, since there is no alternative. A lock-in of one transaction party leads to a hold up.

Low specificity exists, if there is a range of homogeneous services or goods and supply is secured. Since goods or services are comparable and competition exists, there is no pricing problem. Further more, high competition may imply motivation and quality.

For the purpose of this study, it can be concluded, that the higher the specificity, the lower is the probability to find a third party usage without the realisation of losses.

Relating back to the bank's options to address the NPL-problem. From a transaction cost perspective, the following two options can be stated:

(1) active workout management by in-house workout team (make); and

(2) active workout management by an external loan servicer (buy/sell).

4.2. Ownership model of the workout problem

This research paper refers to Hart and Moore (1990) analysing the control structure of agents and their assets. Ownership of an asset is "sensitive to whether he has access to the asset and is important in the generation of surplus" (Hart and Moore, 1990, p. 1149).

For simplicity reasons, we assume a two agent model, consisting of a set S of risk neutral agents $i = 1, 2$, where:

- agent 1 = bank/loan originator; and
- agent 2 = loan servicer.

Final consumers, in this case the borrowers, are neglected in the following analysis.

We concentrate on the ownership of asset a_2 by agent 1 or agent 2, since this equals to our research question.

In a two-period model, the agents have to undertake investments at date 0, while at date 1 production and/ or transfer occur.

To keep the model simple, we assume that agent 1 undertakes a certain investment x_1 to aquire an asset a_1. Let us assume x_1 is a human capital investment in knowledge

on loan origination. (It is an investment in the core competence of the bank.) Because of that investment the bank is more productive in the loan origination (a_1 = knowledge related to core competence of loan origination). Since agent 1 has access to the specific knowledge of loan origination, he can grand a loan and is more productive and efficient than other players. From the bank's perspective, it invests in debt to provide a monetary good (liquidity) to the customer.

Agent 2 undertakes the investments x_2 for what he acquires/improves a_2 = servicing knowledge. Servicing knowledge is a human capital asset, which is essential to service the debt.

In line with Hart and Moore (1990), we assume, that asset a_1 is used by agent 1 and its workers to produce a semi-final service to agent 2, who uses asset a_2 to finalise the service for the customer. Agent 1 uses its knowledge to originate a loan, while agent 2 provides servicing knowledge to workout distressed property debt.

According to Hart and Moore (1990) an agent should not have any control rights if they do not have (specific) investments to the product and are indispensable (see Hart and Moore, 1990, pp. 1136-7).

> An agent i is indispensable to an asset a_n if, without agent i in a coalition, asset a_n has no effect on the marginal product of investment for the members of a coalition (Hart and Moore, 1990, p. 1133).

Agent 1 is indispensable for asset a_1. By assumption, this statement holds true. Since we apply the control structure model on a make- vs buy/sell-model; without agent 1 there is no production/service at all.

In a next step, it must be clarified, whether agent 2 is indispensable for a_2?

As terminated above, x_2 represents an investment in human capital. As a consequence, if x_2 is essential for the loan workout, then agent 2 is indispensable, too.

In the context of the research problem, that statement holds true to some degree. Special servicing knowledge is a special human capital asset, so it takes some time and effort to acquire the knowledge.

Therefore the question arises to what degree this human capital knowledge is specific?

- If agent 2 is replaceable, a market solution is more efficient.
- If agent 2's knowledge is human capital specific, he/she is crucial for the use of the asset *a*2 and he/she is indispensable. In this case vertical integration is more efficient.

(In the first case the service is rather specialised than specific. Knowledge can be quickly acquired and can be acquired in the market.)

So, what makes servicing knowledge human capital specific?

Servicing knowledge is human capital specific, if the serviced loan contract or the underlying property are specific. This means that the underlying loan and property have a high level of specificity in the contract structure, high degree of site specificity of the real estate or asset specificity of the underlying collateral. In this case, the servicer cannot approach the workout problem by standard knowledge-specific servicing knowledge is requested.

4.2.1. Excursion. In the context of distressed real estate debt workout we want to find out whether workout knowledge is a human capital specific knowledge. Therefore

we first analyse the three different types of specificity relevant to the make-buy-sale-decision and the relations between the different types of specificity.

First, we look at the asset specificity of a loan. Therefore, the market for loan cash flows has to be analysed: The two criteria are:

(1) the stability of the cash flow of the loan respectively the probability of default of the loan; and

(2) the specificity of the loan as well as the collateral, in this case, real estate (see Figure 3).

For performing loans, the probability of default is low. Cash flows can be regarded as stable. Therefore, asset and site specificity of the underlying real estate can be neglected (or regarded as low, too). Stable cash flows can also be achieved by rent guarantees. Rent guarantees that stabilise the cash flows are superior to a high asset and site specificity. For performing assets, no special servicing knowledge is required. In that case, the transaction cost economics recommend market solution via direct sale or securitisation (Figure 4).

For NPLs and SPLs the probability of default is high, which implies instable cash flows from the loans. Therefore the loans can be regarded as highly specific. Here the solution depends on the specificity of the collateral.

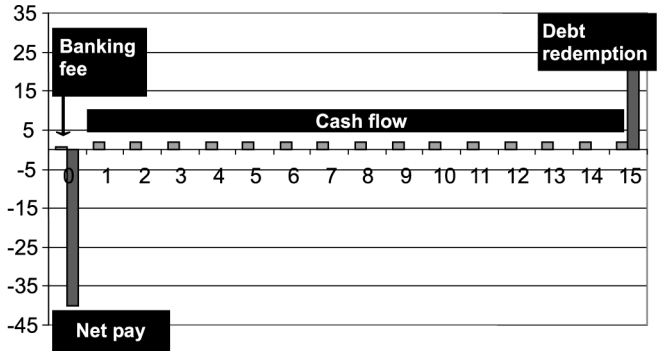

Figure 3.
Loan cash flows from bank's perspective

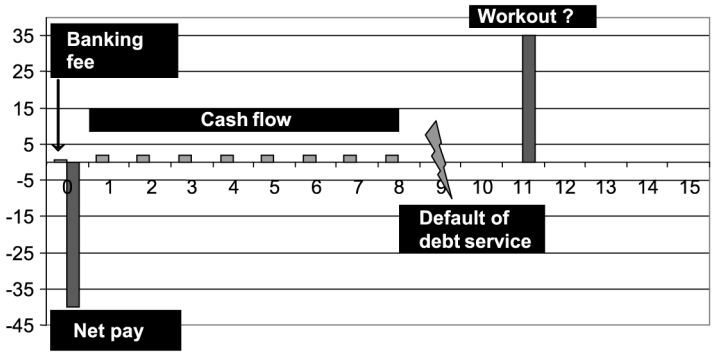

Figure 4.
NPL cash flows from bank's perspective

If asset and site specificity of the underlying real estate are low, meaning that a third party usage is possible and the collateral is easily marketable, transaction cost theory recommends a market solution. For assets with a low degree of asset and site specificity, no special servicing knowledge is requested. Additionally, site and asset specificity can be replaced by rent guarantees, which also indicate stable cash flows and therefore allow market solution.

On the contrary, if site and asset specificity are high, the degree of third party usage will be lower and demand will weaken. Additionally, highly specific assets require specific servicing knowledge. The existence of an market for specific third party servicing is not necessarily existent. Here, transaction cost economics recommends a hierarchical solution.

As a consequence of the above, the degree of specificity is crucial for the degree of specificity of workout skill required:

- If the specificity of the underling loan/real estate is high, specific workout knowledge is required. Transaction cost recommends a hierarchical solution via vertical integration.
- If the specificity of the underling loan/real estate is low, specific workout knowledge is not required. Transaction cost recommends a market solution via nonintegration.

4.3. Formal model of the workout-problem according to Jost (2001)

The following formalisation of the vertical integration/disintegration decision is related to the approach of Grossman and Hart (1986) and Erlei and Jost (2001)[7].

Agent 1, the bank, undertakes specific investments I_1 to improve its business. The investment is associated to cost of:

$$K(I_1) = a/2{*}I_1^2.$$

Agent 2, the servicer, undertakes specific investments I_2 to improve his/her business. (For the formal analysis it is assumed that servicing knowledge requires specific investments.) The investment is associated to cost of:

$$K(I_2) = b/2{*}I_2^2.$$

More effort results in higher quality output. Effort is defined by a variable e with dichotomous characteristics, $e = 1, 2$:

- $e_1 = 2$ means high effort in approval of high risk and specific loans; and
- $e_2 = 2$ means high effort in workout management, that leads to a higher output.

Nash equilibrium solution generate the following pay-off for each agent:

$$\pi_1 = (2e_2 - e_1)(aI_1 + bI_2) - a/2{*}I_1^2$$

$$\pi_2 = (2e_1 - e_2)(aI_1 + bI_2) - b/2{*}I_2^2.$$

If $e_1 = e_2 = 2$, highest pay-off can be generated.

The transaction is represented by a non-cooperative play. *Ex ante*, agents undertake the investments I_1 and I_2 and decide about the efforts they put in the transaction. The

assumptions of transaction economics of uncertainty and incomplete contracts, which *ex ante* hold true, lead to uncooperative efforts of the transaction partners. Assuming the transaction becomes *ex post* contractible, bank and workout manager will adjust their efforts to Nash equilibrium inputs, to improve the value of he transaction. The additional value generated by cooperation is assumed to be divided 50:50 between the two transaction partners.

4.3.1. First best. On aggregate level, highest pay-off is generated if e_1 and e_2 equal 2, that means both agents 1, and 2 put high effort in their work. This result is also valid under logical considerations. *Ex post* adjustments are therefore not necessary.

Optimisation of $\pi_{agg}^{FB} = 4(aI_1 + bI_2) - a/2I_1^2 - b/2I_2^2$, over I_1 and I_2 results in the following first best results:

$$I_1^{FB} = 4a/a \text{ and } I_2^{FB} = 4b/b \text{ and } \pi_{agg}^{FB} = 8*\left(a^2/a + b^2/b\right).$$

The first best result serves as a benchmark for the pay-off of the possible ownership constellations.

This paper analyses the make-or-buy-problem problem from a bank's perspective, therefore in the following analysis only forward integration and non-integration are considered. Backward integration is neglected.

4.3.2. Non-integration. Since investments are highly specific and agent 1 and 2 may anticipate non-cooperative decision making, they are reluctant in putting high efforts in production. Therefore *ex ante* $e_1 = e_2 = 1$, while expost efforts are adjusted to $e_1 = e_2 = 2$:

$$\begin{aligned}\pi_1^{NI} &= (aI_1 + bI_2) - a/2*I_1^2 + 1/2\big(4(aI_1 + bI_2) - a/2*I_1^2 \\ &\quad - b_2/2*I_2^2\big((aI_1 + bI_2) - a/2*I1_1^2\big) - \big((aI_1 + bI_2) - b/2*I_2^2\big) \\ &= 2(aI_1 + bI_2) - a/2*I1_1^2\end{aligned}$$

$$\begin{aligned}\pi_2^{NI} &= (aI_1 + bI_2) - b/2*I_2^2 + 1/2\big(4(aI_1 + bI_2) - a/2*I_1^2 - b_2/2*I_2^2 \\ &\quad - \big((aI_1 + bI_2) - a/2*I_1^2\big) - \big((aI_1 + bI_2) - b/2*I_2^2\big) \\ &= 2(aI_1 + bI_2) - b/2*I_2^2\end{aligned}$$

Optimisation of $\pi_{agg}^{NI} = \pi_1^{NI} + \pi_2^{NI}$over I_1 and I_2 identifies $I_1 = 2a/a$ and $I_2 = 2b/b$ as optimal inputs. Comparing these inputs with the first best benchmark, one experiences under-investment.

Pay-offs equal to:

$$\pi_1^{NI} = 2a^2/a + 4b^2/b \text{ and } \pi_2^{NI} = 4a^2/a + 2b^2/b.$$

Aggregated pay-offs amount to

$$\pi_{agg}^{NI} = 6a^2/a + 6b^2/b.$$

That is below the first best pay-offs.

By assumption both agents 1 and 2 have highly specific investments. Since there are incomplete contracts (by assumption of the transaction cost economics), the agents pursue uncooperative strategies. Danger of a hold-up let both the bank and the servicer

become less productive. They reduce their efforts in order to reduce the own downside potential. By this, upside is limited to an inferior pay-off than the first best result.

4.3.3. Forward integration. Under forward integration, agent 1 has control rights over I_1 and I_2. Assuming non-cooperative decision making from agent 1's perspective the dominant strategy *ex ante* is to keep own efforts low and maximise e_2. However, *ex post*, the transaction partner adjust their inputs to $e_1 = e_2 = 2$:

$$\begin{aligned}\pi_1^{\mathrm{FI}} &= 3(aI_1 + bI_2) - a/2{*}I_1^2 + 1/2\big(4(aI_1 + bI_2) - a/2{*}I_1^2 - b_2/2{*}I_2^2 \\ &\quad - \big(3(aI_1 + bI_2) - a/2{*}I_1^2\big) - \big(-b/2{*}I_2^2\big) \\ &= 7/2(aI_1 + bI_2) - a/2{*}I_1^2\end{aligned}$$

$$\begin{aligned}\pi_2^{\mathrm{FI}} &= -b/2{*}I_2^2 + 1/2\big(4(aI_1 + bI_2) - a/2{*}I_1^2 - b_2/2{*}I_2^2 \\ &\quad - \big(3(aI_1 + bI_2) - a/2{*}I_1^2\big) - \big(-b/2{*}I_2^2\big) \\ &= 7/2(aI_1 + bI_2) - a/2{*}I_1^2.\end{aligned}$$

In this case, optimal investments for $\mathrm{agg}^{\mathrm{FI}} = \pi_1^{\mathrm{FI}} + \pi_2^{\mathrm{FI}}$ are $I_1^{\mathrm{FI}} = 7/2a/a$ and $I_2^{\mathrm{FI}} = 1/2b/b$.

Agent 1 invests more, while agent 2 invests less. Nevertheless, on an aggregated level under-investment in comparison to non-integration occurs.

This results in pay-offs of $\pi_{\mathrm{agg}}^{\mathrm{FI}} = 63/8a^2/a + 15/8b^2/b$ below the first best solution.

4.3.4. Optimal control structure. In order to derive the optimal control structure aggregated pay-offs are compared.

$$\pi_{\mathrm{agg}}^{\mathrm{FB}} = 8\big(a^2/a + b^2/b\big)$$

$$\pi_{\mathrm{agg}}^{\mathrm{NI}} = 6a^2/a + 6b^2/b$$

$$\pi_{\mathrm{agg}}^{\mathrm{FI}} = 63/8a^2/a + 15/8b^2/b.$$

In non-cooperative games, neither non-integration, nor forward integration achieve pay-offs as good as the first best pay-off, because of *ex ante* under-investments.

If $\pi_{\mathrm{agg}}^{\mathrm{NI}} - \pi_{\mathrm{agg}}^{\mathrm{FI}} = -15/8a^2/a + 33/8b^2/b > 0$, then non-integration generates higher aggregated pay-off and is more efficient.

If $\pi_{\mathrm{agg}}^{\mathrm{NI}} - \pi_{\mathrm{agg}}^{\mathrm{FI}} = -15/8a^2/a + 33/8b^2/b < 0$, then forward integration generates higher aggregated pay-off and is more efficient.

The equations example that non-integration is favourable if there is symmetry in $a = b$ and $a = b$. In this case $\pi_{\mathrm{agg}}^{\mathrm{NI}} - \pi_{\mathrm{agg}}^{\mathrm{FI}} > 0$ and non-integration generates higher pay-offs. Symmetry represents an equally degree of specific. In this case non-integration is superior, since integration would lead to under-investment of the integrated investment.

If the specificity of the investments is high, but unequal, integration is superior to non-integration. If both agents undertake specific investments, the one having the more specific investment should own control rights over the other agent's specific investments.

If $a > b$, then forward integration is the favourable control structure.

In terms of distressed debt workout forward integration is the most efficient structure, if agent 1, the bank, undertakes more specific and cost intensive investments than the servicer. It is obvious that the bank's investment are more capital intensive and specific, if it invests in loans with a high risk profile (e.g. unsecured loans or loans which are secured by specific collateral with a low third-party usage).

Since servicing of distressed debt requires specific servicing knowledge this special knowledge should also be owned by the bank. Transaction costs theory favours in this case a hierarchical solution.

If the bank invested in highly standardised loans with a low risk profile, no control rights on servicing would be required since the service is could be acquired in the market. Transaction costs theory would favour a market solution.

To sum up the different situations, the market-hierarchy-paradigm (Figure 5)[8] shows the efficiency of the different options, namely, the hierarchical solution, "make" by an integrated workout department or a market solution "buy/sell". The higher the specificity of an investment, the higher the transaction costs. For investments of a relatively low specificity, a market solution is more efficient. For investments of high specificity, a hierarchical solution is more efficient.

5. Conclusion

To summarise the results, in the following, the main strategic options to deal with real estate NPLs are depicted:

- For performing loans, the degree of specificity of servicing is low. If servicing is not a core competency of the bank (which is usually the case), it should be done externally by a third party entity ("make").
- For non- and sub-performing loans with collaterals of high asset and site specificity, transaction cost theory recommends own workout management as

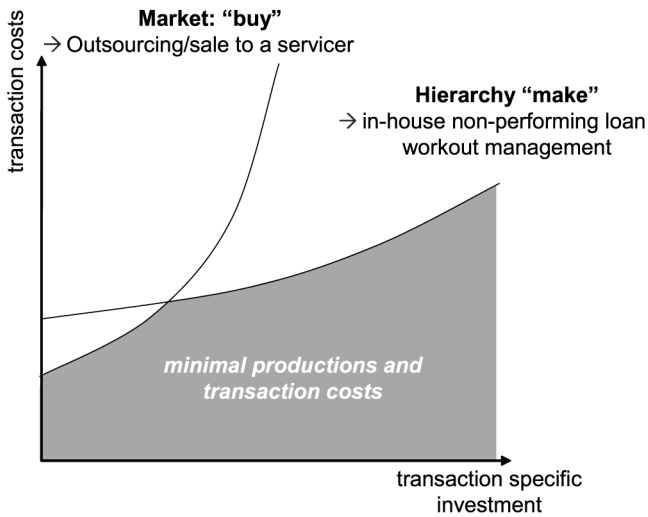

Figure 5.
Market versus hierarchy (organisational failures framework)

the discounts on the outstanding debt balance would be too high (exception, e.g. rent guarantees) ("make").

- For non- and sub-performing loans with collaterals of low asset and site specificity, transaction cost theory recommends a market solution via disposal of the distressed loans to an investor ("sell") or outsourcing to an external third party workout manager ("buy").

Notes

1. Most of the loans hold by the AMCs are loans of former SOEs. Real estate loans account for 25-30 percent of AMCs loan portfolio.
2. In 2002 Huarong Asset Management Corporation sold an NPL portfolio to a consortium of Morgan Stanley, Lehman Brothers and Salomon Smith Barney. See Ernst & Young (2003, p. 5); Sprayregen *et al.* (2004, pp. 38-9).
3. Expect for year 1993; here, the negative GDP growth can be explained by the effects of the German unification.
4. A survey of "Sparkassen- und Giroverband" determines an average profit margin of companies of the German Mittelstand of 3.3 percent. Nearly 30 percent of the German SME companies and family businesses do not operate profitable.
5. This number includes subletting vacancy.
6. For the full-version of the New Capital Accorf Basel II see www.bundesbank.de/bankenaufsicht/bankenaufsicht_basel.en.php?print = no&
7. See Grossman and Hart (1986, pp. 691-719); Erlei and Jost (2001, pp. 59-69).
8. Compare to Picot and Dietl (1990) as well as Erlei and Jost (2001).

References

Alchian, A.A. and Demsetz, H. (1972), "Production, information costs, and economic organization", *American Economic Review*, Vol. 62 No. 5, pp. 777-95.

Anders, D. (2004), "Ausgewählte Rechtsfragen zum Handel mit 'Non-Performaing Loans'", *Aktuelle Fragen des Bank- und Kapitalmarktrechts I: Non-performing-Loans/Faule Kredite – Handel, Work-out, Outsourcing und Securitisation*, working paper no. 54, Hochschule für Bankswirtschaft, Frankfurt aM.

Barseghyan, L. (2004), *Non-performing Loans, Prospective Bailouts, and Japan's Slowdown*, Cornell University, New York, NY.

Berger, A.N. and DeYoung, R. (1997), "Problem loans and cost efficiency in commercial banks", *Journal of Banking and Finance*, Vol. 21 No. 6, pp. 849-70.

(The) Boston Consulting Group (2004), *Optimale staatliche Rahmenbedingungen für einen Kreditrisikomarkt/Verbriefungsmarkt für Kreditforderungen ind -risiken in Deutschland Gutachen in Auftrad des Bundesministeriums der Finanzen*, The Boston Consulting Group, Frankfurt aM.

Bundesbank (2003), "The New Basel Capital Accord, part 2: the first pillar – minimum capital requirements", available at: www.bundesbank.de/bankenaufsicht/bankenaufsicht_basel_konsultationspapiere.en.php

Cahn, A. (2004), "Bankgeheimnis und Forderungsverwertung", Working Paper Series No. 32, Institute for Law and Finance (ILF) an der Universität Frankfurt am Main, Frankfurt.

Callen, T. and Ostry, J. (2003), *Japan's Lost Decade Policies for Economic Revival*, International Monetary Fund, Washington, DC.

Chen, J. (2004), *Non-performing Loan Securitization in the People's Republic of China*, Stanford University, Palo Alto, CA.

Coase, R. (1937), "The nature of the firm", *Economica*, Vol. 4 No. 16, pp. 386-405.

Cooper, J.R. and Brown, R.K. (1992), *Value Nonperforming Investment – Real Estate – A Proposal for a Team Approach to the Appraisal Workouts under Surrounding Conditions of a Market Failure and Destructive Competition*, Georgia State University, Atlanta, GA.

Cortavarria, L., Dziobek, C., Kanaya, A. and Song, I. (2000), "Loan review, provisioning, and macroeconomic linkages", IMF Working Paper No. 00/195, IMF, Washington, DC.

Creditreform Wirtschafts- und Konjunkturforschung (2004), *Wirtschaftslage und Finanzierung im Mittelstand*, Creditreform Wirtschafts- und Konjunkturforschung, Neuss.

Curry, T. and Shibut, L. (2002), "The cost of the savings and loan crisis: truth and consequences", *FDIC Banking Review*, Vol. 13 No. 2, pp. 26-35.

Demsetz, H. (1968), "The cost of transacting", *Quarterly Journal of Economics*, Vol. 82 No. 1, pp. 33-53.

Erlei, M. and Jost, P.-J. (2001), "Theoretische Grundlagen des Transaktionskostenansatzes", in Jost, P.-J (Ed.), *Der Transaktionskostenansatz in der Betriebswirtschaftslehre*, Schäffer-Poeschel, Stuttgart, pp. 35-75.

Ernst & Young (2001), *Nonperforming Loan Report: Asia 2002*, Ernst & Young, New York, NY.

Ernst & Young (2003), *2003 Annual Review – Non-performing Loans in China*, Ernst & Young, New York, NY.

Ernst & Young (2004), *Global Nonperforming Loan Report 2004*, Ernst & Young, New York, NY.

Ernst & Young (2006), *Global Nonperforming Loan Report 2006*, Ernst & Young, New York, NY.

Federal Deposit Insurance Corporation (FDIC) (1997), *History of the Eighties – Lessons for the Future*, FDIC, Washington, DC.

Federal Deposit Insurance Corporation (FDIC) (1998), *Managing the Crisis: The FDIC and RTC Experience*, FDIC, Washington, DC.

Frey, K. (2002), *Opportunistic Real Estate Investments around the Globe*, Institute for Fiduciary Education, Sacramento, CA.

Garthe, E. (2004), "Real estate bank lending in Germany – a status quo in early 2004", *Briefings in Real Estate Finance*, Vol. 4 No. 1, pp. 37-49.

Gibler, K.M. and Black, R.T. (2004), "Agency risks in outsourcing corporate real estate functions", *Journal of Real Estate Research*, Vol. 26 No. 2, pp. 137-60.

Grossman, S.J. and Hart, O.D. (1986), "The costs and benefits of ownership: a theory of vertical and lateral integration", *Journal of Political Economy*, Vol. 94 No. 4, pp. 691-719.

Hamberger, K. and Diehm, A. (2004), "Veräußerung von Non-performing Loans: Motive, Auswirkungen, Lösungsansätze", *Die Bank*, No. 3, pp. 182-5.

Harding, J.P. and Sirmans, C.F. (2002), "Renegotiation of troubled debt: the choice between discounted payoff and maturity extension", *Real Estate Economics*, Vol. 30 No. 3, pp. 475-503.

Hardymon, F. and Lerner, J. (2003), "The challenges of German turnaround investing", working paper, Harvard Business School, Cambridge, MA.

Hart, O. and Moore, J. (1990), "Property rights and the nature of the firm", *Journal of Political Economy*, Vol. 98 No. 6, pp. 1119-58.

Hellauer, R. (2003), "Notleidende Immobilien Kredite in Deutschland", *ZfiFP*, Vol. 1, August, pp. 1-11.

Herr, K.E. and Miyazaki, G. (1999), "A proposal for the Japanese non-performing loans problem: securitization as a solution", working paper, Leonard N. Stern School of Business, New York University, New York, NY.

Hypo Real Estate Group (2004a), "Hypo Real Estate Bank AG verkauft Immobilienfinanzierungsportfolio von 3,6 Mrd. Euro – Restrukturierung in Deutschland beendet", press statement, 16 September, available at: www.hyporealestate.com/pdf/PI-Portfolioverkauf04_Deutsch_neu.pdf

Hypo Real Estate Group (2004b), "Press conference", 28 September, available at: www.hyporealestate.com/pdf/Praes_Portfolioverkauf_280904.pdf

Jones Lang LaSalle (2004), *City Profile Frankfurt/M – Update Q4 04*, Jones Lang LaSalle, Hamburg.

Jost, P.-J. (2001), "Einführung in den Transaktionskostenansatz", in Jost, P.-J. (Ed.), *Der Transaktionskostenansatz in der Betriebswirtschaftslehre*, Schaffer-Poeschel, Stuttgart, pp. 9-34.

Klingebiel, D. (2000), "The use of asset management companies in the resolution of banking crises – cross-country experience", Policy Research Working Paper No. 2284, World Bank, Washington, DC.

Kroll and Mercer Oliver Wyman (2005), *A Market for the Making – The German Bad Loan Market*, Kroll and Mercer Oliver Wyman, London.

Lautenschlager, P., Mettler, A. and Volkart, R. (1998), "Neue Wege für das inländische Kreditgeschäft – Rating-Agentur und Workout-Gesellschaft für KMUs in der Schweiz", ISB Working Paper No. 12, ISB, Zürich.

Lieber, H., Schiereck, D. and Schmid, M. (2004), "Distressed debt investing", *ÖBA*, No. 9, pp. 649-60.

McIver, R. (2005), "Asset management companies, state-owned commercial bank debt transfers and contingent claims: issues in the valuation of China's non-performing loans", *Managerial Finance*, Vol. 31 No. 12, pp. 11-28.

Peiser, R. and Wang, B. (2002), "Non-performing loan resolution in China", *Journal of Real Estate Portfolio Management*, Vol. 8 No. 4, Fall/Winter, pp. 115-27.

Picot, A. and Dietl, H. (1990), "Transaktionskostentheorie", *Wirtschaftswissenschaftliches Studium*, Vol. 19 No. 4, pp. 178-84.

Schalast, C. and Daynes, C. (2005), "Distressed Debt-Investing in Deutschland Geschaftsmodelle und Perspektiven", working paper no. 66, Hochschule für Bankwirtschaft, Frankfurt aM.

Sprayregen, J., Friedland, J., Miller, N. and Li, C. (2004), "Non-performing loans in China: a potential win-win opportunity for foreign investors and China's economy", *Global Restructuring & Insolvency Review*, pp. 38-9.

Statistisches Bundesamt Deutschland (2006a), *Bruttoinlandsprodukt*, Datenreihenpublikation, Statistisches Bundesamt Deutschland, Wiesbaden.

Statistisches Bundesamt Deutschland (2006b), *Arbeitslosenquote*, Datenreihenpublikation, Statistisches Bundesamt Deutschland, Wiesbaden.

Williamson, O.E. (1965), "A dynamic theory of interfirm behaviour", *Quarterly Journal of Economics*, Vol. 79 No. 4, pp. 579-607.

Williamson, O.E. (1967), "Hierarchical control and optimal firm size", *The Journal of Political Economy*, Vol. 75 No. 2, pp. 123-38.

Williamson, O.E. (1973), "Markets and hierarchies: some elementary considerations", *American Economic Review*, Vol. 63 No. 2, pp. 316-25.

Williamson, O.E. (1975), *Market and Hierarchies: Analysis and Antitrust Implications*, Free Press, New York, NY.

Williamson, O.E. (1976), "The economics of internal organization: exit and voice in relation to markets and hierarchies", *American Economic Review*, Vol. 66 No. 2, pp. 369-77.

Williamson, O.E. (1979), "Transaction-cost economics: the governance of the contractual relations", *Journal of Law & Economics*, Vol. 22 No. 2, pp. 233-61.

Further reading

Coase, R. (1992), "The institutional structure of production", *American Economic Review*, Vol. 82 No. 4, pp. 713-9.

Coase, R. (1998), "The new institutional economics", *American Economic Review*, Vol. 88 No. 2, pp. 72-4.

Dresdner Kleinwort Wasserstein (2005), *German Non-performing Loans – To Sell or Not to Sell?*, Dresdner Kleinwort Wasserstein, Frankfurt.

Göbel, E. (2002), *Neue Institutionenökonomik – Konzeption und betriebwirtschaftliche Anwendung*, Lucius and Lucius, Stuttgart.

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