

Dickler, Robert A.; Schalast, Christoph

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Distressed debt in Germany: What's next? Possible innovative exit strategies

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HfB – Working Paper Series

No. 73

**Distressed Debt in Germany: What's Next?
Possible Innovative Exit Strategies**

Robert A. Dickler, Christoph Schalast

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Sonnemannstr. 9 – 11 60314 Frankfurt an Main, Germany
Phone: +49 (0) 69 154 0080 Fax: +49 (0) 69 154 008 728
Internet: www.hfb.de

Abstract

During the past two years, private equity funds have acquired substantial portfolios of non-performing loans from banks in Germany. Typically a private equity investor does not commit funds unless exit strategies are clearly defined. The usual exit strategies for distressed debt investors are “fix it” (restructuring and turnaround), “sell it” (sale of debt or equity), or “shut it down” (liquidation). A new alternative exit strategy for NPL investors considered here is the “transfer” of credit recovery risk.

The structure “Sector Focus Fund” (SFF), which corresponds to the credit risk transfer strategy “Triple Play”, is a partially funded synthetic securitization of non-performing loans to small and medium-sized enterprises in a specific sector. The SFF special purpose vehicle sells protection up to specified forward recovery rate to the NPL investment fund in the form of a credit recovery swap and buys this protection through a three-tranche, partially funded synthetic collateralized debt obligation (CDO). Title to the loans remains with the NPL investment fund, but responsibility for performance of the portfolio passes to the specialists of the SFF.

Equity investors, who take the first loss position in the Sector Focus Fund’s CDO, provide funds for the collateral account held by the SFF by paying a premium to go long in a call option on the excess spread which accumulates when the realized recovery rate exceeds the forward recovery swap rate. Bondholders, which assume a mezzanine position, also provide funding for the collateral account, which serves to support the counterparty rating of the Sector Focus Fund. Repayment is assured as long as the shortfall in the recovery rate does not exceed the net premium paid to the SFF for the call option. The senior position is occupied by reinsurers, which are exposed to a short recovery option position. Their exposure is limited to extremely unlikely large shortfalls in the realized recovery rate below the forward recovery rate. A liquidity facility bridges the SFF’s transitory cash flow shortfalls.

The SFF is incentivized to achieve recovery rates higher than the forward recovery swap rate through participation of the portfolio managers in excess of the realized recovery rate over the forward recovery rate (“swap rate”). The SFF is able to achieve the excess by virtue of the portfolio managers’ specialized knowledge in the specific sector in which the borrowers are engaged and their specialized expertise in workout situations. Investors in the first-loss tranche benefit from reduced risk due to the high correlation of recoveries and high likelihood of high recovery rates due to the focus of the portfolio managers. Also, the higher recovery correlation raises the risk to senior investors but also enables them to achieve a yield pick-up within the bounds of their risk tolerance.

The implication of the securitization framework of Basel II (substitution approach, disallowance of spread accounts as mitigant, overly conservative calibration) is that the regulatory capital charge for portfolios of loans hedged by credit default swaps is in excess of the economic capital required. Consequently, regulatory capital arbitrage will be triggered as unregulated non-banks, such as private equity funds, bond funds and credit reinsurance funds, are likely to become major investors in portfolios of credit risks that are hedged by credit

derivatives contracted with high and medium investment grade special purpose vehicles which act as counterparties. New asset classes, such as non-performing loans of small and medium-sized enterprises, are likely to be synthetically securitized in the future due to ongoing impulses for innovation in credit risk transfer (individual loan and portfolio recovery risk modeling, CDO modeling and pricing, recovery ratings for facilities, recovery data bases such as the Pan European Credit Data Consortium).

Learning from experience gained in securitizing non-performing corporate loans in Asia (e.g. KAMCO) and Italy enables market participants to create innovative exit strategies and structures for NPL investors in Germany. It is likely that credit risk transfer by means of reverse syndication of recovery risk can be achieved within a year or so by the proposed “Triple Play” synthetic securitization transaction. Such transactions create economic value and improve social welfare by realizing gains from specialization (“division of knowledge”) made possible by prudent use of credit derivatives. The likely outcome is a significant increase in recovery rates of non-performing loans to small and medium-sized enterprises. A successful demonstration of the strategy’s benefits for recovery of non-performing loans would have the effect of increasing the political pressure for further liberalization of the legal and regulatory framework for credit risk transfer of distressed and non-distressed debt.

Key words: focus, diversification, specialization, monitoring, bank returns, bank risk, Non Performing Loans, Distressed debt investing, Synthetic securitization, Collateralized debt obligations, Credit risk transfer, Credit derivatives, Credit default swaps, Credit recovery swaps, Credit portfolio management, Credit portfolio risk, Credit portfolio returns, Efficiency of credit risk portfolio allocations, Learning effects.

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Kontakt:

Robert A. Dickler, PhD
Professor of Management and Finance IMADEC
University School of Business Vienna, Austria and
Partner Financial Services/Strategy
Strateco GmbH & Co KG
Bad Homburg v.d. Höhe, Germany
E-mail: robert.dickler@strateco.de

Prof. Dr. Christoph Schalast
HfB-Business School of Finance and Management
Frankfurt am Main, Germany
E-mail:schalast@hfb.de

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1. Preface

This working paper is based on lectures given during the research colloquium organised by the HfB on December 15th, 2005. The presentation of Christoph Schalast's contribution closely resembles his original lecture, whereas Robert A. Dickler expanded his lecture considerably and added relevant footnotes. The authors would like to thank Prof. Dr. Paul G. Schmidt, director of the Centre for Financial Economics (CFE) at the HfB-Business School of Finance and Management, for his introduction at the colloquium and chairing the stimulating discussion that followed. We welcome any comments and suggestions on the subject area of Distressed Debt/ Non Performing Loans – which still remains inadequately considered and discussed academically – under schalast@hfb.de or robert.dickler@strateco.de.

2. The German Distressed Debt Market (Christoph Schalast)

In the last few years – beginning with the first transactions of international investors in 2003 – a dynamic market for distressed debt (or non-performing loans) evolved in Germany. At first sight, this may seem surprising as Germany is generally not considered to be a typical trading centre for non-performing loans. However, when taking into account the distinct historical and economic developments of the last 15 years, i.e. the reunification with all of its burdens as well as the fall in valuations in the real estate market, the reasons behind this development become apparent quickly. How this newly emerged market is being valued in business volume differs greatly. Ernst & Young in their Non-Performing-Loans-Report 2004 state a volume of up to €300 billion, a figure which has also been repeatedly quoted in the press. But there are also much smaller numbers circulating. E.g. the study of Kroll & Mercer Oliver Wyman, put together in spring 2005, arrives at a much lower value of €160 billion – but also repeatedly quoted in the press; moreover, the study differentiates between non-performing-loans (€125 billion) and sub-performing-loans.

A difference of opinion also exists regarding the annual trading volume. Roland Berger Strategy Consultants in their study of November 2005 estimated the volume for the sector Corporate Loans in the year 2005 to be approx. €13 billion and for Real Estate Loans approx. €16.1 billion, however all German-Speaking countries, i.e. Germany, Austria and Switzerland, were included. Roland Berger dared to voice the prognosis that the market in 2006 would have the same overall volume as it did in 2005, whereas a shift from Real Estate Loans to Corporate Loans is expected. From 2007 onwards, a decrease in market activity (or rather: the volume of transactions) is presumed to take place.

Regardless of whether one considers these figures to be realistic or not and what opinion one may have of the market and its perspectives, it is recognisable that the big portfolio transactions that have created a lot of public attention are on the decline in favour of the sale of single claims (or single names) and baskets. This shift to single claims and baskets corresponds closely with the generally presumed decrease in market shares of real estate loans and the increased significance of exposure to corporate debt. This tendency is especially interesting with regard to exit strategies employed by investors. Under German law real estate loans regularly come with special rights of

the owner, in particular the right of forced administration (*Zwangsverwaltung*) – if the holder of the right is a bank institutional receivership forced administration (*Institutszwangsverwaltung*) and sale by court order (*Zwangsversteigerung*). This is not applicable for corporate financing and especially the judicial sale (*Zwangsversteigerung*) of companies is a new and highly problematic instrument.

It is also interesting to have a look at who is determining the market and whether there will be any changes in the foreseeable future. In those transactions that are publicly known the main players acting on the seller's side are still mostly private banks, e.g. Dresdner Bank and Commerzbank, but also mortgage banks and – but only few – public banks (saving banks), e.g. BayernLB. The insufficient representation of public banks is surprising as a great part of Germany's existing non-performing loans is reckoned to exist in the scope of saving banks organisations. On the other hand, there are numerous reasons that make the transfer of distressed loans by saving banks seem problematic. Saving banks normally work locally and fulfil a regional political obligation to financially support economic development. Loan sales could have a negative effect on future business. Therefore, it remains to be seen what effects the platform – created by the S-Finanzgruppe (NordLB, WestLB, Shinsei Bank and JC Flowers) – that pools transactions of this sector of the German banking market will have in the near future.

First, the buyers were foreign investors (so-called “opportunity funds”) as well as investment banks, but then also domestic players discovered the market. Also interesting is the investors' tendency to use a banking licence for carrying out their transactions. E.g. Cerberus acquired the Handelskreditbank in 2004 and Lone Star took over the MHB Bank in spring 2005. In December 2005 Lone Star then acquired the majority of Allgemeine Hypothekenbank Rheinboden (AHBR) from the holding company of the unions and thus ended the year 2005 on a spectacular high-note. The acquisition of banks by leading investors shows that servicing of non-performing loans without a banking licence leads to numerous problems. But this is not a matter of banking regulations or a problem originating in the areas of banking secrecy or data protection but these are practical operating problems, e.g. granting of a new credit and legal advantages, e.g. the option of institutional forced administration in the case of real estate financing.

But despite the big wave non-performing loans have created, a sellers' market (still) exists in Germany. Numerous prospective buyers are competing in auctions for portfolios, baskets and single names. This means that sellers – despite the pressure they are under to sell – have the chance to achieve an attractive price. On the other hand, prospective buyers are increasingly burdened by high breakage costs of deals pursued but not done, especially in the case of auctions.

Also, the German Government “did its homework” and in June 2005 – shortly before the election campaign – smoothed out significant obstacles in the area of NPL-transaction refinancing by passing the Law on the New Regulation of the Federal Finance Administration and on the creation of a Refinancing Register. It remains to be seen whether – apart from the few transactions that have become publicly known (Volkswagen Bank) – this reform in association with the True Sale-International Initiative (initiated by the KfW and other commercial banks) will make Germany more attractive with respect to securitisations. Overall, the German legal system makes the investment in non-performing loans more attractive: Even if it comes to the – from the investors'

point of view – unattractive “exit-version”, i.e. enforcement of judgement (*Zwangsvollstreckung*), realisation is still possible within a reasonable time-frame.

The „take-off“ of servicing is maybe one of the most interesting phenomena that has recently happened on the German distressed debt market. In the past the banks' work-out operations only attracted comparably little attention. This changed due to the emergence of special servicers, e.g. Hudson Advisors (Lone-Star Group) or Servicing Advisors Deutschland (Citigroup, Eurohypo, GMAC). Hence investors acquiring non-performing loans are assuming that their main chance to receive the rate of return lies in servicing. They are assuming that their highly qualified servicers as well as – if need be – the acquisition of specialised know-how (keyword: outsourcing) will lead them to the same rate of return that they were able to provide their investors (especially American pension funds like Ontario Teachers or California Fireworkers Pension Fund) with in the past. Accordingly, the success of servicing is the key to success for the German non-performing loans market and one will surely be able to draw conclusions from the year 2006 as to how the performance of the great transactions of 2004 and 2005 is to be interpreted. But the market is also changing in relation to exit-perspectives. Although “more traditional” work-out alternatives are still the main focus of the investors and are being enhanced accordingly by the servicers, at the same time in the area of corporate loans new exit-strategies are being developed (keyword: securitization), which already promise an exciting year 2006 for this market.

As an overall observation it can be said that the trade with non-performing loans and distressed debt investing present a special variety of private equity activity in Germany. The existing market is currently very interesting for foreign investors – but also domestic players – last but not least because of the overall attractive refinancing conditions on the capital market.

3. Distressed Debt in Germany: What's next? Possible Innovative Exit Strategies (Robert A. Dickler)

3.1 Introduction¹

In Germany during the past two years, globally operating private equity investors have acquired large portfolios of non-performing loans (NPL) from major domestic banks.² A number of the key players on the buy side of the NPL transactions are funds which have gained experience in investing in the distressed debt markets of Asia and Latin America. Although their expertise is in distressed debt, their narrower focus in Germany is on NPL's. This is dictated by the institutional and legal framework, not by strategic choice.

NPL's are exposures to borrowers who have breached the loan contracts. Under German banking law, banks may disclose information about such a borrower to potential buyers of a loan portfolio.³ For credit market participants, the meaning of the asset category "distressed debt" is more inclusive than simply NPL's. It also includes borrowers which a bank deems highly likely to default within a year. However, current German banking law prohibits disclosure of information on borrowers of distressed loans when payments of principal and interest are current and the willingness to meet future debt servicing requirements is not in doubt. Consequently, the distressed debt market in Germany is currently limited to NPL's.

The institutional private equity investors, which recently have acquired portfolios of NPL's in Germany generally deal with these assets the way they deal with any investment. Before committing capital to the purchase of assets, clear exit strategies must be defined.⁴ In the case of NPL's, most of which are secured by real estate or other collateral, the strategic exit options are:

- (1) **Fix it:** Restructuring a company's operations, capital assets and its capital structure; change of management.
- (2) **Sell it:** Sale of debt or sale of equity obtained in debt/equity swap

¹ The author thanks the Österreichische Nationalbank Jubiläumsfonds for a grant to carry out applied research in the project „The Time Dimension of Credit Risk“ at the IMADEC University School of Business, Vienna, Austria. The author bears sole responsibility for the content of the Working Paper. Parts of the paper were presented at the Forschungskolloquium der Hochschule für Bankwirtschaft on December 15, 2005. The author thanks Professor Dr. Christoph Schalast, Head of the Research Area “Non-Performing Loans” and Professor Paul-Günther Schmidt, Head of the Center for Financial Economics, for their kind invitation to make a presentation to the colloquium.

² Schalast (2005) in Jobe/Stachuletz (2005), pp. VI-XI. Gleumes (2005) in *op.cit.*, pp. 349-386.

³ Fischer/Zuleger (2005) in *op. cit.*, pp. 411-436.

⁴ Moyer (2005) provides a definitive discussion of the strategic nature of distressed debt investing. The most successful practitioner of such investing is the founder of Appaloosa Management and former senior portfolio manager for high yield debt at Goldman Sachs, David A. Tepper. See Grimm (2004).

- (3) **Shut “it” down:** Liquidation of the company’s assets. More precisely, in the present context, bankruptcy, reorganization and formation of a new entity or liquidation of the old entity.

The first option aims to increase the going concern value of the enterprise in order to improve its debt servicing capacity. Investors in the NPL fund gain from higher recovery rate on the loan than would occur if the firm were to go bankrupt and be liquidated by court administrator, which is the most likely scenario if the loan had not been sold by the domestic bank which originated it and subsequently took write-offs. The portfolio managers of the fund are presumed to be *turnaround specialists*. The first strategy may be labeled “Fix it”.

The second exit strategy focuses on the search for a strategic or financial investor who is willing and able to buy the debt claims or equity interests. The value added by the portfolio manager is more akin to a *mergers and acquisitions specialist* who matches buyers and sellers of companies. This strategy places more emphasis on enterprise value redistribution than on enterprise value creation. The owner’s stake is usually diluted. The private equity funds which acquire the loans may exit by selling NPL debt with “equity kickers” which offer investors upside potential of a firm which may possibly be highly solvent but temporarily illiquid. Or the debt may be converted into equity held by the fund and then sold. The recapitalization increases debt capacity and enables the company to reduce illiquidity. A variant of this scenario is the sale of the equity stake acquired in the debt/equity swap by the fund. Under such circumstances the recovery rate can well exceed the face value of the loan. The action characterizing the second exit strategy is simply “Sell it”.

Third, the fund may make a strategic choice to liquidate the company’s assets. The aim is to realize as much value as possible from the sale of the security that has been offered as collateral for the loan. Transactions costs of this strategy may be significantly higher than the other two options, thereby limiting recovery rates. In addition significantly higher costs of financial distress are incurred in liquidation. Not only the cost of bankruptcy proceedings, but also the reduced proceeds from distressed sale (“fire sales”) are to be counted as additional costs of this strategy. Such an exit strategy may nevertheless be attractive if the fund has entered the NPL market during a recession and is exiting via liquidation during a strong upswing. The appreciation of the collateral during a cyclical upswing offers the chance of improving the recovery rate and therefore adding value for the fund’s investors. Here the timing and selection skills of a *trading specialist* and the search skills of a *broker* are decisive. The third exit strategy is tantamount to discontinuation of operations of the borrower as a legal entity and, from the standpoint of the distressed debt fund, might be termed “Shut it down”, even if the asset is utilized by a new owner, since “it” (the old firm) no longer exists as a legal entity.

Are these the only options from the standpoint of the funds which invest in portfolios of NPL’s? The purpose of this paper is to present arguments and provide evidence to support the hypothesis that there are alternative innovative NPL exit strategies in Germany. The paper is necessarily exploratory in nature. Much work is still required for a rigorous analytical defense of the ideas sketched in a preliminary fashion in what follows. The aim is to consider plausible arguments for the feasibility and efficiency of *credit risk transfer* by means of synthetic sector-specific

collateralized debt obligations (CDO) of non-performing loans (NPL) of small and medium-sized enterprises (SME) as a possible innovative exit strategy.⁵

The innovative exit strategy is designated “Triple Play”.⁶ Three novel distinguishing features of the strategy are: (a) the *type of CDO* is partially funded synthetic not True Sale; (b) *the obligors of the underlying loans* are sector-specific SME’s not a sectorally diversified portfolio of corporates; (c) the *asset quality of the loans* is speculative grade, not investment grade. Such a credit risk transfer may be viewed as an exit strategy, because the fund hedges recovery risk in the capital market or private placement market. The issuer of the SME NPL CDO is a special purpose entity called a “Sector Focus Fund” (SFF). A central theme of the paper is the claim that key factors which enhances the chances for success of the “Triple Play” are the reputation and quality of asset managers with specialized sector (industry) expertise. The design of the SFF structure assures that it manages the credit risk of the portfolio, but transfers part of the recovery risk to investors. The degree of “exit” is deliberately limited to the exposure to recovery rates that the SFF portfolio managers deem below the most likely potential rates. The SFF still has a strong incentive and, presumably, the ability to achieve very high recovery rates.

The rest of this paper is organized as follows. Part 3.1 elaborates briefly three theses and three insights which motivate the following discussion of synthetic securitization. Part 3.2 focuses on trends in credit risk transfer. Part 3.3 reviews briefly the Harvard Business school case study of the securitization of NPL’s in Korea (KAMCO) and highlights the key lesson learned from that well-documented experience in which the Deutsche Bank played a decisive role. Part 3.4 surveys the new impulses for a wave of credit risk transfer innovations. Part 3.5 outlines the SFF structure to implement the “Triple Play” strategy and assesses feasibility and efficiency of the transaction. Part 3.6 concludes the paper by considering the outlook for meeting the challenges to overcome the limitations of the proposed innovative exit strategy for NPL investment funds in Germany.

⁵ Stachuletz/Vyazovtsev (2005), in Jobe/Stachuletz (2005), pp. 388-410 analyze economic capital requirements of synthetic securitization as an instrument of loan securitization, but do not extensively discuss whether it is a likely exit strategy for NPL investment funds in Germany.

⁶ The basic idea for the instruments and the structure is derived from the insightful discussion of „reduced loss credit default options“ by Tavakoli (2001), pp.184-186 and Tavakoli (2003), pp 100-4.

3.2 Three Theses and Three Insights on Credit Risk Transfer

Credit risk transfer may be achieved through “true sale” of the debt claims or through the use of credit derivatives.⁷ When the latter path is taken, it is referred to as a synthetic securitization. When the securitization is structured to facilitate different degrees of credit risk exposure to different tranches available to investors, the instrument is referred to as a collateralized debt obligation (CDO).⁸ The original debt claims serve as collateral for the securities issued to facilitate credit risk transfer.

Thesis 1: Partially funded synthetic SME NPL CDO

Despite the setbacks from Basel II treatment of regulatory capital relief from credit derivatives, partially funded synthetic securitization of industry sector-specific portfolios of non-performing small and medium-sized enterprise loans by means of collateralized debt obligations is possible within the next 2 years.

As will be elaborated upon below, *the Revised Framework*⁹ places significant burdens on the market development of synthetic securitization of credit risk by means of credit derivatives. The likely response to the additional regulatory burden of banks will be increased participation in credit markets by non-bank institutional investors, private equity funds and hedge funds with appropriate ratings. If the “regulatory dialectic” hypothesis¹⁰ and the experience of Basel I are reliable guides to the future, then the likely response to the excessive regulatory capital charge for synthetic securitizations is financial innovation in credit risk transfer to tap non-bank sources of risk assumption and economic capital.

Insight 1 for investors

The first loss position of investors in the SME NPL CDO is a “recovery call option”

Although first-loss positions in CDO's are referred to as “equity tranches”, such claims may also be viewed as call options on the residual asset value of the loan portfolio after the priority claims of

⁷ Oesterreichische Nationalbank (2004), pp.12-14; JPMorgan (2000) for introductory treatment of credit default swaps and options. Succinct and useful introductory overview to credit derivatives is given in Hartmann-Wendel/Pfingsten/Weber(2004), pp. 309-318; applications to risk management are provided in Teil M4.2.2. “Methoden des aktiven Kreditrisikomanagements”, pp. 597-602. Applications of credit derivatives to credit portfolio management are also concisely explained in Smithson (2003). For a fixed income portfolio management perspective on credit risk management, Credit Suisse First Boston (2004). An overview of synthetic securitization and structured portfolio credit derivative market developments is given in Hawkins (2004) of Merrill Lynch in Gregory (2004), pp. 169-192. The integration of credit derivatives and securitization in synthetic CDO's is discussed by Choudhry (2004) in Gregory (2004), pp. 193-235.

⁸ Duffie/Singleton (2003), Chapter 11. Heidorn/König (2003); Bluhm (2003); Felsenheimer /Gisdakis/Zaiser (2006), pp.443-467.

⁹ Basel Committee on Banking Supervision (2005).

¹⁰ Kane (1977) and Kane (1981).

the more senior tranches have been met. In the proposed SME NPL CDO the “hybrid security” owns a contingent claim on the excess spread of the Sector Focus Fund.

Thesis 2: Gains from division of knowledge

Financial innovation (recovery swaps and options, recovery data bases), Regulatory Capital Arbitrage and monitoring reputation are the probable key drivers of the emergence of specialist sector-focused funds of credit derivatives of NPLs.

Modern portfolio theory and contemporary credit portfolio management emphasize the gains in efficiency from diversification. Other things being equal, more diversification reduces risk per unit return. Recent theoretical¹¹ and empirical¹² studies in the microeconomics of banking lend support to the view that under certain conditions (e.g. depending on size and expertise of bank) specialization may enable banks to reduce credit losses. In banking, what Hayek termed “division of knowledge” takes the form of the reduction of information asymmetry in the lender-borrower relationship. As in the private equity and venture capital markets, the specialization often takes the form of sector-specific expertise. Recovery data bases are thus necessarily structured along sectoral lines. If the gains from specialization exceed the costs in terms of reduced diversification effects, the Regulatory Capital Arbitrage triggered by the excessive capital charges for hedged NPL credit exposures will consequently take the sectoral path of least information asymmetry.

Insight 2 for portfolio managers

Credit Recovery Swaps and Credit Recovery Options hedge recovery risk.

Until recently modeling of credit risk focused on probability of default. Most models that will be subject to supervisory review under Pillar 2 of Basel II assume that the loss given default is a non-stochastic, i.e. deterministic variable whose value is known with certainty either by the supervisor or by the bank. The recent emergence of marketable credit recovery swaps¹³ suggests that portfolio managers are seizing opportunities for hedging the recovery rates presumed in internal credit models. Furthermore, purchasing a “guarantee” for a certain recovery rate would be the equivalent of taking a long position on a put option which would pay off to the protection buyer if the recovery rate fell short of the exercise recovery rate (“shortfall” scenario) but would not be exercised if the recovery rate was at or above the recovery rate (“no shortfall” scenario) used for pricing the loan and allocating economic capital.

¹¹ Winton (1999) and Winton (2004) and in this spirit the valuable paper by Stomper (2004).

¹² Hayden/Porath/Westernhagen (2006) for German banks. The importance of industry sector-specific risk factors in influencing credit losses is extensively explored in Heitfield/Burton/Chomsisengphet(2005) for the USA using nationally syndicated loans for the 30 largest syndicated loan lenders.

¹³ Berd (2005). The author correctly points out that the contract is more appropriately termed a *recovery forward rate agreement*, but the market convention refers to credit recovery swap. A limited guarantee of a recovery rate is effectively a put option contract (*credit recovery option*), but there is no active trading in such instruments.

Thesis 3: Demonstration effects

If a market for sector-specific synthetic securitizations of SME NPLs emerges successfully, it would raise the likelihood for liberalization to ease transfer of credit risk of performing SME loans.

As noted above, bank secrecy rules codified in current banking laws and regulations in Germany constrain the transfer of performing loans of distressed debtors. The history of the evolution of capital markets shows that learning processes lead to institutional changes, such as the changes which permitted synthetic securitization of loans to small and medium-sized enterprises (SMEs) in Japan, Switzerland and Germany, particularly KfW's pioneering and highly successful PROMISE platform¹⁴ for credit risk transfer from major banks to private equity investors Germany. The improvement in credit market efficiency achievable by distributing credit risk of non-performing loans to non-bank investors by means of credit derivatives could result in increasing pressures from investors and banks for liberalization of the legal framework. In addition, if the oft-cited threat of financially destabilizing expansion of credit derivatives is shown under stress situations to be illusory, then the demonstrated improvement of social welfare and economic value from more efficient and possibly more stable credit markets would imply that the regulatory burden of institutional constraints is socially and politically unacceptable.

Insight 3 for the general public

Where appropriate, prudent use of credit derivatives can create economic value and improve social welfare.

Financial stability is a legitimate major concern of financial market supervisors and regulators. Central bankers and macroeconomists have long been aware of the negative influence of financial instability on the performance of the economy. According to one prominent central banker¹⁵, the reduction of volatility of output, the containment of inflation and the achievement of sustained high levels of employment in the USA over the past 15 years may be explained in part by greater financial stability in the banking system. He cites the rapid expansion of credit risk management through prudent use of credit derivatives as one factor contributing to the *increase* in financial stability.

¹⁴ Bank for International Settlements, Committee on the Global Financial System (2003), pp. 50-52.

¹⁵ Greenspan (2005).

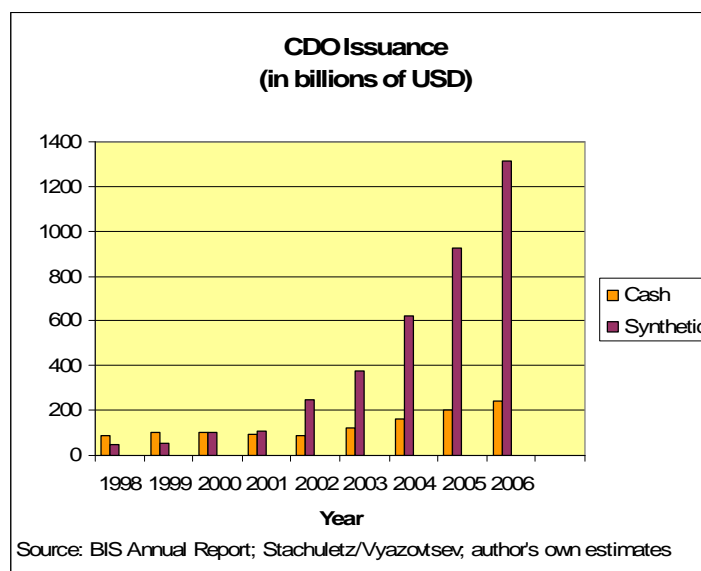
3.3 Trends in Credit Risk Transfer

The rapid development of credit risk transfer has been stimulated by innovation. However, the future of credit risk transfer is likely to be retarded by regulation, unless further innovation occurs. Despite the favorable experience in the USA with credit derivatives, the Basel II framework for securitization reflects the dominance of both warranted and possibly unwarranted concerns about financial instability over chances for improved efficiency.

3.3.1 Emergence of Synthetic Securitization

As noted in the 75th *Annual Report* of the Bank for International Settlements, the notional amounts of credit default swaps contracts increased 6-fold between 2001 and 2004 to USD 4.5 trillion. Collateralized debt obligations (CDO's), which also facilitate credit risk transfer, are expected to grow 10-fold from 2001 to 2006 (Figure 1). Synthetic securitization is clearly the most rapidly growing CDO segment, far surpassing cash CDOs (true sale). The growth of this segment is explained¹⁶

Figure 1



by the search for yield by investors and the use of instruments by financial institutions to more efficiently hedge and manage risk.

Higher yields on relatively low risk CDO tranches can be obtained if correlations among defaults of underlying loans are high. Figure 2 shows that the cumulative probability of a low loss for the

¹⁶ BIS(2005), p. 116.

equity tranche (“Junior”) is significantly lower for loss distributions with high default correlations for the borrowers compared to a portfolio with low default correlation. This implies lower risk for the Junior tranche due to the “fat tail” for extremely low pool losses.

Figure 2

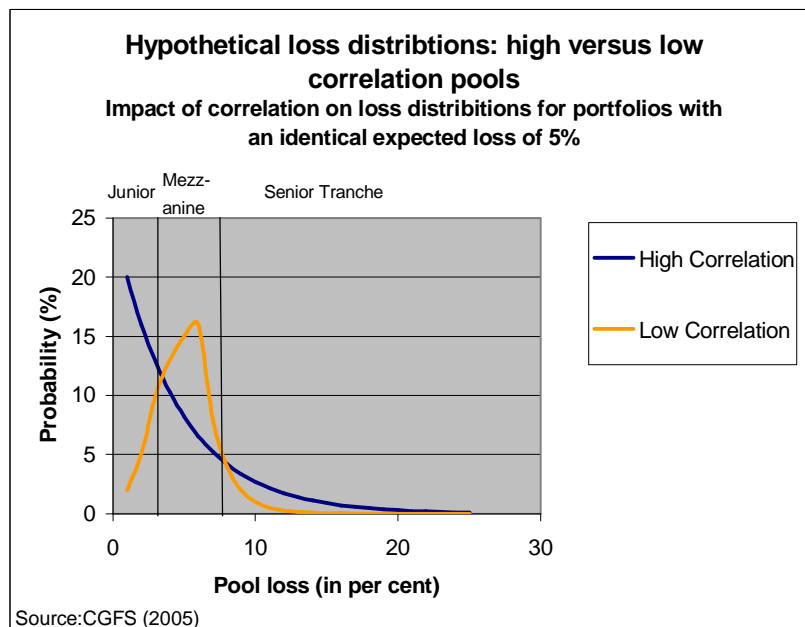
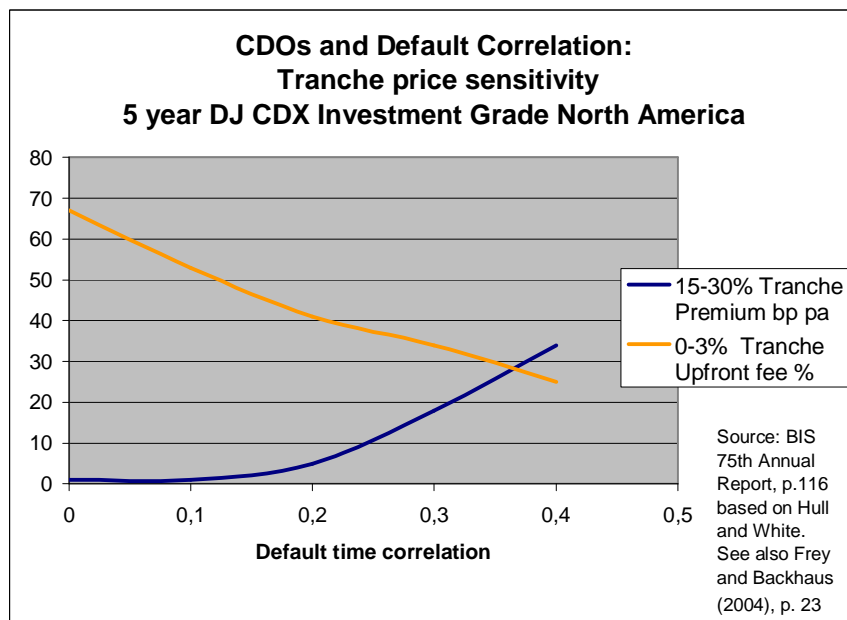


Figure 3



On the other hand, the fat tail of the senior tranche of the high correlation pools offers the investors which are least exposed to default risk a higher yield due to the increased amount of credit risk exposure. The search for yield pick-up of investment grade securities thus provides a strong impulse for the issuance of CDOs with high correlation pools.

As the markets focus more and more on correlation, a reallocation of risk towards the senior tranches of CDOs and greater willingness of equity investors to bear credit risk is likely to occur. This is reflected in current market pricing of the tranches of investment grade CDOs (Figure 3). Pools with higher default time correlation have lower upfront premiums for the “equity” tranche; similarly, higher correlation of such pools is associated with higher risk premium.

3.3.2 Introduction of New Asset Classes

The response to the search for higher correlation pools and higher risk-adjusted returns has been the introduction of new asset classes for securitization. For the present purposes it is noteworthy that loans of SME borrowers have been targeted recently by GE Commercial Finance.¹⁷ A total of 354 secured business loans to 305 borrowers in 42 states of the USA provided collateral for a CDO with a notional amount of \$713 million. The structure achieved credit enhancement (risk mitigation) through subordination, spread accounts and expected spread. Of the six tranches, three were rated AAA and comprised 88% of the notional exposure. Two mezzanine tranches rated investment grade and accounted for 9.5%. The equity position was exposed to the first 2.5% of the losses on the portfolio. The ratings by Fitch emphasized the servicing experience of GECC as master servicer.

While the inclusion of SME borrowers in a synthetic securitization is certainly not new to the German market, the GE Business Loan Trust transaction is of special interest because there is no government supported entity (GSE) involved as a counterparty to the transaction. Moreover, the portfolio is focused on performing SME borrowers.

Another class of assets which is obviously relevant for the present discussion is NPLs in general. It includes a variety of non-performing loans. Credit exposure is not only to small and medium-sized businesses, but also to private individuals and corporates. Consequently, the degree of diversification is higher, and thus the default correlations are lower. Fitch reviewed 32 NPL-backed transactions in Italy as of June 2003 and found that they were performing well and in some cases exceeded expectations.¹⁸ Credit enhancement was achieved by overcollateralization ranging from 16x to 2x, with an average of 4x across deals. Most noteworthy is the fact that all of the downgraded notes were issued by the same entity. The quality of the servicer and asset manager appears to be a source of default correlation.

¹⁷ Fitch (2005b).

¹⁸ Fitch (2003).

This brief look at two new asset classes is not intended to be exhaustive. It serves to illustrate the evolution of market segments which may produce a mutation that initiates the emergence of the new asset class proposed in this paper: SME NPLs.

3.3.3 Basel II: Capital Charges under the New Securitization Framework

The prospects for the growth of bank and insurance companies as investors in CDOs received a major setback when the Basel Committee agreed to the new framework for securitization. The regulatory capital charges are generally viewed as excessive. There are three reasons for this assessment.

First, *the substitution approach* to determining the probability of default of a hedged credit exposure is highly restrictive. According to this procedure for determining risk-sensitized regulatory capital charges, the applicable probability of default is assumed to be the lower of the probability of defaults of the obligor or the guarantor. This approach neglects the fact that two events must occur before the credit exposure incurs a loss: both the default of the obligor and the default of the guarantor. If the two events are statistically independent, then the joint probability of their occurrence is the product of the probabilities. For a loan that is guaranteed by a financial guarantor that joint probability is very low. Usually the two events are uncorrelated. Abstracting from such considerations, the substitution approach of Basel II deters banks from investing in CDOs because the regulatory capital charge is a multiple of the economic capital required (Figure 4). In effect, the substitution approach has been

Figure 4

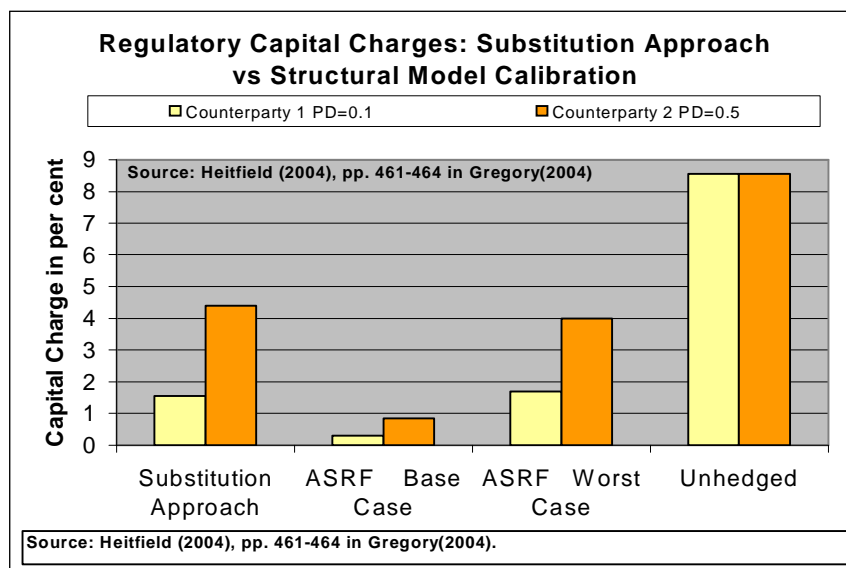


Table 1

Risk Weights for Auto Loan : PD= 2.78% LGD=30% 5yr maturity			
Tranche	AAA	AA -	Un-rated
Size	91.3%	5.3%	3.7%
Perraudin /Pyhkin w/o excess spread	0%	113%	1126 %
ESF Quant Group w/o excess spread	0%	62%	1215 %
Perraudin /Pykin with excess spread	0	34%	958%
ESF Quant Group with excess spread	0	17%	1234 %
Source : Batchvarov , Picone , Hoogbruin , de Smet , Tchistiakov (2004), pp.380 -387 in Perraudin (2004)			

shown to be equivalent to the use of a structural portfolio model (asymptotic single risk factor) under the worst case scenario.¹⁹ Second, the calculations of the ESF Quant Group in Table 1 show how disallowance of excess spread as a mitigant leads to a “shadow” regulatory capital that is nearly double the amount of economic capital.²⁰ Third, the impact of questionable calibration assumptions combined with the disallowance of the excess spread as a mitigant leads to regulatory capital charge (according to “shadow” regulatory calculations by Perraudin/Peretyatkin²¹) which is 6 times higher than the economic capital allocation for AA- tranche of a CDO with auto loans with high probability of default.

The Basel II capital adequacy rules are intended to increase the risk sensitivity of capital allocation of banks. Under Basel I, the 8% capital charge for all corporate borrowers, regardless of risk rating led to regulatory capital arbitrage (RCA), as banks securitized high quality, low or negative margin corporate credits. The Basel II rules will eliminate the disincentives for holding investment grade corporate credits. However, it will not eliminate regulatory capital arbitrage. The regulatory capital charge does not apply to a portfolio of credits, but rather to each credit individually. Even after calibrating for default correlations in arriving at the regulatory formula, there are opportunities for bundling names with relatively high default correlations which enable equity tranche investors and super senior tranche investors to improve efficiency (risk-adjusted returns). Synthetic securitizations will enable banks to reduce excessive capital charges by transferring *portfolios* of credit risk to non-bank institutional investors rated at least A-.

¹⁹ Heitfield (2004) in Gregory (2005), pp. 451-466.

²⁰ Batchvarov/Picone/Hoogbruin/de Smet/Tchistiakov (2004) in Perraudin (2004), pp. 364-388.

²¹ Peretyatkin/Perraudin(2004), pp.329-362.

3.4 KAMCO Case Study

The regulatory burden from the restrictive treatment of securitization under Basel II is very difficult, if not impossible to quantify. Theoretically, in terms of the supposed trade-off between stability and efficiency, the opportunity cost of increased financial market stability by limiting credit risk transfer should be measured by the loss of financial market efficiency from liberalizing credit risk transfer.²²

In the distressed debt market the opportunities for synthetic securitization that may be foregone can be illustrated by a well-documented Harvard Business School Case Study of NPL securitization in South Korea.²³ The following brief sketch of the landmark Korean Asset Management Corporation (Korea Asset Funding 2000-1 Ltd) is intended to demonstrate the feasibility of securitizing non-performing loans and to consider the lessons learned from its success. Moreover, from a regulatory perspective, the Case Study calls into question the hypothesized trade-off between stability and efficiency. The underlying static regulatory model ignores dynamic learning effects and thus may lead to a framework which unintentionally constrains both stability and efficiency by neglecting their possible complementarity.

KAMCO, an NPL fund, purchased non-performing loans totalling nearly \$400 million from five South Korean banks. It purchased protection from a domestic special purpose vehicle, Korea 1st Int'l ABS Speciality Co which was funded mainly by the issuer Koreas Asset Funding 2001-1 Limited, which took a senior position, but also in part (12%) by KAMCO, which thereby took a mezzanine position in exposure to the banks whose portfolios of non-performing loans it was managing. The first loss position was taken by the five banks which originated the loans and sold put options to the protection seller. If a corporate borrower failed to meet rescheduled debt service obligations, the option was triggered and the loan could be put back to the originating bank. If the bank failed to repurchase the loan, KAMCO was obligated to compensate the protection provider up to 12% of the face value of all the doubly defaulted obligations (borrower default on the restructured loan and banks default on the put options). The bulk of the funding of the SPV was accomplished by means of Baa2/BBB+ senior notes issued offshore in the international bond market. Liquidity for the structure was provided by the Korean Development Bank which was rated Baa/BBB+.

Principal and interest from the loans were paid through the originators to the domestic SPV and passed through first to the international issuer and then to KAMCO. The management of the non-performing loan portfolio was at the discretion of KAMCO, which had special workout expertise and thus received management and servicing fees. The originating banks received premia for the put options. The investor base consisted of over 60% distressed debt funds, over 25% banks, and nearly 10% insurance companies. Over half the investors were domiciled in the USA; nearly a third were based in Asia; the rest came from Europe, principally the UK and Ireland.

²² Smith and Walter (2003), pp.336-338.

²³ Chacko/Hood/Dessain/Sjöman, *Harvard Business School Case Study* 9-205-037 (2005) and Deutsche Bank AG (2002).

The credit enhancement structure involving put-backs offered by the loan originators and subordination accepted by the servicer KAMCO and liquidity facilities of an investment grade bank contributed to the success of this and subsequent transactions. Collateral and loan terms were screened before inclusion in the portfolio. In addition the industry and geography diversification are cited as success factors and closely related to this the favorable risk/return profile of the senior tranche.

For the purposes of the present discussion, special attention should be drawn in particular to three key success factors:

- High recovery potential of the portfolio
- Servicer's recovery track record
- Viability of business and operations of the obligors.

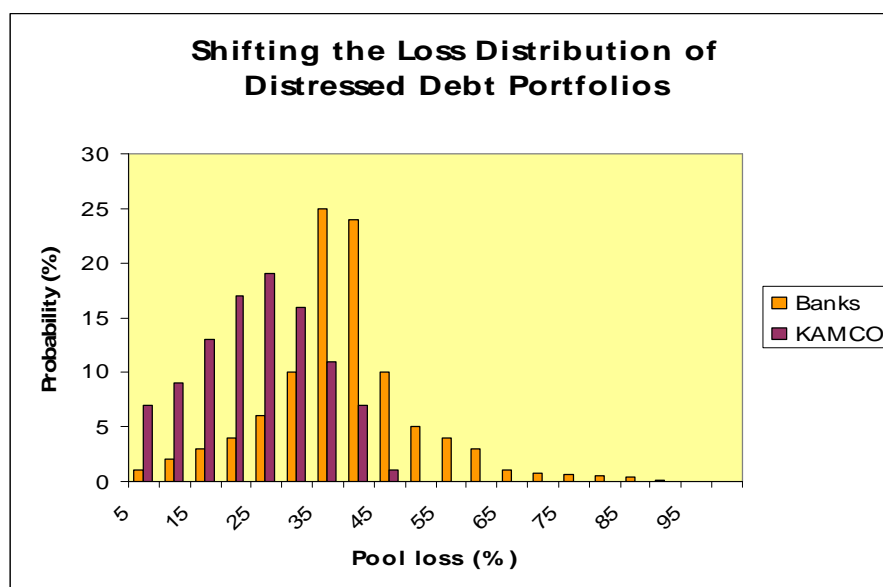
It is evident that the specialization of the portfolio manager and servicer KAMCO *endogenizes* the recovery rate. The high potential recovery rate represents the feasible "output" of the workout operation. The servicer's recovery track record is evidence of organizational and technological know-how in the "production" of loan recoveries. The viability of the business and operations of the obligors are the "raw materials" selected by the portfolio manager. Good portfolio managers, combined with specialized servicers, have the capacity to "produce" favorable results. This was the learning experience of KAMCO.

Current models of loan loss distributions treat the loss given default as deterministic and constant. The value of this parameter is fixed either by the supervisors (Internal Ratings Based Approach – Fundamental) or by the historical experience of the bank (Internal Ratings Based Approach – Advanced). In the latter approach, Basel II recognizes that there are differences among banks at a given point of time based on validated historical recovery data.

The experience of KAMCO demonstrates that the loss given default of a given institution can change over time, especially if that institution is specialized in workouts and focused on raising recovery rates to the potentially highest level. The learning effects of special loan administration units dealing repeatedly with bankruptcy law, corporate law, commercial law, business reorganization and restructuring, turnaround situations, debt/equity conversions, collateral liquidations, mergers, etc. are considerable. As will be discussed below, the distribution of recovery rates in a country is not unimodal, but bimodal. This interesting fact requires an explanation. The hypothesis offered here is that a possible cause of the bimodality is the endogeneity of the quality of "delegated monitoring". Some banks are good at recovery and get better over time; however, some are bad at it and eventually are selected out in an evolutionary process. Thus, one lesson to be learned from the KAMCO Case Study is: learning effects matter.

Learning effects enter into the framework of distressed debt analysis by comparison of the loss distributions faced by different banks at a point in time or by considering the changes in the parameters of a loss distribution of a single bank over time.

Figure 5



In Figure 5, the KAMCO transaction is interpreted as a shifting of the loss distribution that may be attributed to the greater specialization of the portfolio manager and loan servicer in loan recovery compared to the banks which originated the loans.

In Figures 6a and 6b, the parameters of the loss distribution representing expected loss and unexpected loss decline as the workout team is “seasoned”, that is, as the

Figure 6a

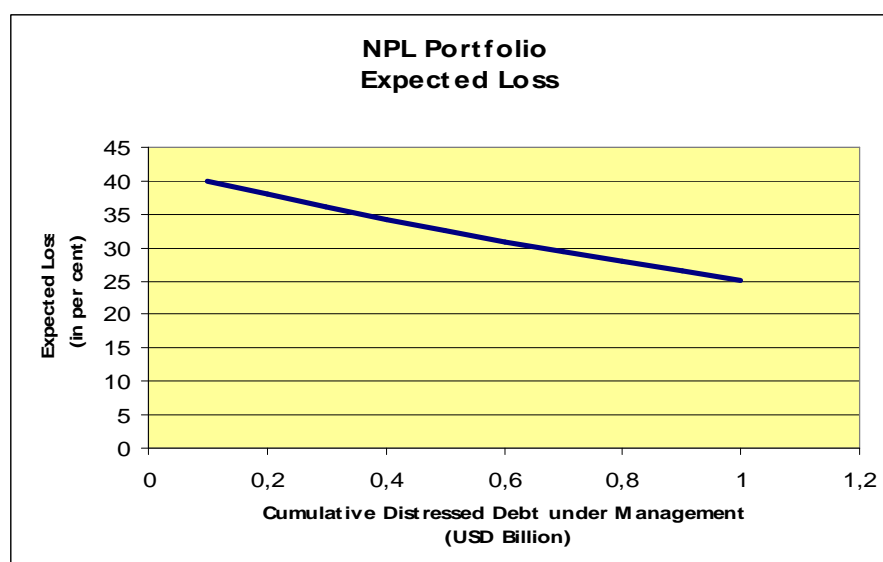
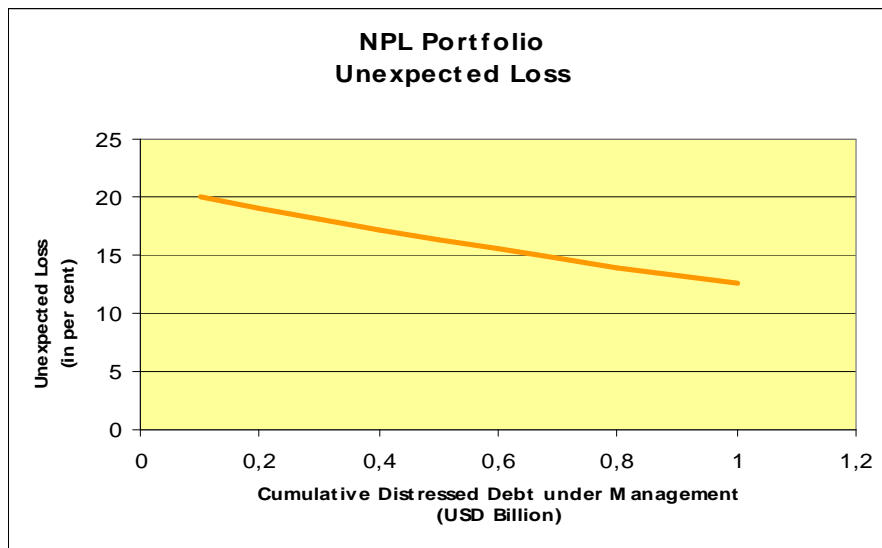


Figure 6b



cumulative volume of comparably diversified portfolios under management increases. The contractual design of the transaction structure strongly incentivizes KAMCO to learn from experience. The positive incentive for continually improving monitoring quality is provided by the excess spread that arises from the significantly lower economic capital charge for unexpected losses of a diversified portfolio of “guaranteed” loans (which are able to be put back, to the banks) compared to the regulatory capital charge for individual loans originated by the banks. Both borrowers and banks must fail before KAMCO is exposed to loss. The disincentive for poor monitoring quality is the higher risk exposure due to the mezzanine tranche’s subordination to the the senior tranche held by the investors. Both the ability and willingness to learn from experience accounts for the hypothesized intertemporal heteroscedasticity of the loss distribution.

3.5 New Impulses for Innovation in Credit Risk Transfer

Recent innovations in recovery risk measurement and rating are suited to accelerating the learning process just discussed. Research on recovery rates both at the individual issuer level and portfolio level carried out by rating agencies suggests that recovery risk is sector-specific. The applied empirical research also indicates that monitoring quality matters, i.e. that the recovery risk is not fully determined by exogenous factors. Furthermore advanced theoretical models for measuring risk and pricing portfolios of credit default swaps represent a major breakthrough for synthetic securitization. Finally, the development and trading of credit recovery swaps shows that instruments exist that separate recovery risk from the default risk. This latter development has far-reaching implications for synthetic securitization of non-performing loans, and eventually for all types of distressed debt.

3.5.1 Issue Recovery Risk Measurement and Rating

Three rating agencies have carried out extensive empirical research on defaulted bonds in order to determine the factors which statistically explain recovery rates. Recently, researchers at Moody's²⁴, S&P's²⁵ and Fitch²⁶ have made important contributions which are intended to lay the empirical foundation for recovery ratings. The results of this research are not uniform. The agencies' work is complementary.

All three agencies agree that *seniority (position in the capital structure)* of an exposure to an issuer is a key explanatory factor. However, only Moody's and Fitch appear to agree that the *sector* of the borrower significantly affects recovery.²⁷ Furthermore, whereas Moody's use of KMV a structural model does not allow for *endogeneity of the recovery rate*, both S&P's and Fitch identify "banks' idiosyncratic factors" (S&P's) and "asset manager quality" (Fitch) as key determinants of recovery rates.

3.5.1.1 Asset Manager Quality

How do banks differ with regard to their recovery process? In a major empirical study, Franks, deServigny and Davydenko²⁸ of S&P's identify five "idiosyncratic factors" which affect recovery rates:

- Definition of default
- Collection of data at the firm and facility level
- Amount and type of collateral (positioning relative to other banks)
- Dynamic process for securing collateral during workout
- Accuracy and timeliness of collateral valuation.

More specifically related to distressed debt manager quality for middle market loans, S&P's emphasizes the following evaluation criteria:

"These managers should have a track record of obtaining recoveries on the distressed debt with high returns on their initial investment. Key features in distressed debt management include a seasoned workout team; understanding and ability to work through complex legal issues involved in restructurings and bankruptcies; access to capital to manage through

²⁴ Gupton(2005).

²⁵ Franks/deServigny/Davydenko(2004).

²⁶ Fitch (2005c).

²⁷ According to Schuermann(2005), p. 19 „Industry matters – sometimes.“ The empirical studies he surveys indicate lack of agreement on whether the sector (referred to as "industry") is statistically significant.

²⁸ Franks/deServigny/Davydenko (2004), pp. 90-93.

workouts that need additional cash; and an understanding of asset valuation and the discipline to liquidate companies when appropriate.”²⁹

More closely related to assessment of synthetic securitizations, Fitch has developed CDO Asset Manager Ratings which assign weights the following factors³⁰:

- Experience (company, management): 15%
- Staffing: 10%
- Procedure and controls: 5%
- Portfolio management: 25%
- CDO administration: 10%
- Technology: 10%
- CDO performance: 25%

S&P's research on CBO Index Deals focuses on the dispersion recovery rates. For the 1999 high-yield cohort analysed over the period October 2000 to March 2001, the findings show that the bottom 10 managers recovered on average about 3% whereas the top ten recovered on average 50%. The implication of the studies by Fitch and S&P's researchers is that the recovery rate of a debt issue (alternatively, loss given default) is neither completely exogenous nor invariant. It is influenced significantly by the quality of the delegated monitoring.

If it is assumed that recovery rates are both exogenously and endogenously determined, then the question arises regarding the performance of the distressed debt manager. As argued above in the case of KAMCO, recovery rates achieved by the specialized unit are presumably higher than those typically realized by the originating banks. Investors in portfolios of non-performing loans are thus interested in the assessment of the performance of the portfolio, which is partly a reflection of the quality of the asset manager, but also dependent on factors beyond the manager's control, such as which sector the firm belongs to and the phase of the business cycle.

Recently, both Fitch³¹ and S&P's³² introduced recovery rating scales. This area of credit analysis research is in its incipency. Consequently, one may expect revisions and refinements as researchers and practitioners gain insights into their usefulness and limitations. A comparison shows that the performance, as measured by recovery rating, is scaled in a strikingly different manner. In Tables 2a and 2b it is seen that recovery ratings have an impact on the *issue* (not issuer) rating.

²⁹ Standard&Poor's, Structured finance (2004), p.10.

³⁰ Fitch (2005a).

³¹ Fitch (2005a).

³² Chew/Kerr (2005) in Altman/Resti/Sironi (2005), pp.87-97.

Table 2a: S&P Recovery Rating Scale

RR	R %	Notches
1+	>100	+3 or 4
1	100	+1 or 2
2	80-100	0
3	50-80	0
4	25-50	0
5	0-25	0

Table 2b: Fitch Recovery Rating Scale

RR	R %	Notches
R1	90-100	+3
R2	70-90	+2
R3	50-70	+1
R4	30-50	0
R5	10-30	-1
R6	0-10	-2 or -3

The impact is measured in *notches*. (For each *grade* there are three *notches*.) In the S&P scale, an improvement in the issue (or facility) rating of one or two notches is recognized by the Recovery Rating RR1 for recovery rates of 100%. A Recovery Rating of RR1+ is assigned to recoveries in excess of 100%. This is possible if loans are overcollateralized (loan to value ratios <1) or if recovery through a debt/equity swap enables the lender to realize proceeds upon sale of equity in excess of interest and payment due. The S&P scale does not differentiate among recovery rates below 1. This conservative feature implies that improved prospects of recovery do not impact the issue debt rating until the threshold of full recovery is reached. Consequently, the current S&P recovery rating scheme is not fully aligned with the debt market's debt pricing practice. Bond prices and secondary loan market prices respond to information that is relevant to the formation of recovery expectations that are below full recovery.

The Fitch rating schema addresses this issue. An average recovery rate ranging between 30% and 50% is assumed to have no impact on issue rating. However, poor recovery rates between 0% and 10% (R6) can lead to a full grade (up to 3 notches) penalty, whereas high recovery rates between 90% and 100% (R1) can lead to at most a full grade (3 notches) improvement. The weakness of the Fitch scheme serves to highlight the strength of the S&P approach. Unlike S&P, Fitch does not explicitly take into account the fact that recovery in excess of face value is also a realistic prospect in distressed debt portfolios in which the managers make extensive use of debt/equity swaps, or

loans are overcollateralized. Clearly, the approaches are complementary. Nevertheless, it appears that the Fitch scale is more aligned with distressed debt pricing practice.

3.5.1.2 Sector

Before taking a closer look at the factors which Fitch takes into account in order to arrive at a differentiated recovery rating, it is necessary to highlight another distinguishing feature of their approach: the critical role played by the sector in which the borrower is engaged. In the recent discussions of recovery risk, “sector” refers to broad industry groupings. Unfortunately, the rating agencies have not yet agreed to a uniform classification of sectors³³, but there is fairly close agreement and convergence in classification schemes may be expected. The most extensive empirical investigation of recovery rates of defaulted bonds by sector was carried out by Hagemann, Renault and Scaillet of S&P’s using a 12 sector classification scheme of S&P’s LossStat slightly different from the 11 sector scheme recently agreed upon by S&P’s with the Citigroup. The results are shown in Table 3.

Table 3: Recovery Rate Means and Standard Deviations: S&P LossStat Data Base

Sector *	Securities (#)	Mean (%)	S.D. (%)
Utility	55	68.37	20.82
Insurance/Real estate	33	39.79	26.70
Telecommunications	14	24.73	7.53
Transportation	39	37.52	27.12
Financial services	24	29.70	24.63
Health care/Chemicals	22	36.51	26.33
High Technology	14	50.46	22.15
Aerospace/Automotive	79	42.98	21.36
Forest/Building	43	39.69	29.46
Leisure/Media	155	36.80	21.21
Consumer/Services	86	42.91	27.06
Energy/Natural resources	59	45.56	25.62

*Defined as „industry by authors” Source: Hagemann, Renault, Scaillet (2005), p.332.

³³ S&P’s GICS® is emerging as an *evolving* industry standard (see Standard & Poor’s (2005)), but the Pan European Credit Data Consortium, which is cooperating with Fitch through Algorithmics, may use slightly different classifications.

In view of the range in recovery rates from about 25% for telecommunications to over 67% for utilities, this table might appear to contradict the finding cited above and reported by S&P's that "industry" is an "irrelevant" factor in the explanation of recovery rates. Note, however, if "normal" rates are, as Fitch suggests, in the range between 30% and 50%, then 10 out of 12 sectors do not exhibit abnormal recovery rates. This lack of extreme variability may be regarded as roughly consistent with the S&P finding. On the other hand, the high standard deviations (except for telecommunications) suggest, but do not prove, that there is significant latitude for "endogeneity" of recovery.

Empirical studies of recovery rates do not answer the question of how the "sector" might enter into recovery rate calculations of lenders and investors in distressed debt markets. The clearest answer to this question has been provided by Fitch in a series of recent publications on their recovery rating criteria.³⁴ The basic insight is that the *sector* is relevant for valuation of the enterprise. Valuation is the starting point for assessment of recovery prospects.

The Fitch recovery rating procedure consists of three steps:

- **Step 1: Valuation** - Estimate of Enterprise value using going concern and liquidation values (whichever is lower)
- **Step 2: Distribution Value:** Estimate of Creditor Mass
- **Step 3: Prioritization:** Distribution of Value among claims.

The *going concern valuation* focuses on current estimates of Earnings before Interest, Taxes, Depreciation and Amortization (EBITDA). Using the North American Credit Data Consortium data base, valuation factors are selected by analysts to arrive at enterprise going concern valuation. (Since October, 2005, Fitch, together with its subsidiary Algorithmics, Inc. and major global banks with operations in Europe, is currently working with the Pan European Credit Data Consortium—a recovery rate data pool-- to put together a similar European data bank.³⁵) First, *estimated EBITDA is discounted*, to obtain *distressed EBITDA*, reflecting the impact of financial distress on cash generating ability. The analyst must assess how supportive non-financial and financial stakeholders are in efforts to achieve financial stability. Here behavioral finance issues, such as suppliers' demand for advance payments (Vorkasse) or risk premia (Risikoaufschläge), customers' demand for discounts (Risikoabschläge), etc. are investigated. These factors may change over time depending upon the degree of cooperation or confrontation among all financial and non-financial stakeholders.

³⁴ Fitch (2005c) for an elaboration of the procedure that is applied in the following discussion. Separate criteria reports have been issued by Fitch for the sectors. The Appendix to this Working Paper briefly summarizes the application in Fitch (2005d) to Delphi Corp, the financially distressed US auto parts supplier in which David A. Tepper's Appaloosa Management Ltd. holds a 9.3% equity interest.

³⁵ Algorithmics (2005).

Table 4: Discounts Applied to EBITDA (% Reduction of EBITDA)

Sector	Low	High	Average
Aerospace and Diversified	23	40	31
Auto Parts	20	45	20
Homebuilders	35	35	35
Chemicals/Health Care	11	75	46
Consumer	31	31	31
Energy/Commodities	25	25	25
Food and Beverage	30	30	30
Technology, Media & Business Services	20	80	45
Retail	15	40	28
Telecom/Cable	20	65	36
Airlines and Gaming	13	16	13

Note: Based on North American data; may vary by jurisdiction Source: Fitch (2005b), p.4

Second, an Enterprise Value *EBITDA multiple* (Enterprise Value expressed as a multiple of EBITDA) is selected which reflects the analyst's view of business position (20% weight), financial flexibility (40% weight) and operating environment (40% weight). A scorecard which is based on conventional financial analysis arrives at a qualitative measure of strength ranging from relatively weak, medium, and relatively strong. The score obtained from the conventional financial analysis drives the selection ("look-up") of the appropriate Enterprise Value EBITDA multiple obtained from the *sectoral* Enterprise Value EBITDA multiple data base. The sector-specific Enterprise Value EBITDA multiples for North America are shown in Table 5.

Table 5: Enterprise Value Multiples (x EBITDA)

Sector	Low	High	Medium
Chemicals/Health Care	6.0x	9.0x	7.0x
Telecom/Cable	4.5x	8.5x	7.0x
Technology, Media and Business Services	4.0x	8.0x	6.3x
Food and Beverage	7.0x	7.0x	7.0x
Aerospace and Diversified	6.0x	7.0x	6.6x
Retail	5.1x	6.2x	5.8x
Energy/Commodities	6.0x	6.0x	6.0x
Auto Parts	4.8x	5.0x	4.9x
Consumer	5.0x	5.0x	5.0x
Airlines and Gaming	4.5x	5.0x	4.9x
Building Products	4.0x	4.0x	4.0x

Note: Based on North American data; may vary by jurisdiction Source: Fitch (2005b), p. 4

The valuation procedure also considers *liquidation value*. The data base is structured to provide balance sheet information that is differentiated by sector. Average liquidation value haircut histories (% of book value realized) of accounts receivable, inventory and property, plant and equipment are used to estimate highs and lows that have been experienced in the specific sectors. For all sectors average accounts receivables range between a low of 66% and a high of 80%; inventory low liquidation value averages 50% whereas the high mean value is 60%; property plant and equipment averagers range between 39% and 53% percent. These averages mask high variability across the sectors for each asset category.

Enterprise value is determined either as going concern value or liquidation value, whichever is lower. To obtain going concern enterprise value, the discounted EBITDA is multiplied by the Enterprise Value EBITDA multiple. For unlisted companies, this “rule of thumb” for valuation is a pragmatic substitute for market value of debt and equity to obtain going concern value. The enterprise liquidation value of operating assets is obtained by finding the sum of the estimated proceeds from liquidating accounts receivables, inventory, property plant and equipment using the haircuts provided by the sector specific data base.

The second step in the recovery rating process is designated determination of creditor mass, which Fitch refers to as “Distribution Value”. This step is necessary to deduct administrative and priority claims as well as estimated collaborative payments to subordinated debt holders in order to get agreement to a reorganization or restructuring plan. These considerations are theoretically and practically well-founded, even if the implementation requires subjective judgements. On the one hand, expected costs of financial distress consist of the inevitable transactions costs of restructuring and reorganization. On the other hand, the outcome of the strategic interaction among different classes of creditors (senior, junior) to coordinate their demands through intercreditor negotiations, in order to avoid prisoner’s dilemma outcome, ultimately determines what is available to the senior debt holders.

The third step in the procedure is prioritization. The Distribution Value is allocated in accordance with seniority level, as would be usual under a specific jurisdictions bankruptcy administration. All claims in the same category are treated equally, i.e. *pari passu*.

The assignment of recovery ratings is then carried out by determining the the fraction of the nominal value of the claim that has been allocated to the liability type. The resulting percentage is then linked to the rating scale.

In Table 6, the empirical frequency distributions of typical recovery rates by seniority class (liability type) are shown on each line. The top line of the table

Table 6: Distributions of Recovery Rates by Seniority and Recovery Rating

Midpoint Recovery	95	80	60	40	15	5	Ave Re- covery
Liability Type/Rating	RR1	RR2	RR3	RR4	RR5	RR6	
Asset Based	100	0	0	0	0	0	95
Secured Bank	90	0	7	3	0	0	91
Secured Bond	34	30	27	8	0	1	76
Unsecured	9	4	25	28	12	22	41
Subordinated	5	0	23	3	22	47	26
Preferred Stock	0	0	0	0	0	100	5
Aggregate	39	5	19	16	7	13	60

Source: Fitch (2005c), p.7. Note: Based on North American data base

shows recovery rate mid-point that corresponds to the recovery rating class. While it appears that one could short-cut the entire procedure by simply looking at the liability class, this is only true for asset based and preferred stock; it is approximately correct for secured senior bank debt. The three step procedure outlined above is necessary to allocate value to the claimants and then compare the result to the nominal value of the claims. Nevertheless there appears to be a very rough correspondence between the rating scale and the average recovery rates by seniority types “asset based” (RR 1) “senior secured” (combined group RR2 and RR3), “senior unsecured” (RR4) and “subordinated” (RR5), and finally “preferred stock” (RR 6).

The difference between such a short-cut, *ad hoc* approach and the value-based procedure leading to an assignment according to the midpoints on top line in Table 6 is decisive. Whereas the liability classification is relatively static and fixed, the valuations which drive the mass of claims to be distributed are dynamic and can change significantly in the course of a workout. More importantly, for the categories “senior bond”, “unsecured” und “subordinated”, the empirical frequency distribution of recoveries among rating classes is highly dispersed. Finally, for the critical category “senior secured bank debt”, the distribution is bimodal, with “fat tails” at very high and mid-range recovery rates. A value-based derivation of recovery rates determined as allocated claim as a per cent of nominal value of claim is fundamentally important for systematic assessment of the expected rate of recovery. The expected recovery rate is not only conditional upon seniority position but also on key drivers which determine enterprise value. As the Fitch three-step procedure demonstrates, among the key drivers of the recovery rate is the *sector* to which the debt issuer belongs through its impact on valuation.

3.5.2 Portfolio Recovery Risk Measurement and Rating

The preceding discussion treated the measurement and rating of recovery at the *individual debt issuer* level. Recovery ratings of issues represent an important innovation which will provide a strong impulse for the development of synthetic securitization. However important the innovation may be for investors which are willing to assume the credit risks of distressed debt, the impact of the innovation will be strongly reinforced by new theoretical advances in pricing and rating risks of *portfolios of loans and credit derivatives*. As was shown in the KAMCO case study, the NPL securitization market can emerge only if the risks of portfolios of loans and the tranches of the instruments (credit derivatives) issued can be assessed and priced.

Two recent breakthroughs in analysis of collateralized debt obligations (CDO') have been achieved by academic researchers. Academic research on CDO's is proceeding at an extraordinarily rapid pace, and thus the work mentioned here is only intended to be indicative. The short review of the work in this area is meant to illustrate the thesis that practitioners must watch the progress in the theoretical applied research and development on the credit derivative instruments required for synthetic securitization of non-performing loans. Of course, one should add that academic researchers should also watch the breakthroughs that are being achieved by "practitioners" in the research and development departments of central banks, rating agencies and financial institutions. In this area of financial engineering research and development, distinctions between "academics" and "practitioners" are blurred. One can plausibly argue that many academics still need to catch up to the advanced "practitioners".³⁶

In a landmark unpublished working paper, Hull, Predescu and White³⁷ apply option pricing theory in a structural model to assess both the portfolio risk, tranche risks and the risks of individual issuers whose issues make up a portfolio consisting of the 5 year Dow-Jones credit derivative CDX Index of Investment Grade Corporates. The riskiness of the portfolio depends on the price volatilities and asset correlations of the underlying credit derivatives. The risks of the tranches depend on the degree of protection offered by the attachment points. Table 7a summarizes the findings for pricing which is dependent upon the risk. The authors find that:

³⁶ For example the breakthrough by Pykhtin (2004) in Perraudin (2004), previously of Key Corp and currently at BoA in deriving closed form expression for economic capital for securitizations.

³⁷ Hull/Predescu/White (2005).

Table 7a Hull, Predescu and White (2005)

Table 7b Frey and Backhaus (2004)

5-YEAR DJ CDX Investment Grade North America						Inter- action	Annual Proba- bility of Default	Annual Default Corr.	5 year Default Corr.	Tranche 1 [0,3] Spread	Tranche 2 [3,10] Spread	Tranche 3 [10,100] Spread
Structural Model Prices (bp)												
	Tranches											
Corre- lation	0-3% fee	3-7%	7-10%	10-15%	15-30%							
0	59.2%	232	0.4	0	0							
0.1	46.2%	376	67	11	0.3							
0.2	37.1%	408	135	46	5	0	3.25	0.00	0.00	93.2	16.2	0.0
0.3	29.4%	407	176	81	16	10	3.24	0.40	3.85	78.1	14.0	0.2
0.4	22.5%	393	199	110	31	20	2.93	0.91	11.95	60.6	10.1	0.4
0.5	16.1%	369	211	130	48	30	2.58	1.37	22.2	49.6	7.4	0.6

- the risk of the mezzanine tranche is *not a monotonically rising* function of correlation
- the risk of the first loss position *declines* as correlation rises
- the risk of the senior positions *rises* as monotonically as correlation increases.

The latter results confirm an earlier study of Frey and Backhaus which models counterparty and borrower default risk for pricing basket default swaps.³⁸ Their findings are summarized in Table 7b.

- Spread on first loss position falls as correlation increases
- Spread on senior position rises as correlation increases

³⁸ Frey/Backhaus (2004)

Although the findings for the mezzanine tranche differ, Hull et.al. define the attachment points more narrowly (3% to 7% compared to 3% to 10%), and they investigate higher ranges of correlation (40% and 50%).

In these studies the attachment points are defined by exposure to cumulative credit losses of the portfolio. The pricing models for the portfolio are based on default correlations among the individual issuers.

The estimation of default correlations among issuers is another area of highly intense theoretical and empirical research which has relevance for structuring and pricing portfolio credit risk in synthetic securitization transactions. Important work at S&P's reported by de Servigny and Renault³⁹ apply copula methods to estimate *conditional correlations*. In Table 8 the rows and columns of the correlation matrix are sectors, but the cells of the matrix are average

³⁹ deServigny/Renault(2004); The pioneer is Citigroup's David X. Li, formerly of Moody's. For pricing of tranches of portfolio of credit derivatives based on copula function approach, Li/Skarabot (2004) in Gregory(2004), pp. 287-312

Table 8: 5-Year Default Correlations, All Countries, All Ratings 1981-2002 (in %)

	Auto	Cons	Energ	Finan	Build	Chem	Hi tec	Insur	Leis	R.E	Tele	Trans	Utility
Auto	3.04	0.51	1.94	1.35	1.52	2.62	1.49	1.25	1.43	4.18	5.00	1.59	1.25
Cons	0.51	2.40	-3.24	1.02	2.08	1.12	0.35	0.54	2.50	6.53	2.71	1.58	1.13
Energ	1.94	-3.24	7.46	-0.13	-1.63	0.00	1.28	1.62	-3.13	1.11	-0.88	-0.56	-0.26
Finan	1.35	1.02	-0.13	2.08	2.16	1.15	1.19	-0.12	3.10	7.38	1.00	1.45	1.02
Build	1.52	2.08	-1.63	2.16	3.75	1.78	1.69	0.22	4.82	8.25	3.24	2.40	1.60
Chem	2.62	1.12	0.00	1.15	1.78	3.46	0.54	0.38	2.02	1.65	6.18	1.35	1.19
Hi tec	1.49	0.35	1.28	1.19	1.69	0.54	2.06	0.29	1.76	5.61	1.71	1.32	0.98
Insur	1.25	0.54	1.62	-0.12	0.22	0.38	0.29	1.21	-0.30	-0.27	1.18	0.96	0.21
Leis	1.43	2.50	-3.13	3.10	4.82	2.02	1.76	-.30	6.97	12.67	3.80	3.31	1.89
R.E.	4.18	6.53	1.11	7.38	8.25	1.65	5.61	-.27	12.67	16.99	-2.01	5.49	2.98
Tele	5.00	2.71	-0.88	1.00	3.24	6.18	1.71	1.18	3.80	-2.01	15.40	3.55	2.57
Trans	1.59	1.58	-0.56	1.45	2.40	1.35	1.32	0.96	3.31	5.49	3.55	2.48	1.22
Utility	1.25	1.13	-0.26	1.02	1.60	1.19	0.98	0.21	1.89	2.98	2.57	1.22	1.12

Source: de Servigny and Renault (2004), p. 190.

correlations of default between pairs of firms in the sectors. Consequently the diagonal elements are not 1, as in unconditional correlation matrices, but of course the matrix is symmetrical. The matrix shows the correlation of the default of pairs of issuing firms *given the sector in which they are engaged*. The diagonal of the matrix reported by de Servigny and Renault in Table 8 shows that firms in the same sector do not all default at the same time. Nevertheless, it is evident from their matrix that the joint defaults of pairs of firms is usually (but not always) highest for firms within the same sector.

This result is significant for investors in portfolios of credit derivatives, such as synthetic CDO's. In particular, the investors in the first loss position may be able to reduce risk while maintaining return by gaining exposure to a single sector. Moreover, the investors in the senior tranches may be able to increase returns without significantly increasing risk by focusing their exposures on specific sectors as well. If such increases in efficiency are possible, the demand for CDO structures which offer exposure to sectors can be expected to increase significantly.

To satisfy the requirements of investors, the rating agencies have made significant advances in their CDO rating approaches by applying theoretical models, such as those discussed above. A study of the Austrian National Bank⁴⁰ provides an overview (Table 10) which facilitates a comparison of their methodologies for assessing the risk of portfolios of credit risk.

⁴⁰ Oesterreichische Nationalbank (2004), p. 43. For background of the quantitative and qualitative analysis for ratings of tranches of synthetic CDO's see Gilkes/Jobst (2004) in Perraudin (2004), pp. 117-139.

Table 10: CDO Portfolio Risk Assessment: Application of Credit Risk Models

Comparison of CDO Rating Approaches in Rating Agencies			
	Moody's	Fitch	S&P
Rating statement	Expected loss	Probability of default	Probability of default
Portfolio model	Binomial expansion technique (BET)	VECTOR model	CDO EVALUATOR model
Modeling approach	Portfolio level	Individual receivables level	Individual receivables level
Assumed distribution	Binomial distribution (defaults)	Monte Carlo simulation (defaults, loss)	Monte Carlo simulation (defaults)
Simulation period	N/A	Multi-step	Single-step
Correlations	Diversity score, discrete value (static)	Factor model, matrix (dynamic)	Historical estimates, matrix (static)
Correlation value	0.00-0.36	0.06-0.55	0.00-0.30
Recovery rate (US)	30%-57%	24%-70%	15%-60%
Stress test result	Is EL < limit for desired rating	Is EL < limit for desired rating	Is EL below limit for desired rating

Source: Oesterreichische Nationalbank (2004)

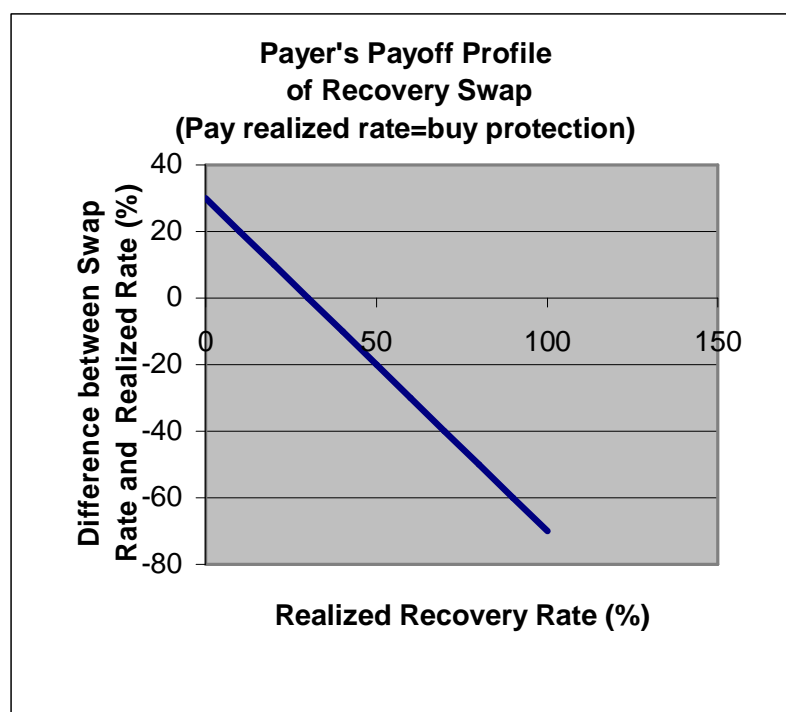
Three models are currently in use are the Binomial Expansion Model of Moody's, the VECTOR model of Fitch and the CDO Evaluator model of S&P's. The range of correlations used by Fitch is noticeably larger than that of Moody's and S&P's. Diversity scores imply a penalty for sectoral concentrations, since it is assumed that diversification lowers risk. This would be true if all risk exposures were exogenous. However, a portfolio manager's specialized knowledge of a sector may be an important factor, especially in CDO's for distressed debt. This is acknowledged by S&P's CDO Rating criteria. The models that are currently in use apply to companies that are not in default.

3.5.3 Recovery Swaps and Recovery Options: Forward Recovery Rates

Can recovery risk be modeled, priced and hedged with credit derivatives? Implicitly recovery risk has been priced into credit derivatives which enable lenders to hedge issues of borrowers which are in compliance with loan agreements. Recent academic research on bond recovery models has

progressed rapidly.⁴¹ A recent market development is the emergence of a market for recovery swaps for issues of high grade corporate names.⁴² The term “swap” is a misnomer. The structure of the financial instrument is clearly that of a forward. Two counterparties agree to exchange the realized recovery versus the preset recovery value (**recovery swap rate**). The protection buyer locks in a recovery rate on or before a specific date in the future. If the recovery rate is above the forward recovery rate, the protection seller's payoff under the contract is positive. If the recovery rate is below the forward recovery rate, the protection buyer's payoff is positive. Figure 7a shows the payoff profile of a recovery swap with a forward recovery rate of 30%.

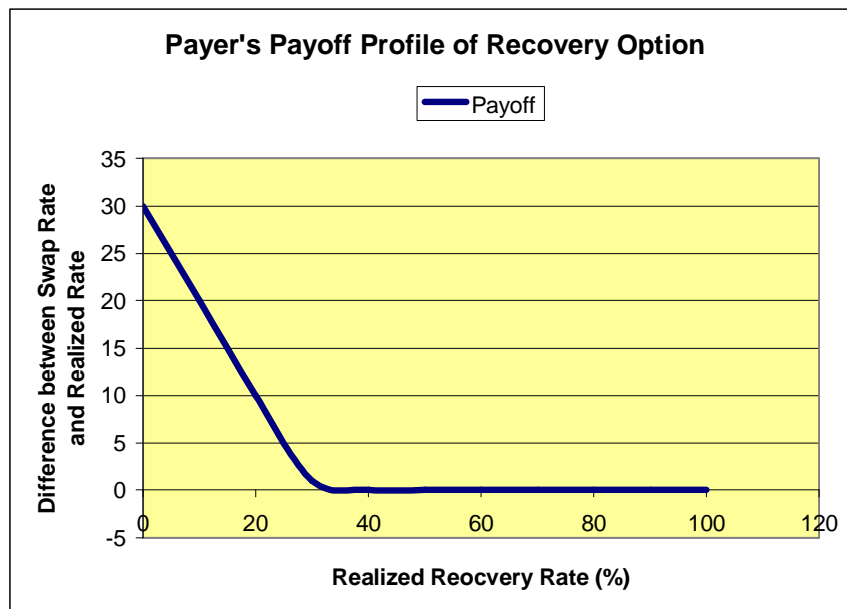
Figure 7a



⁴¹ Schönbucher (2003), Chapter 6 „Recovery Modelling“, pp. 131-163; Lando(2004), pp. 117-121 for intuitive arguments. For advanced modeling, see Hagmann/Renault/Scaillet (2005) in Altman/Resti/Sironi (2005), pp. 323-346 and Friedman/Sandow (2005) in *op. cit.*, pp.347-359.

⁴² Berd (2005); Felsenheimer/Gisdakis/Zaiser (2006): „While recovery value is directly tradable with a combination of CDS and DDS contracts, recovery default swaps allow investors to take directional exposure to recovery risk...As the contract is forward-styled and not option-styled, it will involve a negative payoff in case the recovery rate is below the strike level.“ *op. cit.* p.496. In the following reference will be made to “recovery swaps” which corresponds to market convention and to analogous “recovery options”.

Figure 7b



Other features and conventions of market terminology of the instrument are as follows⁴³:

- No running or upfront payments
- **Investor:** „Receiver“ of *realized* recovery rate *sells protection* (receives insurance premium, receives realized recovery rate in “swap” against preset forward recovery “swap” rate). Receiver of realized recovery rate suffers loss when recovery rate is zero or less than preset recovery swap rate and enjoys gain when recovery rate is above the preset forward recovery “swap” rate, thus takes a “*long position*” in recovery swap.
- **Portfolio Manager:** „Payer“ of *realized* recovery rate *buys protection* (pays insurance premium, pays zero if recovery rate is zero, receives in exchange (“swaps”) the preset forward recovery swap rate. The “Payer” hedges recovery shortfall losses but foregoes recovery excess gains, thus takes a “*short position*” in recovery swap.

$$\begin{aligned} \text{Rswap rate} - \text{Rrealized} &= \begin{cases} \text{Rswap rate} - \text{Rrealized} & [t < T] \\ 0 & [\text{otherwise}] \end{cases} \\ \text{Payoff to “Payer”} &= \begin{cases} \text{Rswap rate} - \text{Rrealized} & [t < T] \\ 0 & [\text{otherwise}] \end{cases} \end{aligned}$$

Note: T refers to deadline for defaulted borrower to emerge from distress

⁴³ Berd (2005), pp. 61-70.

Figure 7b shows the payoff structure for what may be conceived as a *recovery option* which is defined analogously to the recovery swap. To the author's knowledge, no such product is traded, but it is clearly closely related to a put option on the credit risk which is triggered by recovery rates that are at or below the forward recovery rate. It is a limited financial guarantee against a specified recovery rate shortfall. The advantage of a Recovery Option would be that it provides flexibility to the protection buyer, who is the portfolio manager ("payer" of realized recovery rate), to participate in recovery rates that are above the forward recovery rate without being exposed to recovery rates that are below the forward rate, as is the case with a short recovery rate forward contract. The disadvantage is that a higher premium must be paid to induce the protection seller to commit to take the downside risk without participating in the upside gain. Intuitively, the pricing is should be approximately midway between an equity default swap (bankruptcy) and a credit default swap (distress).⁴⁴ Unlike the recovery swap, there would be an upfront, and perhaps even running payments. The portfolio manager has an incentive to recover this premium through high performance.

The instrument most closely resembles a financial guarantee or credit insurance, except that the indemnification is not in full but for the difference between the swap rate and the realized recovery rate applied to the nominal value of the debt contract under management. As with every insurance contract, there is information asymmetry about the insured party's behavior, which gives rise to moral hazard. However, in sequential games in which reputation plays a decisive role, the portfolio manager's performance in the current period will affect whether in future periods the risks of future portfolios of credit risk can be transferred on favorable terms. In the interest of maintaining a good reputation as a portfolio manager, transfer of credit risk of portfolios whose recovery rates are expected by the portfolio manager to be well below the forward recovery rate ("lemons") will not take place.

The Recovery Put Option could be employed in a collateralized debt obligation. The first loss position would be an equity-like exposure, i.e. a long position in a Recovery Call Option for recovery rates that are 0% to to 4% below the preset forward recovery "swap" rate, i.e. payoff only for recovery rates between 26% and 30%. The mezzanine position would be exposed to the next highest credit risk exposure of recovery rates from 4% to 20% below the preset forward recovery "swap" rate, i.e. bond repayment in full only if recovery rates are at least 26%, and total loss if they are no more than 10%. The senior position would in effect be protected by long position in a Recovery Put Option (short position in recovery rate="Payer of realized recovery rate") for up to 20% of the exposure and exposed to the short position in a recovery put option (long position in recovery rate="Receiver" of realized recovery rate) for up to 30% of the exposure, thus obtaining net exposure to recovery rates that are 20% to 30% below the forward recovery rate. These recovery rates of 0% to 10% represent the most extreme shortfalls of the recovery rate below the forward recovery swap rate of 30%. These events are cumulatively in the range of shortfall designated by the attachment points least likely to occur, even if there is a bimodal distribution of recovery rates.

⁴⁴ The premium of an Equity Default Swap (far-out-of-the-money barrier put option) is estimated by Felsenheimer/Gisdakis/Zaiser (2006), p.497 to be 3x the Credit Default Swap. The recovery put option premium might be viewed as lying close to mid-way between the two extremes, i.e. 2x the CDS premium.

*Such hypothesized performance, which may or may not be disproved by market practice, is that **the sectoral specialization** of the portfolio managers adds the required value needed to induce investors to be willing to take the risk which the managers are willing to hedge. Although “sector” has been interpreted here to be defined as “industrial sector” (for example, in the sense of S&P’s 11 sectors), alternative types of specialization by Sector Focus Fund managers are conceivable, such as the type of real estate object for which mortgage loans have been granted (for example, commercial office buildings, industrial properties, apartments, single-family and multi-family houses, etc). Specialization, not diversification, is the basis for the strategy. Of course, for a shorter time horizon, a tripling of the portfolio recovery rate is not required.*

The term “Triple Play” also refers to the novel category of asset class. The CDO structure that corresponds to the NPL investment fund exit strategy proposed here can be designated “partially funded synthetic SME NPL CDO”⁴⁵.

- **SME:** Borrowers are small- *and medium sized enterprises*. The risk transfer of portfolios of non-performing loans has heretofore concentrated on corporates and sovereigns.
- **NPL:** The status of the loans to the borrowers is *non-performing*. CDO’s for SME’s have focused on performing loans (CLO’s) and bonds (CBO’s).
- **Synthetic CDO:** The credit risk transfer mechanism is partially funded *synthetic securitization*. In Germany, the preferred mechanism for transfer of portfolio credit risk of non-performing loans has been true sale. By dramatically reducing transactions costs of credit risk transfer, a wholesale secondary market for different degrees of risk exposure to middle-market non-performing loan portfolio credit risk is made possible through the use of credit derivatives.

Finally, the rationale for the “Triple Play” strategy is the fact that risk modeling, measurement and management financial innovations can all be incorporated into the structure as the relevant breakthroughs occur. Whereas banks are required under Basel II to *price risk* and hold *regulatory capital* according to expected loss unexpected loss of *individual* loans adjusted for assumed common correlation with a single systematic risk factor (except for retail portfolio), the synthetic SME NPL CDO structure will enable non-bank investors to price risk and allocate *economic capital* according to *exposure to counterparty risk and to portfolio and tranche expected and unexpected loss*, which depends on ***three types of parameters that are the focus of quantitative credit risk research and credit derivative product development:***

- **Expected loss** of individual loans (mean) and counterparties
- **Unexpected loss** or expected shortfall of individual loans (volatility/variance) and counterparties

⁴⁵ For a discussion of CDO structures as balance sheet management tools, see Picone (2004) of Royal Bank of Scotland in Perraudin(2004), pp. 181-214, especially Fig. 8, p. 199, and the reference to Goodman(2001) of UBS AG in Fabozzi/Goodman (2001).

- **Correlations** of losses between pairs of exposures (conditional upon sector)

As the relevant basic academic research and applied research and development in financial institutions progresses, the demonstration of the feasibility and value of new structures using portfolios of credit derivatives will improve the chances for practitioners to complete the market for credit risk and to make it more efficient.

3.6.2 Structure: Sector Focus Fund as Buyer and Seller of Recovery Risk

The Sector Focus Fund (SFF) is the structure to implement the “Triple Play” strategy, that is to say, the innovative *credit risk transfer exit strategy of an NPL investment fund*. The SFF is both a buyer and seller of credit risk protection. It buys protection from its investors, debt holders and counterparties. It receives funding for a Collateral Account by selling a Recovery Call Option to the holder of the first-loss position and by selling bonds to the mezzanine bondholders. As a buyer of protection it is a “Payer” of the realized recovery rate in long positions in the Recovery Put Option contracts (short position in the recovery rate) with the senior “Reinsurers”. As a seller of protection it is a “Receiver” of the realized recovery rate in long positions in the Recovery Swap contracts (long position in recovery rates). It sells protection to the NPL investment fund. It is “Receiver” in recovery swap contracts with the NPL investment fund with It adds value through specialized sectoral expertise and workout expertise.

3.6.2.1 CDO Issuance and Sale of Recovery Risk: Purchase of Protection

In Figure 8, three tranches of a partially funded CDO are depicted in the bottom row. The SFF is enabled to purchase risk by virtue of its sale of recovery risk (purchase of protection) and procurement of funds from investors in credit risk. (It is in the strict sense of the word a “hedge fund”, but it is by no means perfectly hedged.) The first-loss position of investors is the so-called *equity tranche*. Strictly speaking, it is a long position in a recovery call option on the excess spread earned by the SFF on the underlying non-performing loan portfolio which has a nominal value of € 250 million. The premium on this call option, which amounts to €10 million, serves to partially fund the synthetic securitization. It is offset by the up front €4 million fee paid by the SFF to the “equity” investor. The *mezzanine tranche* of the CDO, rated A/A and amounting to €40 million is used to fund a *collateral account*. It holds a long position in the bond issued by the SFF. The collateral account funded by the bond serves to enhance the creditworthiness of the SFF as a protection selling counterparty to the NPL. The *senior tranche* of the CDO, rated AAA/Aaa is not funded, but is a collar. The collar consists of a long position in a 30% Recovery Put Option (short position on the realized recovery rate) and short position in a 20% Recovery Put Option (long position on the realized recovery rate). Alternatively, it may be a combination of a short position as “Payer” in a 20% Recovery Swap contract” and a long position as “Receiver” in a 30% Recovery Swap contract. This would require the SFF to be willing to forego upside potential in order to to lock in a recovery rate without up front payment, rather than put a floor on the recovery rate. The collars created by the Recovery Put Options or Recovery Swaps are sold by “Reinsurers” to the SFF.

A *liquidity facility* is necessary. It is a revolving credit facility obtained from banks which are highly confident that the SFF will achieve recovery rates well in excess of 30%. The liquidity facility serves to meet up front and running fee obligations of the SFF to its protection sellers which it cannot meet out of its own cash flow and to pay out to the NPL investment fund in the extremely unlikely case that recovery rates are below 10%. In that event, proceeds from the senior tranche are pledged to the R/C provider for repayment. In the event that the SFF fails to meet milestones (financial covenants of the R/C), the entire structure is unwound due to technical default of the SFF.

3.6.2.2 Portfolio of SFF and Purchase of Recovery Risk: Sale of Protection

The partially funded synthetic CDO puts the SFF in a position to act as a credit insurer for the NPL Fund which purchased loans from the originating bank. In this hypothetical example, the NPL Fund is assumed to have purchased €250 million in nominal value of loans from the originating bank in a true sale transaction for €75 million. (The actual transaction may have been substantially larger, but it is assumed here that €250 million exposure is in one of 11 possible sectors of the larger portfolio.) It is assumed that the bank has already written off 70% of the value of the loans, and that the remaining 30% are booked by the NPL investment fund at the purchase price equal to the adjusted book value.

The NPL investment fund is assumed to be willing to hedge fully this exposure to non-performing loans in a single sector. It is assumed to lock in the recovery rate at 30% and transfer the upside potential to the SFF. It will purchase protection on the entire sectoral portfolio (sub-portfolio of the larger NPL transaction) by buying recovery swaps on the exposure from the SFF. The SFF is rated at least A- because of its sector expertise, its collateral account and its liquidity facility. Moreover, it has recourse to its senior protection sellers (called “Reinsurers”). In Figure 8 the SFF sells €50 million in junior Recovery Swap protection €200 million in senior Recovery Swap protection to the NPL Investment fund. *The recovery risk exposure and the upside potential is thus transferred to the SFF, and the portfolio management responsibilities are transferred as well to the sectoral workout specialist. In this sense, “Triple Play” is an exit strategy for the NPL investment fund.* However, the underlying non-performing loans remain on the books of the NPL investment fund, because it has hedged, rather than divested, its credit risk exposure to the borrowers in the sector. Of course, it still has a counterparty exposure to the SFF.

3.6.3 Economics: Risks and Returns to Protection Buyers and Sellers

Is the structure sketched above economically viable? Economic viability requires both feasibility and efficiency. The transaction is *feasible* if the issuer of the CDO, the SFF, is willing to purchase protection and procure funding on terms which the investors in the tranches are willing to sell it. The transaction is *efficient* if, after taking account of all transactions costs, the SFF earns a return on invested capital (ROIC) which is at least as high as its weighted average cost of capital (WACC) and if the investors are earning at least their required risk-adjusted return on capital. Such a situation adds value for both the issuer and the investor, and it reduces credit risk for the NPL

investment fund. If the the “Triple Play” meets these conditions, it is a win-win-win situation for the issuer, the investors and the NPL investment fund. The following discussion attempts to calibrate key parameters which characterize the performance of the “Triple Play” in order to gauge the economics required for the transaction to take place.

The analysis proceeds in three steps. First, an upside scenario is developed which specifies returns to the issuer (SFF) and the investors of the three tranches of the partially funded synthetic CDO. A subjective probability is assigned to the upside scenario. Second, a downside scenario is considered which shows losses to the parties involved in the transaction. A subjective probability is also assigned to this scenario. Third, the expected returns are calculated based on the assumed returns and subjective probabilities. These are compared to the cost of capital commensurate with the degree of risk usually taken by private equity investors.

For both scenarios the following assumptions hold for the SFF

- Invested Capital: €75 million (30% of nominal value of portfolio)
- Debt/Equity Ratio = 12,5:1
- Tax rate= 25%
- WACC=9,0% (assume 20% required return on equity for hedged portfolio)

For the investor in the first-loss position “equity tranche”, the following assumptions hold in both scenarios

- Invested Capital: €10 million (=4% of nominal value of portfolio)
- 40% up-front fee on funds provided
- Required return on equity: 25%

The value of the SFF portfolio of recovery swaps depends on the success of the portfolio manager in realizing a recovery rate which is higher than the forward recovery rate. The NPL investment fund has purchased protection to lock in the forward recovery rate. If it is lower, then the SFF must pay out to the NPL investment fund. If it is higher, the SFF retains all proceeds higher than the forward recovery rate. For illustrative purposes, it is assumed that the Recovery Rating for the facilities in the portfolio initially is 4, representing 30% recovery rate.

3.6.3.1 Upside Scenario (RR 1 with 99% probability)

After 5 years of restructuring and reorganization of 100 firms each with an average exposure of € 2,5 million, the workout team with sectoral expertise has achieved a recovery rating of 1, representing a recovery rate of 96%. It is assumed that the 5-year rating transition probability from RR4 to RR 1 is 99%. In other words, it is nearly certain that the workout team is highly successful. Tables 11 and 12 provides illustrative values for the SFF and for the “equity” investor in the first

loss position respectively. They may expect to achieve a return on invested capital that exceeds or equals their required rates of return.

Table 11: SFF Performance: Upside Scenario, Downside Scenario, Expected Values

Performance Indicator	Upside Scenario RR=1 Pr(RR=1)=99%	Downside Scenario RR=6 Pr(RR=6)=1%	Expected Values (probability Weighted ave.)
Terminal Cash Flow	€152 million	€75 million	€151 million
ROIC	14,4%	- 5,9%	13,8%
ROE	22,5%	- 23,7%	22,3%
EVA Margin	5,4%	-19,1%	5,2,0%
EVA	€4 million	-€14,3 million	€3,8 million

Source: Author's calculations

Table 12: Equity Tranche Performance: Upside Scenario, Downside Scenario, Expected Values

Performance Indicator	Upside Scenario RR=1 Pr(RR=1)=99%	Downside Scenario RR=6 Pr(RR=6)=1%	Expected Values (probability Weighted ave.)
Excess Spread	€31 million	0	€30 million
ROIC	37,5%	-100%	36,125%
ROE	25%	-100%	23,75%
EVA Margin	12,5%	-75%	11,375%
EVA	€7,5 million	-€7,5 million	- €7,425million

Source: Author's calculations

3.6.3.2 Downside Scenario (RR 6 with 1% probability)

The downside scenario assumes a transition to Recovery Rating 6 with 0% recovery in 5 years and a transition probability of 1%. The corresponding performance of the portfolios of credit risks to which the SFF and the first loss “equity tranche” investor are exposed are shown in Tables 11 and 12. The SFF, which is a payer of protection, liquidates the collateral account and fully draws the liquidity facility for payment of € 75 million (30% recovery rate) to the NPL investment fund, which is the ultimate receiver of protection.

SFF's contingent invested capital of €75 million (€50 million from the junior and €25 million from the senior tranche) suffers a total loss. Consequently, investors in the equity, mezzanine and senior tranches issued by the SFF, lose their entire capital as well. The equity investor, which has

received a €4 upfront fee, incurs a net loss of €6 million. The capital of the mezzanine investor, which has provided €40 million in funds, is wiped out. The senior tranche investors in the SFF, which have sold a senior recovery put option on the last 10% of the nominal value to default, lose €25 million, which are used to repay the liquidity facility, once the NPL investment fund has been received priority payment under the recovery swap. The SFF is very thinly capitalized (i.e. highly leveraged at 12,5:1 debt/equity ratio); its equity capital is raised by selling the recovery call option to the “Equity Provider” who takes the first-loss position in the capital structure. Although nominally €10 million, the SFF incurs an expense of €4 million in fees to raise €10 million of equity, and it pays out any excess spread that has accumulated in the SFF after 5 years.

As will be elaborated in detail below, through the establishment of the SFF, the credit risk exposure of the NPL investment fund to a recovery rate of 0% (or, in principle, up to 30%) is hedged. The SFF offers the upside potential to investors of nearly 100% recovery rate, thanks to its specialization in sector-specific credit risk exposure and its workout expertise. This amounts to an improvement of nearly 70% over the usual 30%. The improvement potentially adds value that is distributable to investors. However, “there is no such thing as a free lunch.” In an efficient market, rewards cannot be achieved without exposure to risk and uncertainty.

The equity-like first loss position is exposed to the first 4% (i.e. €10 million) of principal loss below a recovery rate of 30% on the €250 million NPL portfolio managed by the SFF. This exposure occurs when the recovery rate lies between 26% and 30% which is between 4% and 0% below the 30% Forward Recovery Rate. The mezzanine tranche is exposed to the next 16% failure to recover 30% on the €250 million portfolio of NPL's (i.e. €40 million). This loss is incurred for recovery rates between 10% and 26%, i.e. between 20% and 4% below the contracted 30% Forward Recovery Rate. The senior position is exposed to the final 10% loss (€25 million) on the €250 million total exposure for recovery rates between 0% and 10%, which is between 30% and 20% below the Forward 30% Forward Recovery Rate.

The sequence of these risk exposures is listed in decreasing order of their respective likelihoods. However, for the present downside scenario, it is assumed that all three tranches suffer total losses with probability 1%. The choice of two scenarios simplifies the presentation, but leads to logical inconsistencies because there are three classes of downside risk exposure that are “state dependent”. A more complete and consistent analysis would have a minimum of four scenarios (one upside and three downside). The setup of the single downside scenario simply assumes the least likely event and highest cumulative value at risk: 30% below the Recovery Forward Rate of 30%, i.e. zero recovery. *The SFF is simply the mechanism for transferring the entire recovery risk from the NPL investment fund to the “Equity Provider”, the “Bondholder” and the “Reinsurer”:*

- *Equity Provider*: The loss of the first loss-position of the “Equity Provider”, of course, is equal to the premium on the *long position in the recovery call option* which is not exercised: €10 million gross (€6 million net of up front fee). These proceeds are held in the *collateral account* and booked as SFF equity. The funds are used by the SFF to meet its obligations to the NPL investment fund under the recovery swap with a 30% forward recovery rate. The SFF net exposure is zero.

- ***Bondholder***: The greatest loss, in absolute terms, is suffered by the mezzanine tranche bondholder (the “Bondholder”) which holds a *long position in a worthless debt claim*: €40 million. The *collateral account* is depleted fully because the SFF transfers the funds to the NPL investment fund which still has title to the loans but which is counterparty to the SFF for recovery swaps at the 30% forward recovery rate. Thus the SFF has a short position on the bond, which may be viewed as a forward contract for money, but a long position in the recovery swap. The net exposure is zero. The exact likelihood of the loss to the Bondholder is also neglected here, but in reality is less likely to experience this downside scenario than the “Equity Provider” and more likely to incur losses than the senior recovery put option provider (the “Reinsurer”).
- ***Reinsurer***: In this simplified setup, the senior *recovery put option provider* (the “Reinsurer”), which has a *short position in the put option position (long position in the recovery rate)*, must be in a position to pay €25 million with 1% probability over a time horizon of 5 years as payoff to the SFF which has a long position in the put option. Unlike the case with the first two tranches, the proceeds from the Reinsurer are used to repay the *liquidity facility* drawn by the SFF to pay the NPL investment fund under the recovery swap agreement.

3.6.3.3 Economics

The economics of the transaction depend on the probability weighted average values of the returns shown in Tables 11 and 12. These returns are net of “transactions costs” which have not been elaborated upon. The establishment and operation of the SFF represents the most significant transactions cost of the credit risk transfer from the NPL investment fund to the investors in the tranches of the SFF synthetic securitization. The other major cost is incurred because protection is provided for a price.

Thus, two additional issues, which are largely, but not entirely, independent of the *ex post* scenarios need to be addressed to understand the economics of the SFF: (1) cost of establishment and operation of the portfolio management special purpose vehicle; (2) pricing of risks absorbed by the investors. The cost of operation is higher in the upside scenario since the portfolio managers of the SFF are incentivized to perform well through their participation in the success (upside) of the operation by receiving bonus payments. Moreover, the pricing is dependent on the *ex ante* scenarios of the investors in the instruments issued by the SFF, which may or may not be identical to the assumed *ex post* scenarios.

Transactions costs: The assumptions about the fees to establish and manage the operations of SFF and the operating expenses underlying the calculations in Tables 11 and 12 are as follows:

- SFF staff for 100 NPL of 100 borrowers
- 1 Senior manager with industry focus
- 1 Manager with workout focus

- 2 Teams each working on 4 workouts
- 1 month per workout per year
- 3 Monitors per team + ½ Adm. Asst.
- Professional consultancy: €0,5 MM per yr.
- 4 „calls“ per week; weekly reporting

The incentive payment, which aligns the interests of the portfolio managers of the SFF with the interests of the investors in risk adjusted returns and the interests of NPL investment fund in value creating risk management, is calculated on the basis of value-added by improving the recovery rate. In the upside scenario, with 96% recovery, the nominal amount recovered is €240 million. The 30% recovery rate, which presumably is expected without the use of the sector specific workout expertise of the SFF, is not value added by the portfolio managers, and thus must be netted out of the proceeds recovered.

The resulting €165 million represent value added. It is assumed that the portfolio managers and the teams supporting them receive in total 10% of this amount, or € 16,5 million. Of course, generally the bonus payment is contingent upon the realized recovery rate. With recovery of 30% or less, no bonus is paid. In effect, the team has a long position in a recovery call option which is part of the compensation package. Also, there could be a sliding scale with the percentage participation rising with the recovery rate. In that case the performance-based part of the pay package consists of a portfolio of call options with different triggers.

The fixed part of the compensation package represents salaries. Along with minimal operating costs, this amounts to €1.500.000 p.a. in the present calculations. The costs of establishing the SFF and use of outside consultants (lawyers, accountants, consultants) is assumed to equal the same amount 1.500.000 p.a. Thus, total costs p.a. of €3.000.000 p.a. of the SFF need to be covered.

Pricing: It is assumed that the SFF passes through the pricing of the risk premia of the tranches through the fees it charges to the NPL funds for the recovery swaps. These fees include the transactions costs just described, but not the bonus payments. It does not include the cost of funds for the partially funded tranche and the liquidity facility. The critical issue is the pricing of CDO tranches for a SPV which holds a sectorally non-diversified portfolio of credit recovery swaps on non-performing loans. To the author's knowledge, there are no existing pricing models for this special purpose. However, as the state-of-the-art in CDO pricing evolves, it may be expected that financial engineers will come up with reasonable approximations.

What might be done by practitioners in the mean time to obtain a workable benchmark? At present, the pragmatic approach taken is to attempt to assess where the risk lies in relation to instruments that have been priced which are both riskier than and less risky than the CDO structure proposed here. As noted above, Felsenheimer/Gisdakis/Zaiser price Equity Default Swaps at three times the

premium of Credit Default Swaps.⁴⁶ If benchmark pricing of tranches of CDOs with portfolios of Credit Default Swaps can be found, then it appears to this author that the premia for the present structure should be slightly more than 2x that of the CDO CDS portfolio benchmark.

In a recent paper by Hull and White (2005), monte carlo simulation of a portfolio of credit default swaps on the DJ CDX IG NA (Dow Jones, Credit Default Swap Index for Investment Grade Issuers in North America) using structural models of economic default of the underlying borrowers came up with the following results of defaults assuming correlation of 0.5

- 0-3% Upfront 40% + 500 bp p.a.
- 3 - 7% Tranche: 370 bp p.a.
- 7 - 10% Tranche: 211 bp p.a.
- 10-15% Tranche: 130 bp p.a.
- 15-30% Tranche: 50 bp p.a.
- Super Sr Tranche N/A (proxy: 25 bp)
- Average: H&W CDO Tranches 67.6 bp

In the author's judgement, a weighted average of 160 bp or €4.000.000 p.a. would be appropriate for the "Triple Play" proposed in this paper. This margin would result from

- 4% = at 1000 bp p.a. (unrated)
- 16% at 300 bp p.a. (A/A)
- 80% at 100 bp (AAA/Aaa)

In effect the margins are between 2x-3x those calculated for the DJ CDX IG NA. These unusual margins given the ratings represent substantial excess returns (high alphas) due to the high complexity of the transaction and extreme uncertainty about the performance of the portfolio managers. Nevertheless, the ratings are justified because the probability distributions of recovery rates. Based on simulations using historical defaulted debt and fitted Beta distributions of losses for a well diversified portfolio, Hagmann, Renault and Scaillet (2005) report Credit VAR at the 99% confidence level is approximately 15%. In other words there is a 99% probability that the maximum loss will not exceed 15% on defaulted debt analyzed in the portfolio. For the 99.9% confidence level, the maximum loss (Credit VAR) is placed at between 20% and 25%. These simulations are in line with a pathbreaking empirical study by Grunert and Weber (2005) for 120

⁴⁶ Felsenheimer/Gisdakis/Zaiser (2006), p. 497. See Fn. 42 and Picone (2004), pp. 202-205. For a survey of average launch spreads of securitizations of performing assets, see Batchvarov (2004), pp.58-59.

defaulted loans processed by a large bank in Germany which shows the mean recovery rate to be around 70% and the median recovery rate over 90%.

For the Credit Recovery Swaps considered above, it is extremely unlikely that the losses will exceed 70%, i.e. that the recovery rate will fall below 30%. Implicitly, in the author's view, the assumption driving the NPL market in Germany is that the originating banks were averse to investing permanently and massively in an efficient workout organization because the unanticipated wave of distressed debt was viewed as transitory and furthermore, the unusually high staffing of highly qualified personnel necessary to clean up the balance sheet rapidly in time for Basel II would have been more costly in the long run than selling the NPL's at a deep discount to distressed debt funds with proven track records of recovery.

The ratings assigned above are based on the author's view of the probabilities of recovery rates falling to within the specified range of the tranche below 30%. The ratings are assumed to be analogous to typical probabilities of default for securities rated in these categories. As data on the performance of German sector-specific SME NPL CDO's accumulate, these premia may be expected to drop sharply.

Finally it should be mentioned that a partially funded synthetic securitization implies that the costs of funds for the collateral account and the liquidity facility must be absorbed. In the present model, this cost is interest expense of the SFF whose operations are expected to yield capital gains and thus ROIC that is sufficient to cover its weighted average cost of capital. *The NPL investment fund is not charged with this cost of debt financing the SFF.* It is charged for the cost of transferring recovery risk. The risk premia charged by the SFF to the NPL investment fund are passed through to the investors. The SFF thus charges its hedging costs and operating expenses, exclusive of the cost of funded debt. These charges together have been estimated to be € 7.000.000 p.a. This amounts to 2.8% p.a. of €250.000.000 nominal value of loans held by the NPL investment fund or 9.3% of the €75 million book value of the defaulted loans which normally are rated D and thus command a risk premium well above 10% p.a. That is the estimated annual cost to the NPL investment fund for locking in a recovery rate of 30% on its entire portfolio. This cost could be recovered by locking in a higher recovery rate, which permits realization of capital gains that can be netted against the costs of hedging.

3.6.3.4 Specialization vs Diversification: Lessons to be Learned

The key driver of the Sector Focus Fund structure presented above is the specialization of the portfolio manager in an industrial sector.⁴⁷ The fundamental thesis of this paper is that sectoral specialization adds ("creates") more value than it foregoes ("destroys") by failing to reduce of risk through diversification. Why could this be so? The answer, in brief, is "learning effects".

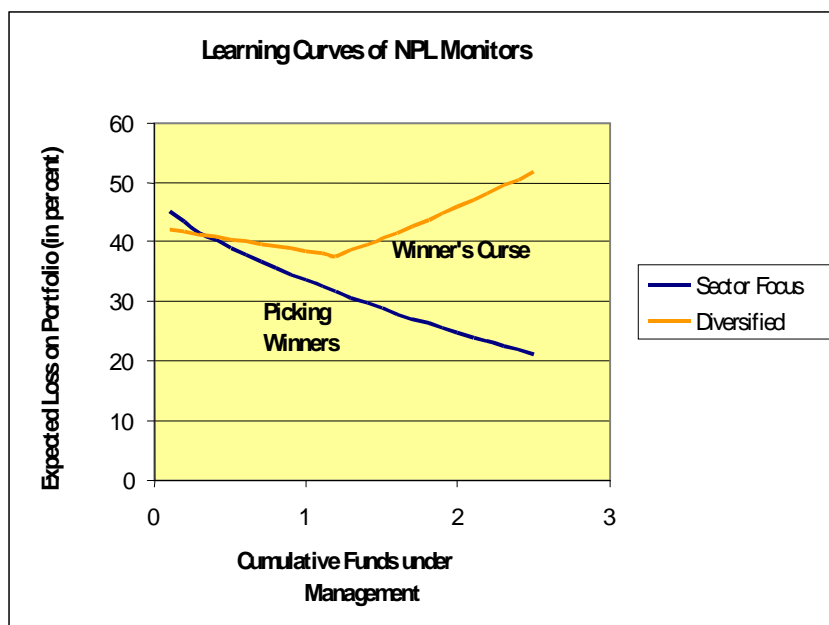
⁴⁷ As mentioned above, there is disagreement among researchers and rating agencies regarding the influence of the sector on recovery rates. The short survey by Schuermann (2005) in Altman, Resti and Sironi (2005), pp. 19-20 summarizes the current status.

The issue of focus vs diversification in commercial banking has been explored by a number of researchers in finance, most notably by Andrew Winton, who analyzed the implications of “Winner’s Curse.”⁴⁸ As has been suggested above, the quality of the delegated monitor is subject to the decisions of the financial institution’s management. Consequently, the exposure to loss is to some extent endogenous. As was argued in the interpretation of the KAMCO case study, the experience of the portfolio manager can improve the quality of the monitor. This argument can be taken one step further by noting that the relevant experience in reorganizing and restructuring a business requires sector specific expertise. This belief is widely shared in the venture capital and private equity investing communities.

Diversification does not make use of this expertise and learning experience. Loan portfolio diversification strategies assume that the loss distribution is exogenous to the evolution of the lender’s monitoring expertise. By diversifying into sectors for which it has little or no expertise, a portfolio manager can be exposed to “Winner’s Curse”. An adverse selection of high credit risk exposures results from the fact that the unknowledgeable lender wins business which has been rejected by the knowledgeable lender. Specialization increases the likelihood that the financial institution is capable of “picking winners”.

Figure 10 illustrates the hypothetical impact of the cumulative volume of assets under management of a diversified and focused fund for managing NPL’s on its expected loss.

Figure 10



⁴⁸ Winton (1999) and Winton (2004). The originators and proponents of the key idea appear to be Broecker (1990), Nakamura (1993) and Schaffer (1997). See also Stomper (2003).

An analogous graph would apply for unexpected loss. For small cumulative volumes of funds under management the experience of the sectorally focused bank is not pronounced. The diagram shows that there is an opportunity cost of specialization. However, as the sectoral specialist learns from experience, expected and unexpected losses may be expected to decline. In this sense, the pro-active specialist is “picking winners” and may even be making winners. The monitor of a diversified portfolio forgoes this learning experience. On the contrary, lack of sectoral knowledge increases risk.

For the diversified portfolio, it is assumed that the sectoral diversification is not achieved instantaneously, but rather *sequentially*. This corresponds to the experience of many banks which have diversified their loan portfolios over an extended period of time. The sectors with which the lender is progressively less and less familiar are gradually added to the portfolio. Whereas *static* modern portfolio theory would suggest that a mix of winners and losers in each sector will result, the Winner's Curse hypothesis suggests that unfamiliarity with the sector will bias *dynamic* selection towards those lenders which sectoral specialists or relationship banks have deemed lacking in creditworthiness or no longer creditworthy. After a certain point the expected and unexpected losses begin to rise as the diversification strategy leads to more and more counterproductive “Wins” in the sense of “Winner's Curse”.

The implication of this dynamic argument is that there is a gain from specialization, not a loss due to foregone static diversification effects. For the SFF, which is organized along these lines, that gain is reflected in the high expected recovery rate and lower variability of recovery rates compared to a fund whose monitoring does not benefit from sector specific learning effects. Here “Winners” that are picked are defaulting borrowers which are put in a position to meet their original debt servicing obligations. Concretely, for example, knowledge of the industry can facilitate debt/equity swaps and subsequent mergers and acquisition transactions which enhance recovery rates considerably and significantly if the borrower's company is turned around.

The main lesson to be learned is that learning from experience is the key driver of added value in the “Triple Play” structure. There are other lessons to be learned which show that the structure represents a potentially a “win-win-win” situation.

- *Portfolio managers* of the SFF are incentivized to realize the gains from high recovery rate. The bonus arrangement enables them to participate in the rewards of focusing on the same sector.
- The *NPL investment fund* benefits from the hedging of risks by the Credit Recovery Swaps or Credit Recovery Options that are employed to transfer risks to the “Equity Investors”, “Mezzanine Investors” and “Reinsurers” by lowering its WACC.
- The “*Mezzanine Investors (Bondholders)*” benefit from subordination of the equity tranche, and the “*Reinsurers*”, who invest in the senior swap or option tranches, benefit from the subordination of both of the junior tranches. The “Equity Investor” is rewarded for assuming the high risk of the first-loss position by claims on excess spread at final maturity. All investors benefit from the liquidity facility, which also sets milestones that need to be met. Otherwise the

structure must be unwound. This termination threat is a penalty for poor asset management quality.

3.6.4 Assessment: NPL Fund Exit Strategy and/or Strategy for Success?

The “Triple Play” is an innovative exit strategy for the NPL investment fund. It employs synthetic securitization (SME NPL CDO) to transfer credit risk, while retaining the title to the loans which it has acquired. This strategy devolves portfolio management responsibility to the Sector Focus Fund. Therefore, the NPL investment fund does not “fix it”, i.e. restructure the portfolio companies and loans so that they are converted to performing assets. The strategy is not a true sale, either. Title remains with the NPL investment fund, but risk is transferred ultimately to the investors through the SFF. Last, but not least, it is not a liquidation (“shut it down”). On the contrary, by allowing specialists to apply sectoral and workout expertise, the chances of liquidation are reduced. Thus it is not a “stealth” liquidation strategy by handing that decision over to a third party.

Since 70% of the value of the original €250 million portfolio has presumably been written off by the originating bank, the NPL investment fund is not exposed to this loss. Upon completing the True Sale, it acquired an exposure to loss of 30% on the NPL portfolio value. While the nominal amount of the “Triple Play” transaction is €250 million, the portfolio is booked at the value-adjusted purchase price. The “Triple Play” allows the NPL investment fund to hedge the book value of the credit risk exposure. The expected loss on the credit exposure of the €75 million is nearly zero thanks to the hedging contracts with the SFF. The unexpected loss is reduced by an amount which depends on the net effects of higher correlation among the loans (cost of sector focus) and the higher recovery from better monitoring (benefits of sector focus).

The “Triple Play” is also a strategy for success of the NPL investment fund’s portfolio. There are a number of positive economic impacts that may be mentioned.

First, the structure’s utilization of Credit Recovery Swaps or Credit Recovery Options creates *a real option to extend the workout period*. The additional specialists who are employed by the Sector Focus Fund are presumably selected for their good reputations in achieving high recovery rates, given sufficient time and resources to achieve this goal. Of course, if the specialists are highly productive, the time to recovery could even be reduced. Implicitly the assumption underlying this positive impact is that liquidation is more likely to be the exit strategy when resources are not focused on the sectoral exposure. The synthetic securitization thus creates the flexibility inherent in a real call option to extend the time to recovery.

Second, the structure aligns the incentives of the delegated monitors with those of the NPL investment fund investors and the recovery risk investors. The SFF portfolio managers perceive not only the opportunity of the bonus arrangement, but also the threat of unwinding the entire transaction if milestones are not met. Such an incentive alignment reduces the agency costs that usually arise through a principal’s delegation of responsibilities to an agent whose interests diverge from those of the principal. In the theoretical literature the word “shirking” is used indiscriminantly

to suggest that the effort of the agent is not commensurate with the responsibility. This is terribly misleading, because an agent with a mandate to manage a diversified NPL portfolio is limited in the ability to perform, no matter how intensive the effort, due to the “Winner’s Curse”.

Optimal design of compensation packages is one proposed solution to the “Agency Problem”. Such a solution works only if there is reasonable prospect for adding value through additional “effort” or, more appropriate in the case of SFF, a more effective combination of sectoral expertise and workout expertise. Alignment of incentives is achieved by creating a call option on the recovery rate for the portfolio management in the form of a performance based bonus which has a reasonable chance of being paid. In so doing, it also reduces information asymmetries between monitor and borrower. The portfolio manager becomes a pro-active consultant to the borrower. This reduces the moral hazard present in every borrower-lender relationship, because the pro-active specialist risk-bearing SFF is incentivized to know much more about the borrower and its sector than the original lender or the NPL investment fund. As analysed incisively by Aoki (2001), this effect is well-known in the venture capital industry, for example, in Silicon Valley.

Third, the SFF is likely to be biased towards non-distressed debt sale as its exit strategy. Thus restructuring and debt/equity swaps increase in importance relative to liquidation as the main sources of recovery proceeds. This shift in strategy protects the value of intangible assets (human capital) in the borrowers’ firms. It profits from knowledge and experience of cooperating focused specialists in bankruptcy law, credit risk accounting, turnaround specialists, private debt and equity placement experts and last but not least, industry-specific business planning and forecasting knowhow.⁴⁹ All participants capitalize on what Hayek termed “the division of knowledge”, which he viewed as being as significant as the gains from “division of labor”.

3.4 Outlook: Meeting the Challenges to overcome Limitations

The obstacles to implementing the Sectoral Focus Fund structure are considerable. Successful implementation will require an awareness of the constraints and a concerted effort to overcome these limitations. Table 13 lists the main constraints and suggests actions that may be appropriate to eliminate them.

⁴⁹ GE Commercial finance Corporate Financial Services (2005).

Table 13: Sector Focus Fund: Actions to Remove Constraints

Limitation/Constraint	Action to overcome constraint
Complexity of models of individual facility recovery and portfolio recovery risk and pricing	Applied R&D in universities, financial institutions, rating agencies (Moody's, S&P's, Fitch); emphasis on transparency and closed formed solutions
Lack of data for validating individual and portfolio recovery risk models; weak IT infrastructure	EU wide participation in Pan European Credit Data Consortium (PECDC); IT infrastructure outsourcing
Restrictive regulatory treatment of double-default (substitution approach) and excess spreads (disallowed as mitigant); need for fair value accounting of credit-linked assets	Learning from experience; benchmarking based on non-bank banks that are successful in making use of sector-specific expertise (e.g. GE Commercial Finance)
Uncertainty regarding size of Sector Focus Fund portfolios and credit recovery swap/option pricing	Coopetition: first round buyers of SME NPL's pool sector specific exposures in SPV to attain critical mass for SFF portfolio (" reverse syndication "); disclosure of non-bank CRS deals with corporates
Staffing of portfolio managers/servicers	Recruiting former successful CEO's, CFO's of firms in specific sectors; entry of sector specific private equity and venture capital managers into NPL market; entry of experienced turnaround consultants

In the author's opinion, it will take between 1½ to 2 years to overcome these limitations. The first credit recovery swaps in Germany will probably be offered for *individual investment grade non-defaulting corporate* names. Large *portfolios of credit recovery swaps* are likely to appear first for large *homogenous pools* (home mortgages, auto loans). The emergence of a market for SME NPL portfolios will depend critically on the *recovery data base* (PECDC) and *consensus on the definition of sectors*. There are alternatives to the S&P GICS^(R) such as the FAZ branches. The latter choice would theoretically enable the investors to hedge their sectoral recovery exposures in the German stock market. *Reverse syndication* of recovery risk is made possible by collecting the risk exposure to many borrowers in a single special purpose vehicle and then hedging that concentrated risk exposure to many borrowers by syndicating this risk to participants in the capital market or private placement market.⁵⁰

⁵⁰ Usually syndication of credit risk is the dispersion of the credit exposure to *one* borrower by distributing it to *many* lenders. The process proposed here is the concentration of the risk exposure to *many* borrowers in a *one* special purpose entity and then redistribution (syndication) of that credit derivative portfolio exposure to many investors willing to assume different degrees of credit risk, depending on the tranche held.

In view of the time required for such an evolution, explosive growth over the next two years appears unlikely. Moreover, it will take time for SFF portfolio managers to establish proven track records over the business cycle. Once these conditions are met, the considerable benefits to society and value to businesses of such a prudent use of credit derivatives, which enable small and medium-sized enterprises to indirectly gain access to capital markets, may become readily apparent. If the success of the “Triple Play” strategy and SFF structure is demonstrated, an increase in the political pressure for further liberalization of the legal and regulatory framework for synthetic securitization of distressed and non-distressed debt in Germany may be expected.

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Appendix: Recovery Risk Rating Case Study: Delphi Corp

Fitch Recovery Analysis: Delphi Corp. Step 1

Valuation – Going Concern

EBITDA	
Estimated sustainable EBITDA	875.0
X (100-Haircut) % (EBITDA Discount=20%)	80%
= Distressed EBITDA	696.0
Enterprise Value – Going Concern Value	
Distressed EBITDA	696.0
X Market EBITDA Multiple	5x
= Estimated Going Concern Value	3,480

Source: Fitch (2005d), p. 4

Fitch Recovery Analysis: Delphic Corp. Step 1

Valuation - Liquidation Value

Asset	Balance	Advance Rates	Liquidation Value
Cash	1,000.0		
Accounts Receivable	5,295.0	60	3,177.0
Inventory	2,264.0	50	1,132.0
Property,Plant&Equipment	5,609.0	25	1,402.3
Intangible	844.0	25	211.0
= Total	15,012.0		5,922.3

Source: Fitch (2005d), p.4

Fitch Recovery Analysis Delphi Corp: Step 2

Determination of Distribution Value (Creditor Mass)

Greater of Going Concern or Liquidation Value	5,922.3
Administrative and Priority Claims (15%)	888.3
Collaborative Payments (5%)	296.1
Adjusted Enterprise Value (Creditor Mass)	4,737.8
	=====

Source: Fitch (2005d), p.4

Fitch Recovery Analysis Delphi Corp: Step 3

Prioritization of Claims w PBGC*

Obligation	Priority	Sen. Sec.	Senior Unsec.	Subordinated	Total Claims	Value Recov.	Recovery (%)	RR Rating
Priority Claims	1500				1500	1500	100	N/A
Senior Secured		1580			1580	1580	100	N/A
Bank Revolver		1825			1825	976	53	RR3
Bank Term Loan		1000			1000	535	53	RR3
Foreign Bank Lines		275			275	147	53	RR3
6.550% Notes 6/06			500		500	69	14	RR5
6.500% Notes 8/09			498		498	69	14	RR5
6.500% Notes 8/13			495		496	68	14	RR5
7.125% Debent.5/29			496		496	68	14	RR5
Jun. Sub.Notes 33				412	412	21	5	RR6

Source: Fitch (2005d) Priority, Sen. Sec. Claims:R=100%; Collaborative: R=14%; Jun.Sub:R=5%

Recovery Analysis Delphi Corp: Step 3

Prioritization of Claims w/o PBGC*

Obligation	Priority	Sen. Sec.	Senior Unsec.	Subordinated	Total Claims	Value Recov.	Recovery (%)	RR Rating
Priority Claims	500				500	500	100	N/A
Senior Secured		1580			1580	1580	100	N/A
Bank Revolver		1825			1825	1565	86	RR2
Bank Term Loan		1000			1000	858	86	RR2
Foreign Bank Lines		275			275	236	86	RR2
6.550% Notes 6/06			500		500	69	14	RR5
6.500% Notes 8/09			498		498	69	14	RR5
6.500% Notes 8/13			495		496	68	14	RR5
7.125% Debent.5/29			496		496	68	14	RR5
Jun. Sub.Notes 33				412	412	21	5	RR6

Source: Fitch (2005d) Priority, Sen. Sec. Claims:R=100%; Collaborative: R=14%; Jun.Sub:R=5%

* Pension Benefit Guarantee Corporation claims transferred back to GM. Author's analysis.

Impact of Recovery Rating on Debt Ratings

Delphi Corp: Relative Value “Notching Effects”

Status/Obligation	RR	Notching	Rating
Before Bankruptcy Filing Announcement: Issuer Default Rating: B-			
Senior Secured Bank Facilities	RR3	+1	B
Senior Unsecured Notes and Debs.	RR5	-1	CCC+
Junior Subordinated Notes	RR6	-2	CCC
Scenario: Post Banruptcy: Expected Issuer Default Rating: CCC+			
Senior Secured Bank Facilities	RR2	+2	B
Senior Unsecured Notes and Debs	RR5	-1	CCC
Junior Subordinated Notes	RR6	-3	CC+

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