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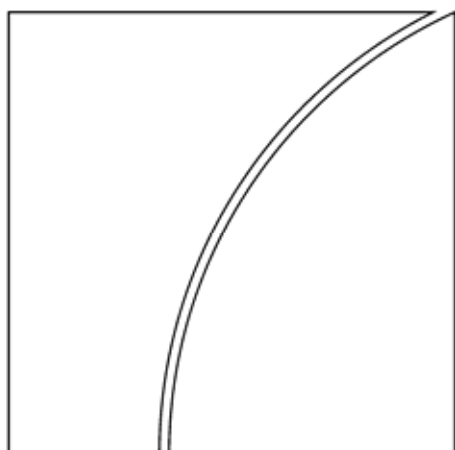
## Private equity and leveraged finance markets

Report submitted by a Working Group established by the Committee  
on the Global Financial System

This Working Group was chaired by Henk Brouwer of the Netherlands  
Bank

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## Preface

Since the early part of this decade, the leveraged finance market has seen dramatic growth on the back of private equity-sponsored leveraged buyouts (LBOs). This has substantially increased the significance of leveraged finance in the global financial system. At its March 2007 meeting, the Committee on the Global Financial System (CGFS) asked a Working Group chaired by Henk Brouwer of the Netherlands Bank to investigate the role, importance and characteristics of the various market participants in the functioning of leveraged finance markets and their interplay with private equity.

As conditions in the leveraged finance market deteriorated rapidly after July 2007, the Working Group focused on the main risks that have either unfolded or increased materially. Against this backdrop, the report addresses two broad questions. First, what have been the important trends during the period of rapid growth in the markets for leveraged finance, private equity and LBOs, and how has the market growth affected corporate finance? Second, how have leveraged finance markets performed since mid-2007, which risks have surfaced, and what preliminary lessons can be drawn for financial stability? This report was presented to the CGFS in May 2008 and covers developments up to the first quarter of 2008.

Donald L Kohn

Chairman, Committee on the Global Financial System  
Vice Chairman, Board of Governors of the Federal Reserve System



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## Executive summary

Since the early part of this decade, the markets for private equity and corporate debt with relatively high credit risk have grown considerably. The amount of leveraged loans and high-yield bonds outstanding tripled between 1999 and 2007. A large part of leveraged debt issuance has been used to finance leveraged buyout (LBO) deals, which are dominated by private equity transactions. Favourable global economic and financial market conditions, high investor risk appetite and financial innovation were important drivers of rapid market growth.

The credit market turmoil since mid-2007 has substantially affected the terms and conditions of funding in leveraged finance markets. Rising investor risk aversion, growing pressure on bank balance sheets and a loss of confidence in structured credit products have sharply reduced demand for leveraged loans. The materialisation of warehouse risks from failed leveraged loan syndications has been another factor contributing to unwanted expansion of bank balance sheets and affecting credit supply. The knock-on effects from deteriorating conditions in leveraged loan markets on LBO deals have severely affected access to leveraged debt markets for private equity activity.

Against the background of these developments, the report addresses two broad questions.

- First, what have been the important trends during the period of rapid growth in the markets for leveraged finance, private equity and LBOs, and how has market growth affected incentives and corporate finance decisions?
- Second, how have leveraged finance markets performed since mid-2007, which risks have surfaced, and what preliminary lessons can be drawn for financial stability?

## Leveraged finance

The landscape of the leveraged finance market has changed substantially in the current decade. Leveraged loan issuance has grown much more rapidly in recent years than issuance of high-yield bonds. At the same time, institutional investors have replaced banks as the main investors. Several related developments have contributed to these shifts in market structure: the emergence of collateralised loan obligation (CLO) vehicles as loan securitisers and intermediaries; growing ratings coverage of loans, which attracted institutional investors; increased secondary market trading of leveraged loans; and a shift in bank business models from “buy and hold” to “originate to distribute” (OTD).

But leveraged debt issuance has also benefited from favourable cyclical conditions: corporate default rates have been low, supported by the favourable global macroeconomic backdrop; investor risk appetite has been high, as reflected in borrower-friendly terms of loan issuance, including weaker covenant protection; and strong corporate cash flows in conjunction with low interest rates have made takeovers attractive.

Conditions in the leveraged loan market deteriorated in the second half of 2007, and demand for leveraged finance declined sharply. An initial temporary adverse investor reaction to loose lending terms and low credit spreads prevailing in early 2007 became more protracted over the course of the second half of the year as the turbulence in financial markets deepened and contraction in demand for leveraged loans became more severe. Global primary market leveraged loan volumes shrank by more than 50% in the second half of 2007.<sup>1</sup>

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<sup>1</sup> This estimate is based on data from Standard & Poor's Leveraged Commentary Data.

The contraction in demand for leveraged loans revealed substantial exposure of arranger banks to warehouse risk. In the second half of 2007, arranger banks had commitments to fund nearly \$400 billion of leveraged loans and high-yield bonds, some of which were later cancelled. At end-2007, private sector estimates put undistributed leveraged loans and high-yield bonds on banks' balance sheets at \$230 billion, but banks have managed to offload some of this exposure in the first quarter 2008. Undistributed loans will contribute to increased funding costs and capital requirements for banks in 2008, on top of other off-balance sheet products that they have been forced to bring on-balance sheet. Moreover, with leveraged loan indices trading close to 90 cents on a dollar in March 2008, realisation of warehouse risks has resulted in significant mark to market losses to banks.

### **Leveraged buyout activity**

LBO activity, which was more US-centred until the late 1990s, has picked up in Europe. Deal volumes in Europe have been broadly comparable to the North American market in the past few years. Yet the rapid increase in LBO volumes has had little impact on overall corporate financing patterns: aggregate leverage has remained broadly stable or even declined recently. Relative to stock market capitalisation, the current LBO volumes are lower than those observed in the late 1980s in the United States. However, at least until mid-2007, the riskiness of LBO deals, measured in terms of debt-to-earnings ratios, had risen while the compensation for risk, measured in terms of loan spreads per unit of leverage, had fallen.

Investor appetite to fund large LBO deals has deteriorated in the wake of the credit market turmoil. LBO volumes declined by more than 15% globally in the second half of 2007, and several deals have been withdrawn or postponed. Riskier second-lien and pay-in-kind loans are attracting little investor interest, and borrowing costs have risen sharply. This, together with the prospect of moderating corporate cash flows in the light of weaker macroeconomic growth, has arguably increased the default risk of LBO firms, particularly for cyclical firms that face substantial refinancing needs in the next few years. Overall, it is estimated that more than \$500 billion of leveraged loans and high-yield bonds will have to be refinanced between 2008 and 2010.

### **Role of securitisation vehicles**

Securitisation vehicles, in particular CLOs, have become major investors in leveraged loans in recent years. Private sector estimates indicate that close to half of the leveraged loan demand comes from securitisation vehicles. Preferences of managers of CLOs and other investment vehicles that include leveraged loans as collateral assets seem to have influenced leveraged loan characteristics. For example, CLO managers are more receptive to covenant-lite loans, while loan maturities have lengthened, reflecting their appetite for long-dated loans.

The importance of a functioning securitisation market became apparent in the second half of 2007, when some CLO vehicles were forced to liquidate their holdings. A sudden drop in demand for loans from CLO vehicles accentuated banks' difficulties in selling "warehoused" assets. Moreover, banks that provided lines of credit to such vehicles during their asset accumulation phase were forced to take on the leveraged loan collateral assets.

CLO vehicles are designed to service their liabilities through current coupon income rather than amortisations, so CLO managers prefer to buy loans close to par. The ability to sell deeply discounted warehoused loans on bank balance sheets will then depend on non-CLO investor demand. Because the non-CLO investor base is broader in the United States than in Europe, US banks might be in a better position to reduce their warehoused loans, even if at high discounts.

## Challenges pertaining to loan valuation

Increased liquidity of leveraged loans and the availability of secondary market trading prices have improved the transparency of loan portfolio valuations and the ability of banks and investors to manage their loan portfolio risks. The recent market turmoil has exposed challenges to loan valuations based on market prices. For example, market prices of leveraged loans and loan indices may deviate from their economic fundamentals during periods of market stress if liquidity premia rise substantially. Difficulties in interpreting market price fluctuations and in valuing credit assets may amplify changes in liquidity premia and market stress as investors pull back the provision of liquidity to major financial institutions and leveraged loan markets. Another consequence of higher loan price volatility has been a fall in demand for triple-A tranches of CLOs. Some fund managers and banks that buy these tranches use mark to market accounting practices. The rising volatility of the prices of these tranches has deterred such mark to market investors.

## Risks and policy lessons

The development of the leveraged loan market since 2000 can be seen as an example of the benefits of a system of market-based intermediation of credit. The broadening of the investor base in leveraged finance markets and the growing commitments to private equity funds have increased the availability of alternative sources of capital to businesses, potentially enhancing the resilience of corporations to funding shocks.

Yet the market turmoil since mid-2007 has also exposed risks and raised a number of issues:

- *Short-term risks:* Arranger banks have been confronted with an unwanted expansion of balance sheets from undistributed leveraged loans. Falling loan market prices led to estimated losses on the warehoused assets ranging from \$20 billion to \$25 billion. While these appear to be modest in relation to the losses of about \$200 billion reported by banks during the credit turmoil, they add to pressure on bank capital and possibly credit supply. Moreover, the ability of arranger banks to provide liquidity and bridge financing depends importantly on the strength of their balance sheets and their own access to funding. As these financing conditions move in line with investor risk appetite, the costs of funding in the high-yield bond market rise at the same time as costs in the loan market. This might limit the capacity of the high-yield bond market to act as a “spare tyre” for corporate funding.
- *Medium-term risks:* While corporate defaults have been historically low in the recent past, a combination of weaker economic growth, higher credit spreads in the leveraged loan markets and a tightening of financing conditions has increased refinancing risks substantially for highly leveraged firms. This, and the expected pressure on firms’ future cash flows stemming from a weakening economy, will further increase the already relatively high default risk of firms dependent on leveraged finance over the medium term. It is important to assess this risk in the light of the fact that banks’ leveraged loan exposures tend to be concentrated among relatively few players.
- *Long-term risks and structural influences:* The rapid development of the OTD business model and of structured finance products has helped broaden the investor base for leveraged finance debt. At the same time, the role of banks as loan originators has enhanced the links between bank balance sheet and credit market conditions. Hence, in the long run, the terms and availability of leveraged finance, and the capacity of private equity participants to fund large LBO deals, will depend on modifications to the OTD model. The credit turmoil may have a lasting impact on the incentives for the screening and monitoring of borrowers, the willingness and capacity of banks to assume and manage warehouse risk, and investors’ appetite for structured products. Finally, the greater diversity of investors in the leveraged

finance market may raise the duration and cost of the debt restructuring process, with potential implications for default risk and the dynamics of the corporate credit cycle.

- *Policy lessons:* Recent market events have demonstrated that enhancing transparency and strengthening risk management practices require special attention. For example, more timely disclosure of balance sheet information might enhance transparency and improve creditors' ability to monitor borrower credit quality. In the area of risk management, improvements in stress testing warrant greater attention.

## 1. Introduction

To further its understanding of the private equity and leveraged finance markets, and to identify aspects giving rise to potential financial stability concerns, the Committee on the Global Financial System (CGFS) established a Working Group on private equity and leveraged finance markets in March 2007 under the chairmanship of Henk Brouwer of the Netherlands Bank. In particular, the Working Group was asked to examine the structure and characteristics of leveraged finance markets, the role and importance of various market participants including private equity firms, the main factors driving growth in leveraged finance markets, and vulnerabilities to changing market circumstances. This report documents the main findings of the Working Group.

Private equity, which was relatively unknown in the early 1980s, has become an important asset class in global financial markets. Private sector estimates indicate that, as of 2006, there were 2,700 private equity funds, which accounted for 25% of global mergers and acquisition activity, 50% of leveraged loan volume and 33% of the high-yield bond market. These statistics demonstrate the close links between private equity and leveraged finance markets. A rationale for private equity transactions is better alignment of shareholder and management interests and improvement of the operational efficiency of firms. Private equity firms attempt to achieve this through a number of measures, including higher leverage and greater incentives for management through significant pay-for-performance packages.

Until the late 1990s in Europe (and the late 1980s in North America), the market for leveraged loans remained small and was dominated by banks. Because loans were privately placed, the barriers to entry for non-bank and retail investors, mainly in the form of information gathering and screening technology, were high. Since the early part of the current decade, favourable global market conditions have led to a significant growth in the private equity and leveraged finance markets. Moreover, the development of securitisation products, particularly collateralised loan obligations (CLOs), has increased the influence of non-bank investors. The entry of new investors willing to buy loans at increasingly favourable terms and conditions for borrowers has in turn encouraged private equity transactions. Consequently, private equity takeovers of publicly traded companies surged until mid-2007, resulting in a substantial increase in leveraged buyout (LBO) volumes. At the same time, the evolution of the business models of global banks from “buy and hold” to “originate to distribute” (OTD) strategies has made the availability of leveraged finance more dependent on liquidity in credit markets.

The financial market turmoil since July 2007 has offered a real test for private equity and leveraged finance markets. Indeed, this market turmoil has demonstrated that some of the risks and vulnerabilities for private equity and leveraged finance markets that were flagged in several policy reports can materialise when market functioning is impaired.<sup>2</sup> For example, banks have been confronted with an involuntary expansion of their balance sheets when warehoused loans could not be sold as investor risk appetite declined. This report describes how some of these risks have played out, and provides an initial assessment of the scale of their impact on leveraged finance markets.

Moreover, there are a number of other risks that may materialise in the coming years. One is the greater vulnerability of LBO firms, which have significant levels of debt, in an environment where financing conditions remain tight and economic activity has weakened. Another issue is how the broadening of the investor base could affect workouts when stressed borrowers seek to restructure debt. Given that the international financial system is exposed to private equity activity through the funding of such activity with leveraged finance instruments, this

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<sup>2</sup> See, for example, ECB (2007), FSA (2006) and IOSCO (2007).

report focuses primarily on developments in leveraged finance markets in order to identify implications to financial stability and policy. Because recent leveraged finance issuance has been dominated by loans, the report gives greater focus to leveraged loans than to high-yield bonds.

The report is structured as follows. Section 2 discusses recent developments in the market for leveraged finance, characteristics of loans, trends in loan market liquidity and the issuance process, and the nature of warehousing risk. Section 3 provides a brief introduction to the private equity market and then examines key factors that drive the level and riskiness of LBO activity over time. Section 4 examines how growth in structured products is influencing the characteristics of leveraged finance markets. It also highlights factors encouraging banks to take loans off-balance sheet, and the role played by securitisation vehicles in facilitating the shift in investor composition for leveraged loans. Finally, Section 5 outlines possible risks and financial stability concerns arising from recent developments in the leveraged finance market.

## 2. Leveraged finance market

As used by market participants, “leveraged finance” usually refers to corporate debt with relatively high credit risk. Leveraged finance has long attracted policy attention because of the risks it poses for banks. In earlier years, portfolio credit losses were the main risk. In recent years, a wider variety of participants have appeared in the leveraged finance market, while the characteristics of loans and the channels for their distribution have changed, raising additional policy questions. For example, even if banks do not ultimately intend to hold the loans they underwrite, the issuance process can give rise to warehousing risk. This section surveys recent developments in the leveraged finance market to serve as background and motivation for the subsequent sections of this report.

### 2.1 Changing landscape of the leveraged loan market

The term “leveraged loan” arose in the early 1990s as a means of distinguishing relatively safe corporate loans from riskier ones in a period when the majority of loans were unrated and held by banks (see Box 2.A on loan market terminology). Leveraged loans were usually syndicated to groups of banks at origination and held to maturity by syndicate members, with little secondary market trading. Through the mid-1990s, the typical deal included a large revolving line of credit (RC) and one or more amortising term loans (TL) with an original term to maturity of five years or less.

Much has changed in the leveraged finance market since the late 1990s. Bank consolidations, heightened competition in traditional banking activities and greater participation by institutional investors in the leveraged loan market have been key factors driving this change. Deal sizes are now larger, many loans are rated by the credit agencies, and liquidity in the secondary market has increased (see Box 2.B for secondary market trading activity).<sup>3</sup> Moreover, greater institutional investor participation has led to a fall in banks’ primary loan market share (Graph 2.1, left-hand panel) with the result that banks’ direct exposure to leveraged debt has declined as well.<sup>4</sup> However, as explained in Section 4, banks now have more indirect exposure to leveraged loans through securitisation vehicles that use leveraged loans as collateral assets.

Loan characteristics have also evolved in recent years in response to institutional investor preferences. For example, arranger banks have partly or fully replaced tranches that appeal to commercial banks with those designed to appeal to institutional investors. Consequently, the “term loan a” (TLa) tranches, which are designed for banks, have almost disappeared in North America. Instead, non-amortising, longer-term loan tranches designed for institutional investors (TLb, TLc, etc) are now much larger than the bank tranches (Graph 2.1, right-hand panel). Table 2.1 summarises the key characteristics of “bank loan tranches”, “institutional loan tranches” and high-yield bonds.

Leveraged debt markets have been one locus of the turmoil in global financial markets that began in mid-2007. So far, this has resulted in a sharp fall in issuance and a large increase in leveraged loan credit spreads in the light of weak investor demand. However, the ultimate impact on leveraged debt markets remained uncertain as this report was being written in early 2008. Therefore, the report focuses on the broad forces affecting the market and the

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<sup>3</sup> Since mid-2007, however, large deals have come under pressure and secondary market liquidity has fallen substantially.

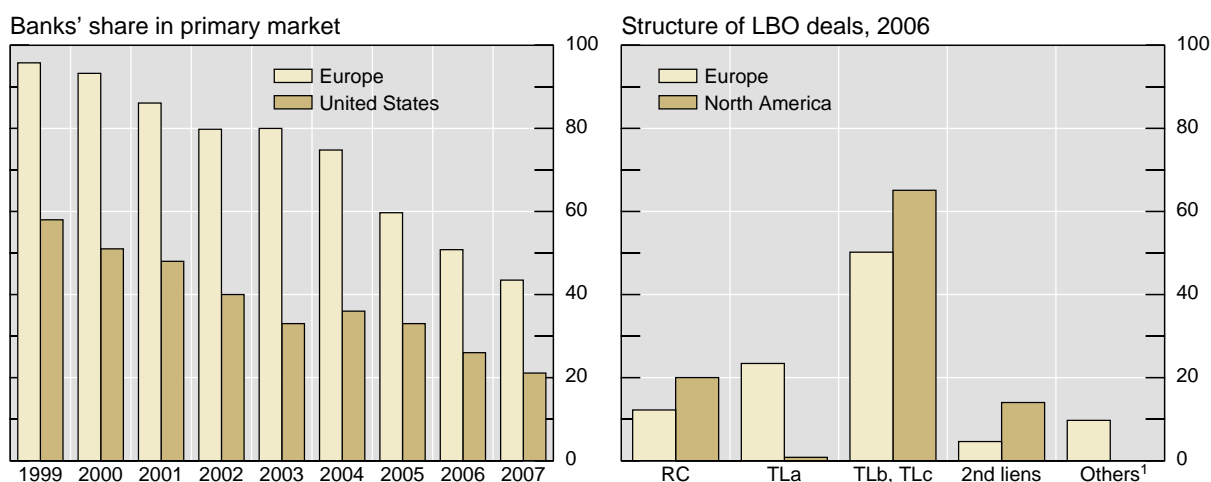
<sup>4</sup> For borrowers in the leveraged finance market, loan volumes are much larger than high-yield bond volumes. Therefore, the largest exposure of banks to very risky corporate debt traditionally has been through loans. Although high-yield bonds are bought by both banks and institutional investors in Europe, institutions are the dominant investors in North America (US banks rarely buy corporate bonds for their investment accounts).

policy issues they raise, without attempting to draw conclusions about how leveraged debt or private equity market structure will evolve in response to these developments in the future (although conclusions about risks and issues to be addressed by policymakers are drawn). The immediate impact of the turmoil on the leveraged finance market has been a sharp reduction in issuance volume since mid-2007 and an expansion of arranger bank balance sheets resulting partly from the realisation of warehouse risk. On the back of strong issuance in the first half of 2007, leveraged loan volumes were, however, higher for 2007 compared to 2006.

Graph 2.1

**Changing landscape of leveraged loan market**

In per cent



<sup>1</sup> Includes letters of credit facilities, bridge loans and capital expenditure facilities.

Source: Standard & Poor's LCD.

Table 2.1

**Characteristics of leveraged loans and high-yield bonds**

Debt contract features	Leveraged loans		High-yield bonds
	Bank tranches	Institutional tranches	
Interest rate type	Floating	Floating	Often fixed
Payment-in-kind coupon payment option	Very rare	Infrequent, more often seen recently	Infrequent, more common recently
Maturity	Five years or less	Five years or more	More than five years
Secured	Usually	Often	Rarely
Amortising	Usually	More slowly than bank	Sometimes
Second-lien	Very rare	Infrequent	Usually subordinated to loans
Covenant-lite	Infrequent	Frequent in North America in 2006–07	Almost always
Early payment restriction	None	Sometimes a penalty	More often has call protection

Source: Working Group.

## Box 2.A

### Leveraged debt market terminology

Through the mid-1990s, a loan was “leveraged” if it was syndicated and had a contractual interest rate spread over Libor above 125 or 150 basis points (the cutoff changed from time to time). Currently, the definitions used by various information providers vary (among other differences, some require the loan to be rated non-investment grade while others do not). Such differences can lead to variations in estimates of issuance volumes and other statistics across data vendors. In contrast, bonds that pose credit risk similar to that of leveraged loans are uniformly referred to as “high-yield” or “junk” bonds.

A syndicated loan usually involves a single credit agreement between a borrower and multiple lenders. It is arranged by one or a handful of commercial or investment banks (the “arrangers”) that negotiate terms with the borrower and are responsible for locating other lenders. Bond issues are also arranged by one or a few major financial institutions, but these are often referred to as “underwriters”, and the legal form of bond contracts differs from that of loans. Bond issues are nearly always underwritten, meaning that underwriters guarantee that the borrower will receive funds at pre-specified terms, whereas leveraged loans may either be underwritten or placed on a best efforts basis, which means that the final terms of the loan are not guaranteed until the syndicate is formed (see Section 2.3 for more details on loan issuance).

A firm wishing to issue bonds with a variety of terms must issue several different bonds. In contrast, syndicated loan “deals” or “packages” often contain several different “tranches”, often as part of the same credit agreement (such tranches usually have the same priority in event of distress, unlike tranches of a securitisation). Tranches include term loans (TLs), which are fully drawn, and line of credit or revolving credit (LC or RC) facilities which may be drawn and repaid at the borrower’s discretion. “Second-lien” TLs are subordinated to other loans but usually senior to bonds.

Loan agreements always include many covenants that restrict borrower actions and may contain covenants which require the borrower to maintain minimum levels of financial performance, such as a minimum interest coverage ratio or a minimum rating. Borrowers that violate covenants are in “technical” default, and lenders may require immediate repayment of all principal, although in practice lenders usually renegotiate the terms of the loan. A “covenant-lite” loan still contains many covenants (such as incurrence covenants) but omits those that require minimum levels of financial performance or ratings (maintenance covenants).

## 2.2 Patterns in debt issuance

Issuance in the leveraged loan and high-yield bond market has deteriorated sharply following the credit market turmoil, suggesting that access to funding through leveraged loans has been severely affected (Graph 2.2).<sup>5</sup> Two noteworthy features of recent issuance are: (i) high-yield bond issuance volume is far smaller than syndicated loan volume, especially in North America; and (ii) about half of the rapid increase in the pace of issuance that occurred

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<sup>5</sup> In this report, charts, tables and figures given in the text are drawn from several sources, and it was not always possible to adjust for inconsistencies. For data sourced from Dealogic, a loan was classified as leveraged if: (i) it had a contractual interest rate spread of 150 basis points or more, whether the loan was rated or not; or (ii) the obligor was rated BB+ or riskier if no spread was available. All tranches reported in Dealogic meeting these criteria are included, not just institutional tranches. This criterion is somewhat different than Dealogic’s own method of classification but yields similar aggregate issuance amounts (the criterion was used because it permitted data back to 1993 to be analysed). Estimates based on this criterion produce total issuance volumes that are far higher than estimates published by some vendors, notably S&P LCD. Nevertheless, interpretations of trends and other results are broadly similar regardless of the criterion used. Where possible, regional distinctions are made according to the market in which the debt was issued, not the domicile of the issuer. Particularly in European debt markets, a material fraction of issuance is by firms located all around the globe.

during 2006–07 was due to large deals (issuances of \$5 billion or more; distinction not shown in graphs).<sup>6</sup>

Box 2.B

**Loan liquidity**

Although dealers in secondary market trades of leveraged loans first appeared in the early 1990s, the secondary market remained less developed until the late 1990s. Trading volumes were small, and most volume was between dealers rather than between dealers and investors. Since the late 1990s, the dealer market has come to resemble the corporate bond secondary market to a much greater degree, with the major dealers often posting firm quotes for loans on electronic trading screens. Trading volume grew rapidly, and progress was made in standardising the clearing and settlement process. Ancillary service providers appeared, such as those providing third-party quotes for use in marking positions to market.

Panel A of Table 2.B displays the numbers of loan tranches for which quotes were available from LSTA/LPC in May of 1998, 2000 and 2007, separately for par and distressed loans (LSTA/LPC is one of the secondary market pricing services; region is determined by the domicile of the borrower; distressed loans are those trading at or below 90% of par value). As an indicator of the depth of market liquidity, Panel B displays the fraction of loans for which three or more market-makers contributed to the LSTA/LPC quote (where only a single dealer contributes to the quote, liquidity is more likely to be limited). Panel B provides a better picture of the growth of liquidity over time, as LSTA/LPC attempts to find at least a single quote even for loans that trade infrequently if one of its customers needs a quote for portfolio valuation purposes.

Table 2.B

**Number of loans for which dealer quotes are available**

Year	Panel A: At least one dealer quote				Panel B: Three or more dealer quotes			
	In Europe		In North America		In Europe		In North America	
	Par	Distress	Par	Distress	Par	Distress	Par	Distress
1998	5	3	378	29	1	0	82	7
2000	11	7	1339	236	1	1	362	117
2007	2741	56	3228	133	922	8	889	35

Source: LSTA/Loan Pricing Corporation Mark-to-Market Pricing Service.

Until recently, leveraged finance issuance volumes were smaller in European markets than in the North American market. The difference arises because a larger proportion of European firms still arrange loans bilaterally with banks. Such loans are not captured in this report's statistics. However, the European syndicated loan market appears to have been gathering momentum since 2003, perhaps signalling a transition towards more market-oriented loan financing by medium-size and large European firms. Issuance volumes remain relatively small in the Asian markets, perhaps because traditional bank lending (without syndication) still plays a dominant role in debt finance for most firms in the region (see Box 2.C), whereas leveraged finance is more market-oriented. Because data on Asian markets are limited, this

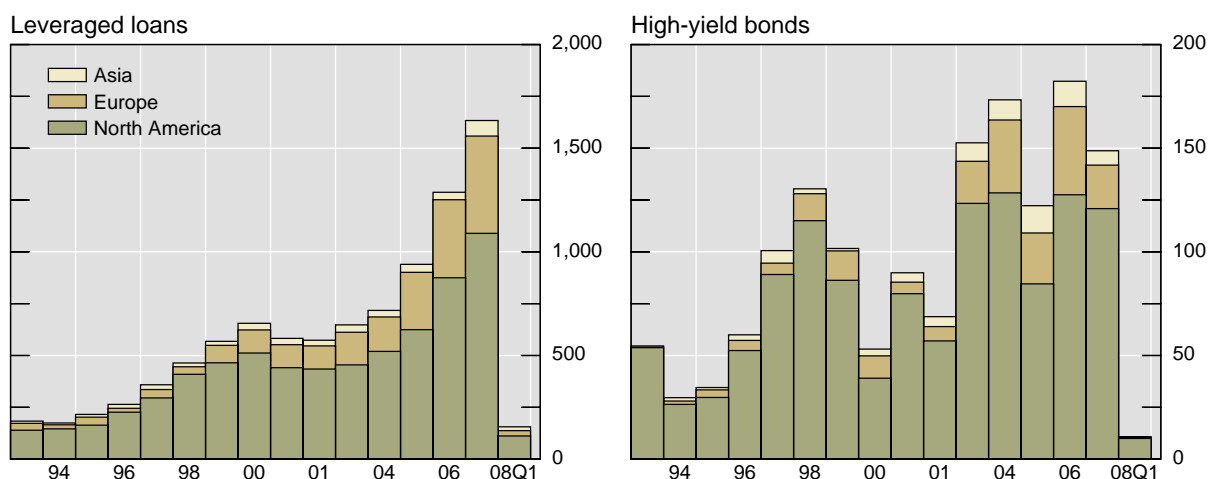
<sup>6</sup> Loan and bond issuance amounts are, however, not strictly comparable because loan amounts include the undrawn portion of lines of credit, but the impact of undrawn amounts on aggregate issuance is rather small. It is to be noted that as many newly issued loans and bonds refinance existing debt, issuance volumes are not indicative of net new debt financing by firms.

report's analysis and statistics focus on developments in the European and North American regions.

Graph 2.2

**Leveraged loan and high-yield bond issuance**

In billions of US dollars



Source: Dealogic.

**Box 2.C**

**Leveraged loan market in Japan**

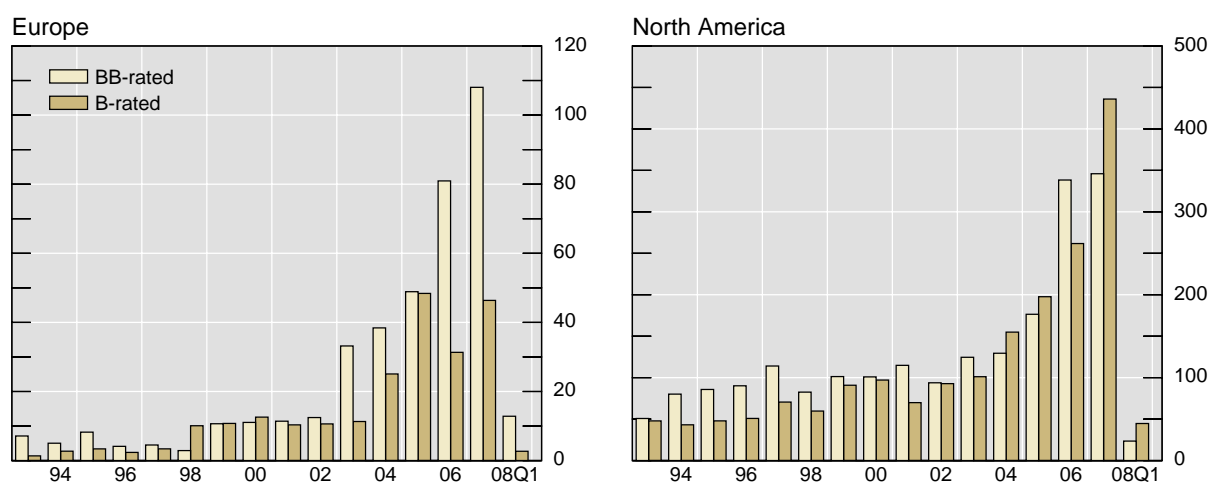
Bank loans continue to be a major source of corporate financing in Japan. As of September 2007, corporate bonds outstanding totalled less than 30% of loans outstanding for the non-financial corporate sector, whereas in the United States bonds outstanding are much larger than loans outstanding. While the syndicated loan market is expanding in Japan, its share of all bank loans (less than 20%) is still small in comparison to bilateral loans. As a result, the number of companies rated by credit rating agencies is small, with less than 30% of Tokyo Stock Exchange listed companies being rated. It is therefore difficult to capture the aggregated amount of loans posing risks similar to those of leveraged loans in North America or Europe, as most Japanese leveraged loans are neither syndicated nor rated. The majority of loans, including syndicated ones, are held by banks and are not securitised.

Newly issued debt has been somewhat less risky on average in the European market than in the North American market, especially in recent years.<sup>7</sup> Using borrower ratings at the time of issuance as a proxy for risk, Graph 2.3 shows total loan issuance in Europe and North America grouped by borrowers with ratings in the BB and B ranges (only loans to rated borrowers are included). Recently, more than half of European issuance has been by relatively less risky BB-rated borrowers, whereas the issuance volumes by BB- and B-rated borrowers have been similar on the whole in the North American market. This pattern is also broadly similar for high-yield bonds. Consistent with a broad-based rise in risk aversion, leveraged loan issuance volumes declined sharply across rating categories. Against this backdrop, a recovery in investor risk appetite might be key for a revival of activity in the leveraged loan market.

<sup>7</sup> However, as a large share of loans issued in Europe is not rated, the riskiness of outstanding European leveraged loans will depend on the quality of unrated loans.

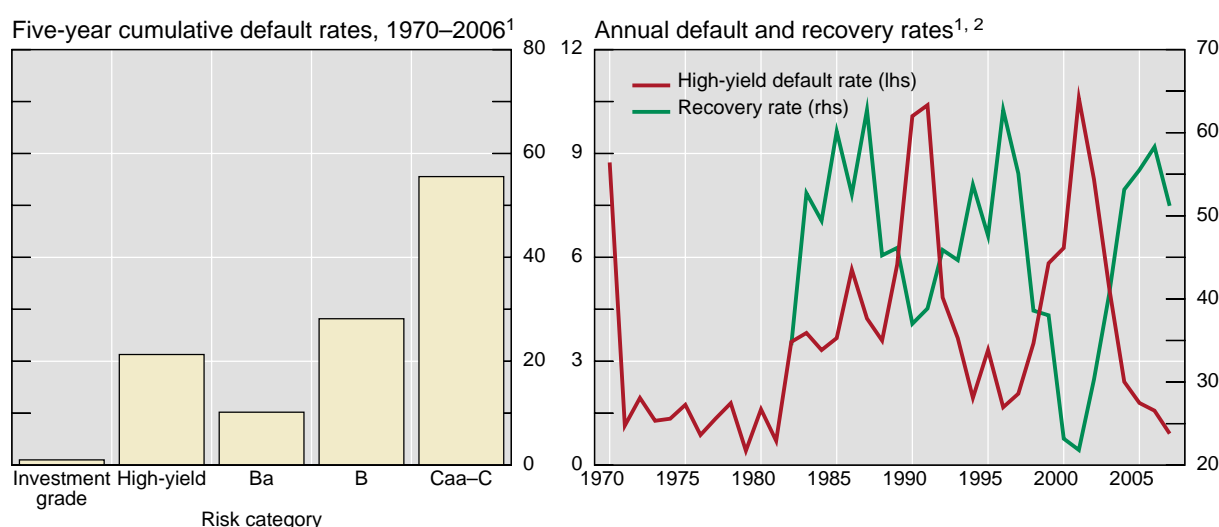
Graph 2.3  
**Leveraged loan issuance across rating grades**

In billions of US dollars



Source: Dealogic.

Graph 2.4  
**Default and recovery rates**



<sup>1</sup> In per cent. <sup>2</sup> Annual default rates of non-investment grade issuers; recovery rates of senior unsecured bonds.

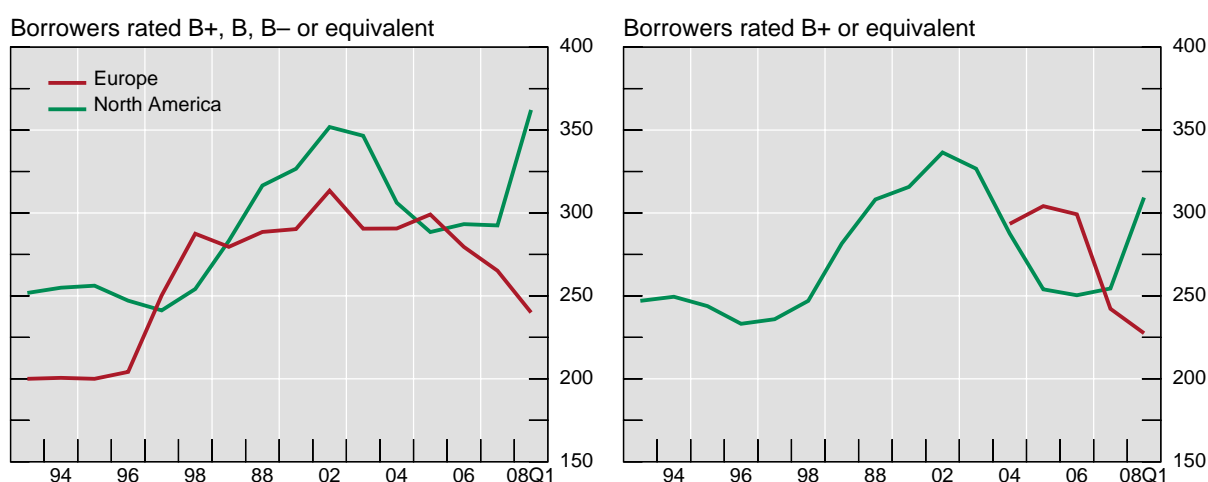
Source: Moody's.

Graph 2.4 (left-hand panel) shows the cumulative average default rates, measured over a five-year horizon, experienced by holders of rated debt issued by European and North American non-financial firms during the period 1970–2006. The annualised high-yield default rate, at about 4%, is far larger than the default rate for investment grade issuers, and the default rate increases markedly as the borrower's rating at the start of the period grows worse. Moreover, recovery values tend to fall and defaults tend to rise not far from the peaks of financial boom periods (Graph 2.4, right-hand panel).<sup>8</sup>

<sup>8</sup> The recovery rates in Graph 2.4 (right-hand panel) are based on secondary market prices of defaulted bonds soon after the date of default. Such prices reflect not only expectations of ultimate recovery cash flow at the

Issuance volume as well as default and recovery rates display some cyclical variation, but such variation is particularly pronounced for interest rate spreads of newly issued debt. Average interest rate spreads over Libor on newly originated loans to borrowers rated B+, B, B- or equivalent peaked in both Europe and North America around 2002, and have been declining recently (Graph 2.5, left-hand panel). However, the graph understates the cyclical variation because the mix of originations tends to shift towards riskier B- borrowers during economic expansions, which raises average spreads for B-rated borrowers as a whole. Average spreads for B+ borrowers are less subject to such variation and display more cyclical variation (Graph 2.5, right-hand panel). The number of loans to B+ borrowers in the European market is too small to support meaningful averages before 2004 and is not shown. Bond spreads also display similar cyclical variation.

Graph 2.5  
**Average leveraged loan spreads over Libor**  
 In basis points



Source: Dealogic.

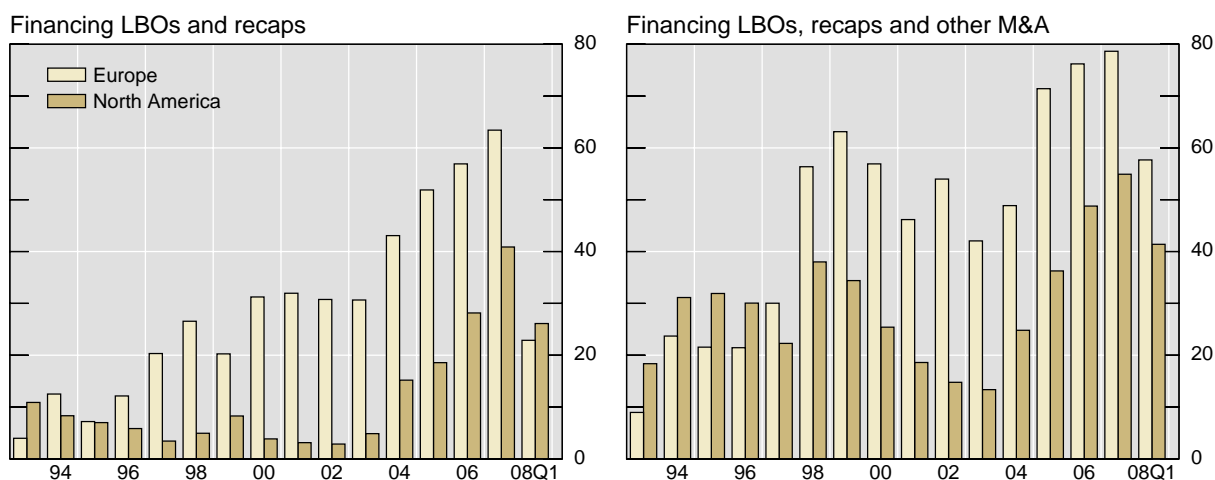
Several factors probably contribute to the cyclical variation of leveraged debt issuance, including firms' more rapid growth rates during economic expansions (and consequent greater need for financing) and perhaps smaller levels of investor risk aversion during such times. The cyclical nature of LBO activity is another reason. For example, the share of leveraged loan issuance used to finance LBOs and other recapitalisations has grown rapidly since 2004 in both Europe and North America, reaching two thirds of leveraged loan issuance in Europe by 2007 (Graph 2.6, left-hand panel). If leveraged loan issuance for all recapitalisation and merger and acquisition (M&A) activity is included, another cyclical boom is visible, peaking in 1998–99, when M&A activity was high but LBOs of very large firms were not as widespread as they have been recently (Graph 2.6, right-hand panel).

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time the default is resolved but also cyclical variations in bond market risk premia. Average ultimate recovery rates tend to be less cyclical. Ultimate recovery rates may be more relevant for buy and hold investors, whereas at-default measures are more relevant for those that tend to sell debt after default.

Graph 2.6

**Percentage of loan issuance**



Source: Dealogic.

The higher share of loan issuance financing LBOs and other activity in Europe does not necessarily reflect a higher absolute level of LBO activity in Europe compared to North America. It arises because European firms still use loans from relationship banks for ordinary corporate purposes, as noted previously, which do not appear in leveraged loan issuance data. However, the high share does imply that an understanding of LBOs is particularly important to shed light on leveraged finance market developments and associated risks. This is addressed in Section 3.

### 2.3 The issuance process

Leveraged loans are issued in a manner broadly similar to that of high-yield bonds. In both cases, one or more lead arranger banks work with the issuer to design the debt issue, including total amount, division into tranches and non-price terms of each tranche. The arrangers are then responsible for finding investors. In the case of loans, the sales process is called “syndication”, but it is roughly equivalent to the “book-building” process that occurs in the bond market. One difference is that loan investors often receive one-time fees at the time the loan agreement is signed (this is rare in the bond market). Investors who commit early in the syndication process to take relatively large portions of the loan often receive larger fees than those that take small pieces later in the process.

Three features of syndicated loan issuance are now different from in the past. First, issuance now often involves a firm-commitment underwriting, in which the arranging banks commit to buy the debt from the issuer prior to general syndication.<sup>9</sup> Any gains or losses in the value of the debt between the date the terms are set and the closing of syndication are borne by the arranging banks. The time between the date of the commitment and syndication varies, but may be as much as several months in the case of debt to fund a leveraged buyout transaction (LBOs often involve a substantial delay between announcement and closing). Especially in such cases, the commitment may be in the form of a bridge loan, which may have different characteristics compared to the final loan package. Firm-commitment underwritings expose arranger banks to a form of warehouse risk that has been realised in a

<sup>9</sup> Most high-yield bond issues involve a firm-commitment underwriting.

big way as a result of the mid-2007 change in syndicated loan market conditions (see Section 2.4).

Second, and especially in the case of firm-commitment underwritings, the arranger may have contractual permission from the borrower to “flex” the interest rate spread on one or more tranches of the loan arrangement by up to a specified maximum number of basis points in order to complete syndication. The spread can either flex up, to complete syndication of debt for which demand is unexpectedly weak, or flex down if demand is unexpectedly strong. Thus, flex pricing reduces the risk borne by the arrangers, but also reduces the gain they can enjoy. No statistics on the incidence and terms of flex pricing agreements are available, but anecdotally, such arrangements have been more common in the North American market in recent years. Common ceilings on the amount of flex are 25 or 50 basis points of contractual interest rate spread.

Third, the distribution of loan tranches to some institutional investors, particularly to managers of CLO vehicles, occurs after the close of the general syndication period. For reasons that are not entirely clear, many CLOs do not wish to appear as original signatories to the credit agreement. Instead, they informally commit to buy their share of the debt in a “secondary market” transaction within a few days of loan closing. This has the effect of inflating the amount of the loan retained by the arranger in statistics that are based on investor shares as of the loan closing date. In recent years, arrangers generally have tended to retain only enough of the institutional tranches of a loan to function as inventory for their trading desks.

The shift in business strategy at most of the major syndicated loan arranger banks away from holding a substantial portion of loans on their balance sheets has changed the channels by which aggregate cycles affect their earnings and capital. Such banks now profit from leveraged loans not so much by receiving the interest rate spread, but by earning: fees received for arranging the loan; fees and trading profits associated with market-making in the secondary market; fees for arranging amendments to the loan agreement or covenant waivers; and fees and underwriting revenues associated with assisting CLO managers to set up and fund their vehicles.

Because all such income is arguably more volatile than interest rate spread income, arranger bank profits flowing from leveraged debt market activity might be expected to be more volatile than in past cycles. However, with smaller retained positions, the risk of large credit losses may be more limited. Conversely, large credit losses may be more likely for institutional investors in loans than in past cycles (including for those institutions that hold the liabilities of CLOs and CDOs). A recent paper published by the ECB discusses the shift towards OTD business models in more detail.<sup>10</sup>

## **2.4 Leveraged loan warehouse risk**

“Warehouse risk” refers to the risk that a change in market conditions will make it difficult to repackage and/or distribute a block of debt at previously expected prices. In the case of leveraged loans, the primary type of warehouse risk borne by major banks is rooted in firm-commitment underwritings. As noted earlier, if market conditions worsen between the commitment date and the distribution date, the underwriter must bear the losses associated with a reduction in the price of the debt in order to distribute it (or must hold the debt on its own balance sheet). For any given debt issue, underwriting risk might be viewed as primarily idiosyncratic. However, when an arranger bank builds up a large “pipeline” of commitments,

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<sup>10</sup> See ECB (2007).

a worsening of general market conditions will reduce the value of all the debt in its pipeline at the same time.

A realisation of warehouse risk occurred in June 2007, when the global pipeline of leveraged loan and bond commitments by major banks had swelled to the equivalent of about \$400 billion. Many such commitments were for debt to fund LBOs scheduled to close during the second half of the year. Although some of the LBOs were later cancelled, in the majority of cases the buyer of the firm to be acquired was committed to the transaction and the arranger banks had made firm commitments to fund it. The commitments usually included price flex features, but the maximum amount of flex, reportedly rarely more than 50 basis points, was inadequate to keep the debt valued near par following increases in market spreads of as much as several hundred basis points. By end-2007, arrangers had distributed some of the committed debt at significant losses (in the range of 3% to 10% of face value), but large amounts remained on arranger bank balance sheets.

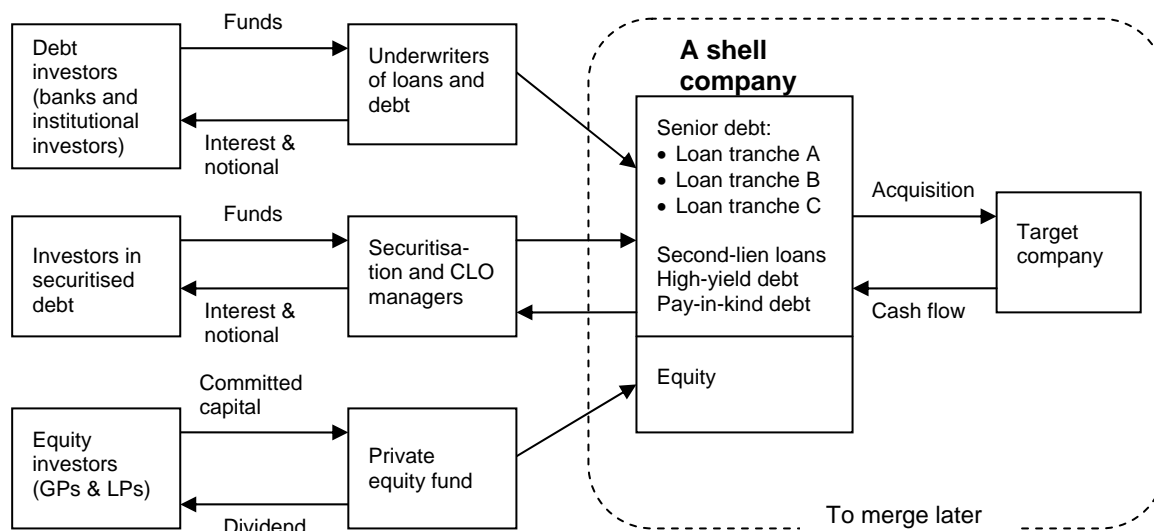
A second form of warehouse risk is associated with the financing of CLOs. A CLO vehicle in the process of formation buys a fraction of the total amount of loans it expects to fund, financing the purchases with a bank line of credit. Some of the CLOs that were assembling loans in mid-2007 saw their equity tranche wiped out by the decline in the market value of loans in their warehouse. This forced banks providing the line of credit to take the collateral, leaving them with even more leveraged loan tranches to distribute. At the time of writing of this report in early 2008, private sector estimates put undistributed global leveraged loan and high-yield debt on bank balance sheets at \$230 billion. With leveraged loan indices trading close to 90 cents on a dollar in March 2008, realisation of warehouse risks has resulted in significant mark to market losses to banks.

### 3. Private equity and leveraged buyouts

A leveraged buyout, which is a subset of M&A activity, is a strategy involving the acquisition of a company using a significant amount of debt financing. LBO deals are dominated by private equity transactions, and the share of debt in such deals can be as high as 90%, but a share of 65–70% is more common. A pictorial representation of a LBO transaction is shown in Graph 3.1.

Graph 3.1

#### Typical structure of a LBO transaction



This section starts with a brief introduction to the private equity market, and then discusses how it differs from the public equity market while highlighting possible risks. Subsequently, it examines recent trends in LBO activity by analysing how it has varied over time and whether risk characteristics and deal structures have changed substantially in this decade. Where appropriate, the possible impact of recent market developments on LBO activity going forward is explored.

#### 3.1 The private equity market

Private equity, in broad terms, refers to the holding of stock in unlisted companies. Categories of private equity investment include venture capital, buyouts and restructuring. Venture capital provides equity funding to younger, small and relatively high-risk companies with strong growth potential. Leveraged buyouts and restructuring deals, on the other hand, are usually targeted towards more mature firms where substantial gains in operational efficiency are likely to materialise. Buyout deals are structured by using a significant amount of debt financing to acquire the target company, with the assets of the acquired firm serving as collateral.<sup>11</sup> The equity capital invested in the acquired firm by deal sponsors is generally recouped after three to seven years using one or more of the following options: dividend

<sup>11</sup> Differential tax treatment of debt versus equity offers another incentive for private equity firms to conduct leveraged buyouts. Because interest costs are deductible from profits, increased leverage can effectively reduce taxable income. Public companies cannot always exercise this option as they may face shareholder opposition to the aggressive use of debt.

recapitalisation;<sup>12</sup> selling the firm to corporate buyers or other private equity firms; or an initial public offering. Private equity also has a role in providing “change capital” through restructuring or refocusing an existing business.

Private equity is now categorised as an alternative investment, an asset class that is often thought to offer improved risk-return trade-offs and diversification benefits relative to investments in publicly traded equity. Substantial institutional investor funds have flowed into this asset class. As a result, global LBO fund-raising, which constitutes a dominant share of funds committed to private equity, increased from less than \$100 billion in 2004 to more than \$200 billion in 2007.<sup>13</sup> In the United States, for example, commitments to private equity funds reached 1.1% of the stock market capitalisation in 2006, almost double what was committed in 1987.

### **3.1.1 Public versus private equity**

Much debate has focused on the advantages private equity-controlled businesses offer over public ownership. One potential advantage is that private ownership of a firm may mitigate some agency problems in corporate governance. A private equity investor with a controlling interest in a firm may be able to provide a high level of management oversight and put in place an effective corporate governance structure. By contrast, some large investors in public companies are restricted under securities commission regulations from active management participation or board representation as this would make them insiders. Some techniques for improving firm performance include direct oversight of managers by investors, well designed pay-for-performance packages for managers and preventing the cross-subsidisation of weak business units by strong ones.

Private equity firms also seek to limit inefficient use of free cash flows. Managers of public companies that produce large operating profits but lack good investment opportunities may have strong incentives to retain the excess cash and invest it in low-return projects rather than returning it to shareholders. In firms acquired through an LBO, a larger share of operating cash flows is used to service debt payments. Finally, the private equity model may promote long-term decision-making as the requirement to meet short-term earnings expectations is avoided.

Notwithstanding these benefits, it is not clear why these problems could not be resolved in a publicly owned company. For example, there is no reason why such companies could not offer significant pay-for-performance packages, prevent cross-subsidisation across business units or avoid inefficient use of free cash flows. Moreover, it is possible that private equity, while solving some agency problems, might create others. For example, given that the general partners’ (GPs’) share in the private equity fund is generally only 1–3%, there is a risk of a principal-agent problem between the GPs and limited partners (LPs).<sup>14</sup>

The ability to realise substantial profits on buyout deals early through dividend recapitalisations also creates incentives for GPs to act in a manner that is detrimental to the interest of the debt holders. Recapitalisations also reduce the size of the equity stake,

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<sup>12</sup> In recapitalisation, a firm incurs new debt in order to pay a special dividend to private equity investors or other shareholders. Private equity investors typically use a dividend recapitalisation as an alternative to selling their equity stake in a company or to recoup some or all of the money they used to purchase their stake in the business.

<sup>13</sup> The actual investments are only a fraction of the total funds committed.

<sup>14</sup> A private equity fund is usually set up as a limited liability partnership (LLP); managers that run LLPs are known as GPs while investors in the fund are known as LPs.

diminishing incentives to monitor the acquired firm.<sup>15</sup> In fact, the view that private equity can resolve conflicts in corporate governance and foster greater efficiency of firms has come under scrutiny of late. In particular, it has been observed that private equity firms have recently sought an early exit strategy, much like activist funds, and that higher returns have been obtained through increased leverage.

Finally, as companies controlled by private equity firms escape market surveillance, there is also some concern that capital markets' efficiency may be adversely affected when large corporates are taken private. This, in turn, might reduce investment opportunities to retail investors or even pension funds that do not have the expertise or mandate to invest in private equity. However, considering that the market capitalisation of LBO deals has been less than 2% of public stock market capitalisation, this concern seems exaggerated.

### **3.1.2 Sources of risk from private equity markets**

Empirical evidence on inflows of resources to private equity funds suggests that these are linked to the past performance of the fund. Furthermore, new partnerships are more likely to be started in periods after the industry has performed particularly well, but they tend to perform poorly afterwards. This evidence suggests that the private equity industry is inherently cyclical and that after periods of high returns the private equity market might be characterised by a situation in which too much money is chasing too few deals. Finally, the growth in the private equity market and the desire to do larger LBO deals are also influenced by the following factors: the limited downside risk for GPs; treatment of carried interest as capital gains, resulting in lower tax rates for GPs; and a management fee that is a fixed percentage of invested capital. These factors point to incentive structures that encourage excessive risk-taking by GPs in the private equity market.

Another source of risk from private equity firms arises from their limited financial disclosure practices and a lack of transparency of their operations in relation to public firms. Given the importance of transparency for market functioning, and the close links between transparency and market liquidity, the lack of adequate disclosure and transparency among private equity firms is a source of concern. In this context, improved standards of transparency for reporting and governance, as well as objectives, would be a desirable practice that private equity firms should aim to achieve.

## **3.2 Trends and characteristics of LBO activity**

Large numbers of LBO deals first began to occur in North America in the mid-1980s. A deep market for publicly issued high-yield bonds developed at that time, which made it possible to obtain debt financing for large LBO deals. European LBO activity picked up in the late 1990s, and deal volumes are now comparable to the North American market (Graph 3.2, left-hand panel). Average deal sizes increased in the United States from \$350 million in 2000 to \$1.3 billion in 2006, while in Europe average deal size increased from €380 million in 1998–2005 to €490 million in 2006. In Australia, the average deal size was \$500 million in 2006. Roughly 17% of LBO deals in 2007 involved firms bought for more than \$1 billion.

Global LBO volumes as a share of M&A activity rose from 2% in 2000 to 19% in 2006, but fell to 14% in 2007.<sup>16</sup> Despite the rapid increase in LBO volumes in recent years, relative to

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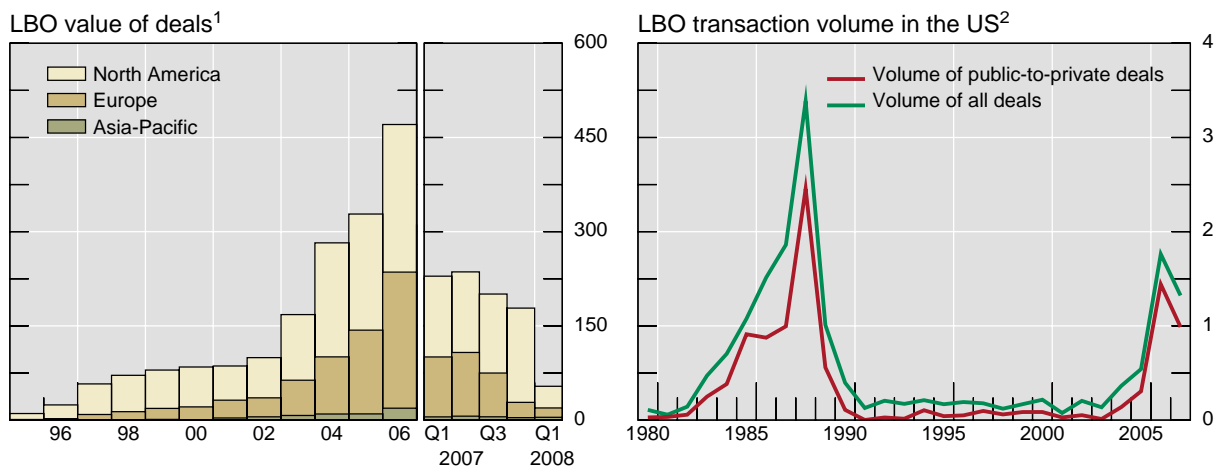
<sup>15</sup> Such refinancings appear contrary to the agency mitigation motive of private equity firms. That is, the low debt financing cost and the tax shield motives appear to be increasingly driving LBO activity, rather than the desire to resolve the free cash flow and management oversight problems that some public companies with strong revenues might face.

<sup>16</sup> These estimates are based on data from Thomson Financial.

the stock market capitalisation, current LBO volumes are lower than those observed in the late 1980s in the United States (Graph 3.2, right-hand panel). Nevertheless, the similarity in trends between 1987–89 and 2006–07 is less comforting given that the United States entered a recession not long after the sharp drop in LBO activity seen in the earlier period, which subsequently generated a large number of corporate defaults in the early 1990s. In this context, the sharp decline in LBO deal volumes seen since mid-2007 might well provide an early warning of a possible weakening of financing conditions for the broader corporate sector with implications for the real economy.

Graph 3.2

**Trends in LBO activity**



<sup>1</sup> Sum of loans and bonds in billions of US dollars; geographical areas are based on borrower parent nationality. <sup>2</sup> Relative to the total US stock market capitalisation; in per cent.

Sources: Dealogic; CRSP; Thomson SDC.

Until mid-2007, the growth in LBO activity was largely driven by very favourable macroeconomic conditions, low global risk-free interest rates and abundant market liquidity. This generated a “search for yield” environment leading to low credit spreads, particularly for debt with lower credit ratings. This search for yield phenomenon and the structural changes in debt markets (discussed in more detail in Section 4) led to a compression of credit spreads, particularly for lower rated debt instruments, including high-yield bonds and leveraged loans (see Graph 2.5 right-hand panel for B+ rated leveraged loan spreads). For example, the average credit spread between high-yield and investment grade corporate bonds declined to 250 basis points over 2004 to mid-2007, roughly 150 basis points below the long-term average over the period 1987–2007. Another contributor to low debt financing costs was a structural demand for leveraged loans created by the development of securitisation vehicles for such loans (Section 4 discusses the role of securitisation vehicles in greater detail).

The resulting low corporate debt costs, in conjunction with high equity earnings yields (due to strong corporate profit growth in recent years not matched by increases in equity prices), made leveraged acquisitions attractive. This is because LBO deals take advantage of the yield gap between equity investments and debt financing.<sup>17</sup> In normal market conditions, capital cost tends to rise substantially after reaching an optimal debt ratio reflecting a higher risk premium enforced by investors (Graph 3.3, left-hand panel).<sup>18</sup> Until mid-2007, capital

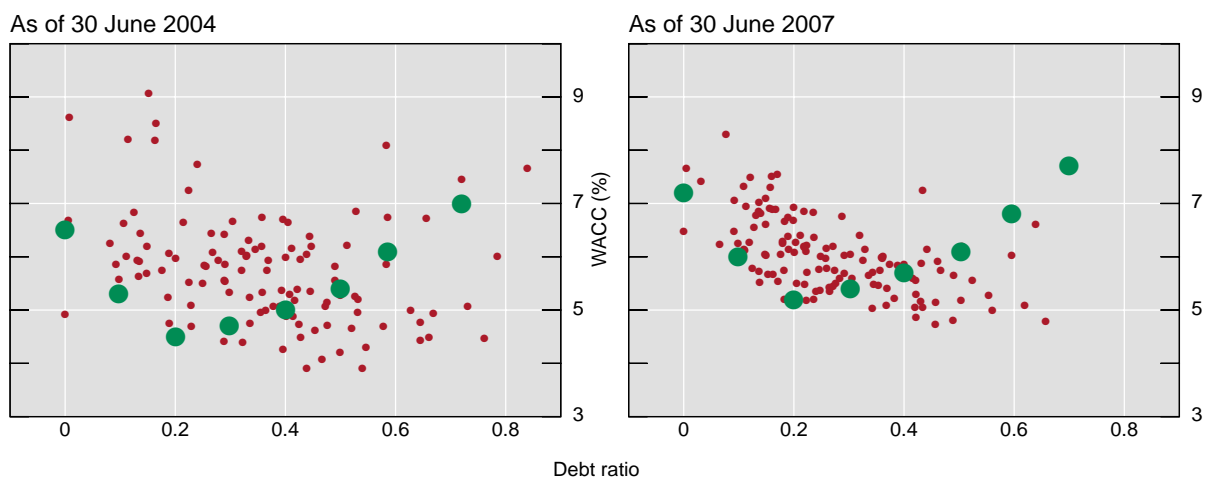
<sup>17</sup> See, for example, OECD, *The private equity boom: causes and policy issues*, May 2007.

<sup>18</sup> The shape of the weighted average cost of capital (WACC) curve is sensitive to assumptions about the tax rate and the equity risk premium. The lower the tax rate, the less attractive the debt financing. With lower tax

costs for European corporates remained largely flat or even declined with rising debt ratios suggesting that incentives to increase leverage existed (Graph 3.3, right-hand panel).<sup>19</sup> Since then, the cost of capital has begun to increase, although moderately, with rising debt levels perhaps reflecting a return to normalisation of markets' perception of risk. Another noteworthy trend in the LBO activity seen until mid-2007 was the increased frequency of dividend recapitalisations, which sometimes occurred within two to three years after taking a company private, and the rising share of LBOs.

Graph 3.3

### Weighted average cost of capital for European corporates



Weighted average costs of capital (WACC) are calculated individually for a sample of 112 (lhp)/123 (rhp) non-financial corporates that are included both in the MSCI Europe and in the iTraxx indices. Cost of debt is based on CDS data. The bigger data points reflect a more typical WACC curve shape. The assumptions are a tax rate of 30% and an equity risk premium of 2.5%.

Sources: Bloomberg; Thomson Datastream; Deutsche Bundesbank calculations.

In the light of the recent market turmoil, global LBO deal volumes fell by more than 15% in the second half of 2007 compared to the first half of that year (see Graph 3.2, left-hand panel). It is possible that this estimate, based on Dealogic data, underestimates the actual decline in LBO deal volumes in the second half of 2007 because they are assigned to the credit distribution date rather than the announcement date of the deal. With the appetite for large deals falling considerably since mid-2007, LBO activity in the next few years is most likely to be driven by smaller deals.

#### 3.2.1 Purchase price and leverage multiples

LBO activity until mid-2007 affected not only the amount of deals in the M&A marketplace, but also their value, raising purchase prices and purchase price multiples paid for acquisitions (Graph 3.4, left-hand panel). The willingness to pay higher prices for target

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rates, the WACC curve shifts upward and gets steeper for firms with high leverage since the cost of debt accounts for a larger fraction of the overall cost of capital. The lower the equity risk premium, the cheaper equity finance becomes and the flatter the curve is for firms with relatively low leverage. Furthermore, the shape of the curve depends on characteristics of sample firms such as industry affiliation and firm age.

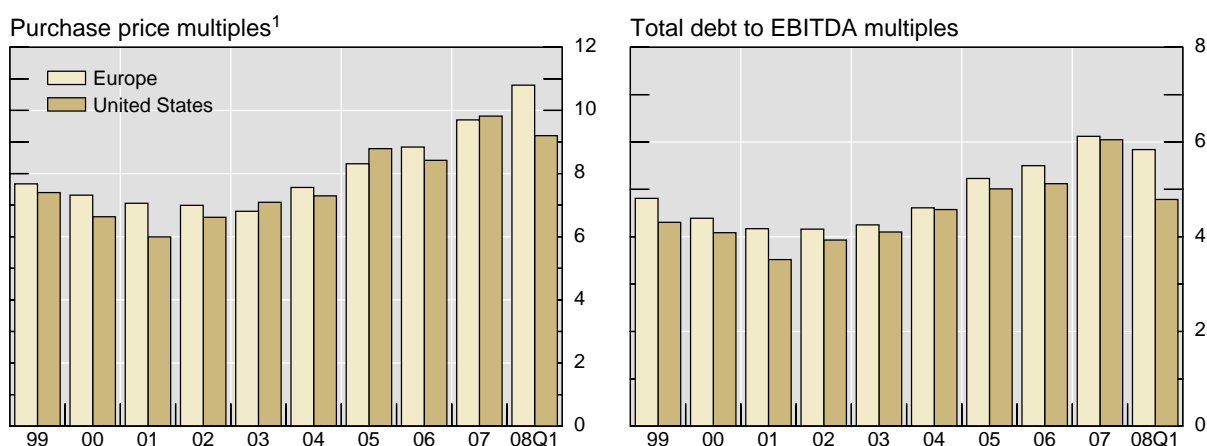
<sup>19</sup> When equity is viewed as undervalued and debt is cheap, equity retirements in the form of share repurchases by firms should also be on the rise. In fact, not only have private equity firms been buying public companies, but public firms themselves have been reducing equity capital through debt-financed share repurchases. In some cases, public firms use excess cash flows and moderate levels of debt to repurchase shares to make acquisitions by private equity firms less attractive. Historical evidence, however, suggests that despite favourable debt financing conditions, mature public firms do not alter their leverage ratio frequently.

companies appears to be a consequence of the high levels of private equity commitments. This allowed private equity firms to employ more equity capital for acquisitions even when purchase price multiples were higher. In fact, the average equity contribution to LBO deals in 2004–07 was between 30% and 35% in the United States, compared to 10–15% in 1987–89.

The riskiness of LBO deals, measured in terms of the debt-to-earnings ratio, has also risen in recent years, exhibiting a pattern similar to purchase price multiples (Graph 3.4, right-hand panel). The compensation for risk, measured in terms of the spreads on institutional loan tranches per unit of leverage, has fallen in recent years, reinforcing the view that growth in LBO activity has benefited from low levels of risk aversion in the leveraged loan market (Graph 3.5, left-hand panel). Since mid-2007, this trend has reversed and the risk compensation demanded by investors has risen sharply.

Graph 3.4

**Purchase price and leverage multiples for LBO deals**



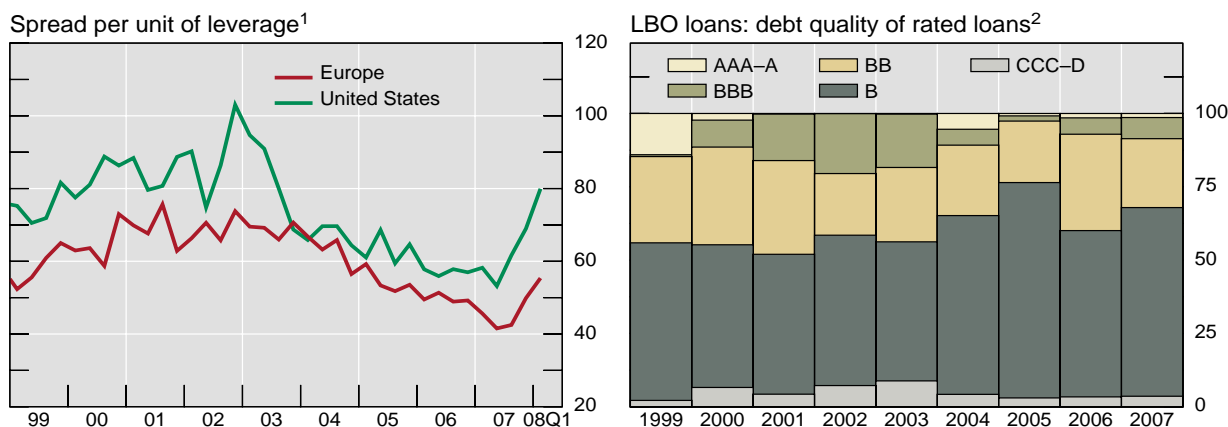
<sup>1</sup> Purchase price is presented as a multiple of earnings before interest, taxes, depreciation and amortisation (EBITDA).

Source: Standard & Poor's LCD.

The low levels of investor risk aversion that prevailed until mid-2007 encouraged LBO deals to be structured with lower credit quality loans (Graph 3.5, right-hand panel). However, given the varying levels of leveraged loan ratings coverage across geographical areas and over time, it is difficult to infer the trend in the overall credit quality of LBO loans.

Graph 3.5

**Decline in risk compensation and credit quality of leveraged loans**



<sup>1</sup> Weighted average institutional spread divided by total debt leverage ratios; in basis points. <sup>2</sup> In per cent.

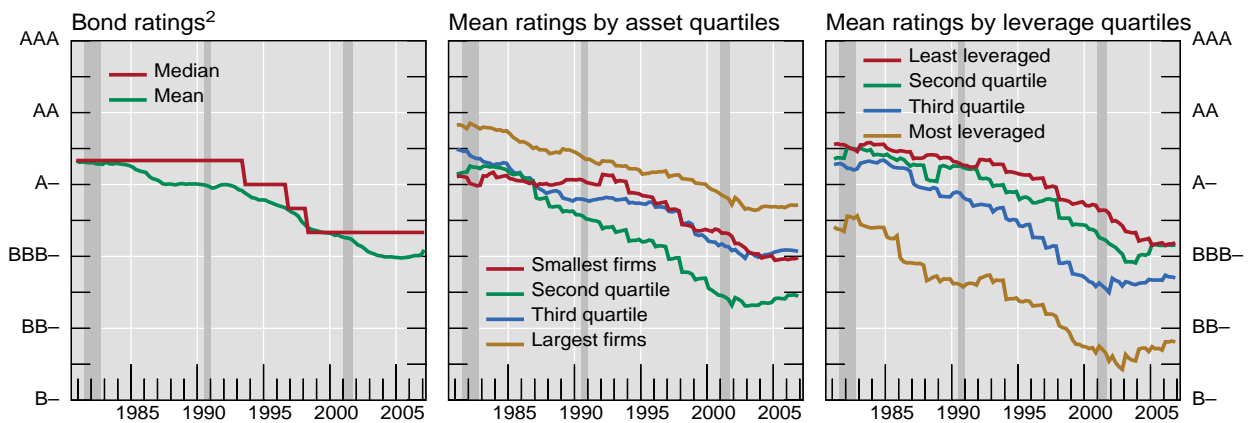
Sources: Dealogic; Standard & Poor's LCD.

### 3.2.2 LBOs versus aggregate trends in firm credit risk

The increased risks in LBO transactions documented above have occurred at a time when the aggregate level of corporate credit risk (as measured by ratings) has been trending upwards. For example, in the United States the median issuer rating for firms with public debt in 2006 was BBB-, whereas in 1995 it was A- (Graph 3.6, left-hand panel). The trend is also evident when one tries to control for the asset size of the firm (Graph 3.6, centre panel) or the degree of leverage of the firm (Graph 3.6, right-hand panel). It is possible that the large increase in LBO debt issuance, in conjunction with a greater proportion of loans being rated, has contributed to the recent deterioration in aggregate firm credit risk. Moreover, a large share of total bond issuance in 2005–07 was rated speculative grade and used to finance LBO deals and other M&A activity. However, the long-term downward trend in median issuer rating is a likely sign of structurally greater institutional investor appetite for lower credit quality firms.

Graph 3.6

#### Composite credit ratings of US corporates<sup>1</sup>

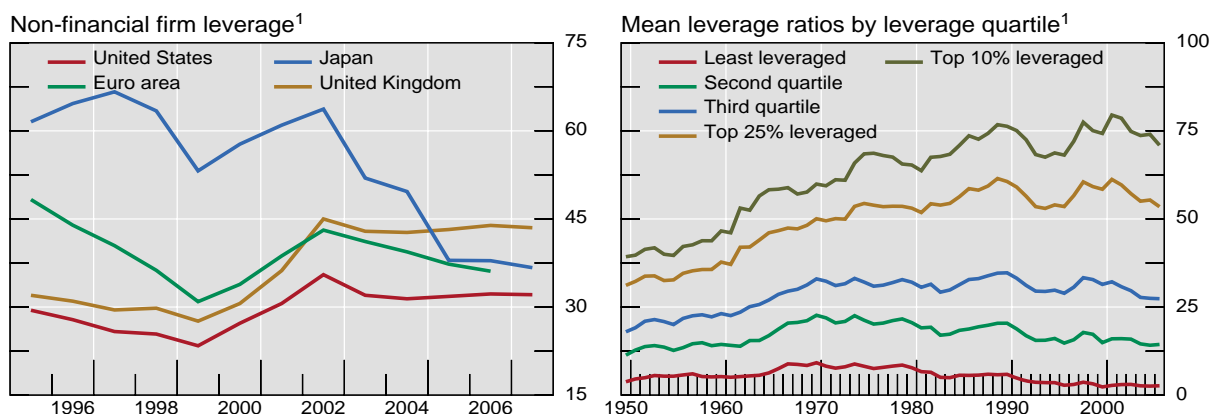


<sup>1</sup> The shaded areas represent NBER recession dates. <sup>2</sup> Composite bond ratings for firms with public debt.

Source: Standard & Poor's.

Graph 3.7

#### Evolution of corporate firm leverage



<sup>1</sup> In per cent.

Sources: Standard & Poor's; national data.

In contrast to the decline in credit quality of corporate debt, leverage levels for the non-financial sector have shown no noticeable increase or have even declined since 2002 (Graph

3.7). However, it is difficult to assess the impact of LBO activity on aggregate corporate leverage.

Box 3.A

**Propensity of LBO firms to default**

To assess the propensity of LBO firms to default compared to their public firm counterparts, the Working Group examined company debt defaults from Standard & Poor's CreditPro database from 1981 to 2007. Using Compustat data the quarter before the LBOs were announced, 650 LBO firms were matched to their proxy public firms using the four-digit SIC industry code. Matches were then restricted to a maximum of five public firms that were closest in terms of asset size.

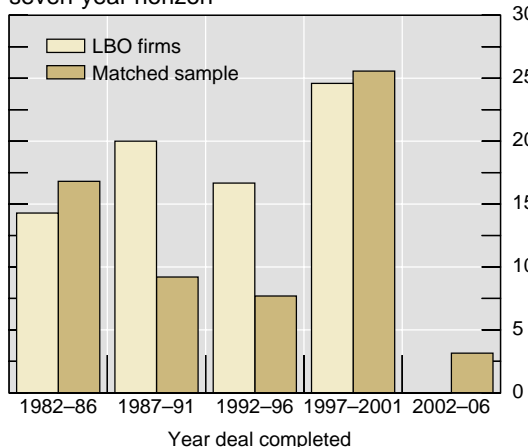
Looking at the default pattern over time, there are two noteworthy episodes of higher default activity. The first is the buyout transactions announced between 1987 and 1991, which experienced a subsequent cumulative default rate of 20% over a seven-year horizon, more than twice the default rate of their matched public counterparts. The second is the buyouts between 1997 and 2001, with a cumulative default rate of 25%. In contrast to the late 1980s buyouts, the default rate among LBO firms and their public firm counterparts was very similar for the late 1990s sample (Graph 3.A, left-hand panel).

To investigate how the propensity to default varies over time, the distribution of default times of LBO firms and their matched sample of public firms was computed (Graph 3.A, right-hand panel). A default time of three years in this graph indicates that the LBO firm defaulted between three and four years after going private. The observed pattern of defaults of LBO firms suggests that the propensity to default is highest between two and five years after the LBO transaction. Even when the sample size is limited to deals completed after 1990, the default time distribution pattern remains very similar.

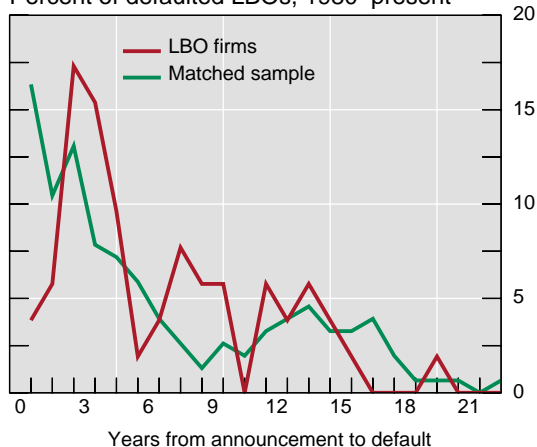
Graph 3.A

**Propensity to default across LBO and matched public firms**

Default rates by five-year cohort:  
seven-year horizon<sup>1</sup>



Percent of defaulted LBOs, 1980-present



<sup>1</sup> In per cent.

Source: Standard & Poor's.

As regards a firm's vulnerability to default, historical experience has shown that despite the higher leverage of LBO firms, their default rates have not been consistently higher than those of similar publicly traded firms (see Box 3.A). It is noteworthy that the propensity to default for LBO firms is high two to four years after going private, and the recent cyclical downturn in economic activity is likely to generate greater than usual defaults. In fact, LBO firms whose buyout deals were completed in the late 1980s demonstrated a significantly higher

propensity to default compared to similar publicly traded firms when economic activity weakened.

Since July 2007, the number of LBO deals has declined sharply as credit market conditions have deteriorated. Leveraged loan spreads were more than 250 basis points higher in the first quarter of 2008 than average levels in the first half of 2007, while high-yield bond spreads rose by almost 400 basis points in the same period. Rating agencies are forecasting corporate default rates to rise from around 1% in 2007 to 4% in 2008, but rates could be worse if macroeconomic conditions deteriorate further. Default rates for LBO firms, which are highly leveraged, can be significantly higher than this estimate. This will depend to a large extent on whether the slowdown in the primary market for leveraged loans is protracted and restricts the ability of LBO and other risky firms to refinance maturing debt.

## 4. Investors and investment vehicles

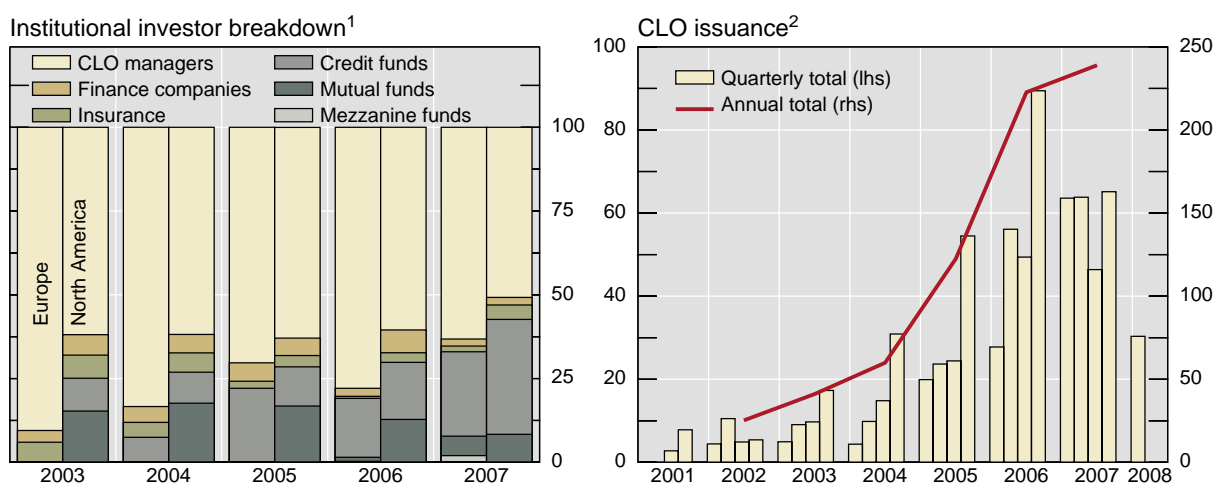
Two concurrent developments have facilitated the increase in institutional investors' share of the leveraged loan market: the evolution of bank business models from "buy and hold" to "originate to distribute", and a rising demand for securitised products in recent years, some of which include leveraged loans as collateral assets. These developments have in turn raised a number of questions: (i) What factors have contributed to a shift in investor composition for leveraged loans? (ii) What role have investment vehicles played in the growth of the leveraged loan market? (iii) Have CLOs influenced the size and characteristics (eg pricing, structure, liquidity and product mix) of the leveraged loan market? This section attempts to shed some light on these issues based on information gathered from a stocktaking of existing literature and interviews with CLO managers.

### 4.1 Factors contributing to a shift in the investor base

The evolution of bank business models in anticipation of new standards for computing regulatory capital charges, and the growth in structured finance products that satisfy the risk-return preferences of diverse investors, are key structural factors behind the observed shift in the investor base for leveraged loans (Graph 4.1, left-hand panel). Important cyclical factors include low default rates and low interest rates.

Graph 4.1

#### Broadening of investor base and growth of CLO vehicles



<sup>1</sup> In per cent. <sup>2</sup> In billions of US dollars.

Sources: JPMorgan Chase; Standard and Poor's LCD.

#### 4.1.1 Structural factors

As noted earlier, banks' share of leveraged loans in the primary market has declined sharply this decade. This has been primarily driven by banks shifting to an OTD business model so that loan syndications are primarily seen as a fee-generating activity. The change in business model occurred in part because of their economic capital allocation decisions and because of Basel II rules, which provide an incentive for banks to transfer non-investment grade exposures to other investors, who might evaluate risk-reward benefits differently.

Innovation in the market for structured finance products has been another important structural factor contributing to a broadening of the investor base for leveraged loans. Because institutional investors like pension funds, insurance firms and asset managers face investment restrictions on exposure to non-investment grade credits, leveraged loans were

usually not part of their investment universe. Structured finance has, however, facilitated the creation of marketable securities, some of which are rated AA or AAA, from an asset pool through a process called tranching. Consequently, investors with widely varying risk-return objectives can buy the claims to cash flows linked to the same collateral pool of assets but with differing priorities. Collateralised debt obligation (CDO) managers and other credit intermediaries buy leveraged loans and repackage them into tranches with different risk-return objectives, which are sold to a wider investor base.

#### **4.1.2 Cyclical and other factors**

Some cyclical factors appear to have led to the shift in the investor base. Particularly since 2003, the global financial market has witnessed low global interest rates. As investors embarked on a search for yield, driven in part by the higher liability commitments among insurance firms and pension funds, investment vehicles such as CLOs offering higher yields over comparably rated single-name securities became popular. Moreover, strengthening corporate balance sheets supported by robust global growth have kept the default rates of corporate borrowers at cyclical lows since 2003. This in turn has helped investors in CLO equity tranches to earn high returns. In this environment, leveraged loans and securitised products backing these loans have attracted a wider investor base as they have been considered to offer attractive risk-return trade-offs.

There is also some evidence that part of the shift in investor demand for leveraged loans in Europe has occurred at a time when global investors were seeking investments in non-US corporate risk exposures. Furthermore, global investors have been attracted to leveraged loans and CLOs backed by them because of the diversification benefits they offer given their low return correlation with other asset classes. In recent years, ratings of CLO tranches also were more stable than ratings of corporate bonds and many CDOs, although the market turmoil since mid-2007 has shown that under stressed market conditions the rating risk of securitised products is significantly higher. Finally, improved hedging opportunities due to the development of loan credit default swaps as well as their indices, and greater secondary market liquidity in leveraged loans supported by increased trading activity, have also contributed to a broadening of the investor base.

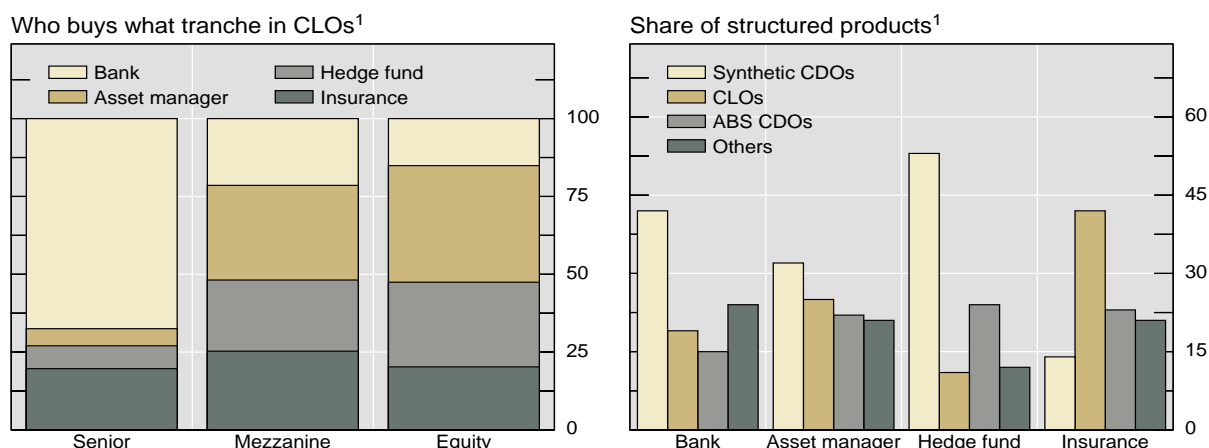
#### **4.2 Role of CLOs and other investment vehicles**

Securitisation vehicles have played an important role in the growth of the leveraged loan market. For example, CLO funds accounted for nearly two thirds of institutional leveraged loan purchases in Europe in 2006, while global issuance of CLOs rose from less than \$100 billion in 2004 to nearly \$250 billion in 2007 (Graph 4.1, right-hand panel). In fact, CLOs have been part of a broader class of securitisation and resecuritisation vehicles that have contributed to a strong demand for leveraged loans (see Box 4.A). Until mid-2007, a substantial part of the demand for CLO senior tranches came from resecuritisation vehicles, such as CDOs of asset-backed securities (ABS CDOs), asset-backed commercial paper (ABCP) conduits and special investment vehicles (SIVs).

Although it has been noted above that banks' share of leveraged loan holdings in the primary market has declined, banks have considerable exposure to the senior tranches of CLOs, perhaps driven by regulatory capital considerations. On the other hand, asset managers and hedge funds hold more of the equity and mezzanine tranches of CLOs because of their greater focus on returns (Graph 4.2, left-hand panel). Insurance firms tend to hold a more balanced exposure across various tranches of the CLOs. In terms of product preferences across securitised assets, insurance firms appear to have a strong appetite for CLOs followed closely by asset managers (Graph 4.2, right-hand panel). In contrast, hedge fund holdings of structured products are characterised by a lower proportion allocated to CLOs (no more than 10% of total), as hedge funds display a notable preference for synthetic CDOs.

Graph 4.2

**Investor share of securitisation products in 2007**



<sup>1</sup> In per cent.

Source: Citigroup.

The demand for CLOs and resecuritisation vehicles among investors has in turn contributed to a rapid increase in the number of CLO vehicles created since the late 1990s, first in the United States and subsequently in Europe. This appears to be driven partly by the favourable pricing differences between the cost of acquiring the assets (leveraged loans) and the cost of issuing the liabilities (notes sold). For example, until mid-2007 the annual excess spread, ie the difference between the yield on the leveraged loans and the interest cost on the liabilities after deducting various fees, was more than 100 basis points for CLOs backing European leveraged loans. Such levels of excess spreads are considered attractive buying opportunities for investors in CLO equity tranches in a period of low corporate defaults. A view widely shared by many market participants the Working Group members interviewed is that CLOs represent an important source of demand for leveraged loans. In the absence of a step-up in demand from other investors, continued loan financing of private equity transactions appears to depend critically on investor demand for CLOs and other investment vehicles that include leveraged loans as collateral assets.

The mechanics of how CLO vehicles operate can also have implications for the functioning of the leveraged loan market. First, CLOs are marketed to investors when the vehicle has acquired a certain fraction (roughly two thirds) of the collateral assets, and the remaining part is typically acquired within a one-year period. This practice transforms some CLO managers into “forced buyers” at certain times, which in turn provides funding opportunities for private equity deals. Second, CLO vehicles are designed to service their liabilities through current coupon income rather than through amortisations. Therefore, CLO managers prefer to buy loans close to par. In market conditions where loans are selling at deep discounts, demand from non-CLO investors would be essential for arranger banks to sell deeply discounted warehoused loans.

The ability of CLO managers to arrange workouts on impaired loans is another channel by which the growth of CLOs may influence leveraged loan market operations. For example, when a loan is impaired, CLO managers are faced with two options: they can either sell the loan in the secondary market or keep the loan in their portfolio and go through a loan workout process. In normal market conditions where default rates are low and secondary market liquidity is abundant, there is no material difference between pursuing either of the strategies. However, during periods of market stress when liquidity is likely to be low, CLO managers lacking workout capabilities may be forced to sell their impaired loans in an illiquid market, driving prices further down. Whether CLO managers who choose to hold distressed loans may impair the workout process will depend on the constraints imposed by their vehicle charters and their ability to hire personnel with workout expertise.

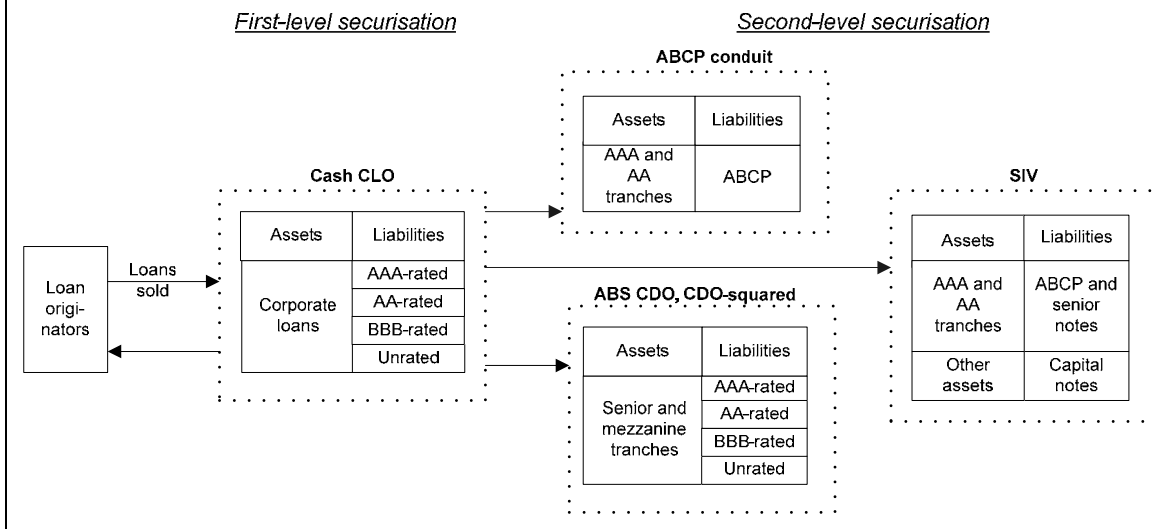
Box 4.A

**The links between CLOs and resecuritisation schemes**

A cash CLO is a securitisation vehicle, usually a special purpose vehicle (SPV) or trust account, that buys corporate loans (mostly leveraged loans) on its asset side and finances this by issuing notes on the liability side. The liabilities consist of several rated tranches and an equity tranche. The desired tranche ratings are achieved through the diversification of the underlying risks, as well as the subordination of junior tranches to protect the more senior note holders, and through other structural features such as overcollateralisation and credit enhancements. Cash CLOs can be classified as a first-level securitisation vehicle, meaning they securitise whole loans rather than buying other asset-backed securities (which is done by some CDOs). Cash CLOs may be further classified either as “static”, implying that collateral assets are not traded, or as “managed” if the CLO manager trades the collateral assets actively. In the case of cash CLOs, the maturities of issued securities must approximately match the collateralised loan maturities. Therefore, CLOs generally face few funding problems once they have been issued because there is very little asset-liability mismatch. As opposed to the loan transfers in a cash CLO, a synthetic CLO transfers the credit risk of loans through credit default swaps while holding government securities or other high-grade securities as collateral assets.

One of the drivers of the recent market expansion in structured finance products has been the re-securitisation or the second-level securitisation vehicles that buy securitised products such as CLOs, residential mortgage-backed securities (RMBSs) and asset-backed securities (ABSs) for their asset pools (Graph 4.A). One could group such re-securitisation vehicles into two categories: those that have a maturity mismatch between the assets and liabilities; and those that do not have this mismatch. Asset-backed commercial paper (ABCP) conduits and structured investment vehicles (SIVs) fall under the first category, whereas ABS CDOs and CDOs of CDOs (“CDO-squared”) fall under the second category. Available information on the asset composition of these re-securitisation vehicles with maturity mismatches indicates that exposures to CLOs are a small proportion of vehicle assets. However, when taken together, these vehicles hold a material proportion of senior cash CLO tranches.

Graph 4.A  
**Securitisation vehicles**



**4.3 Do CLOs influence leveraged loan characteristics?**

In view of the large share of leveraged loans being used as collateral assets in CLOs and other investment vehicles, loan characteristics are likely to be influenced by the preferences of the managers of these vehicles. Moreover, the process of repricing risk in the leveraged

loan market may be influenced by the behaviour of CLO managers who exercise their fiduciary responsibility with respect to the purchase and sale of the leveraged loans. Recent changes in the nature of leveraged loan characteristics, noted in Section 2, seem to be at least partly linked to the operational framework of CLO managers.

First, CLO managers favour longer-term bullet loans because of their more predictable maturities and interest income streams. Hence, the share of pro rata amortisable leveraged loans, traditionally bought by banks, has been progressively declining. Second, the average maturity of term loans has been lengthening. This could be attributed to CLO managers favouring longer-term loans (five to seven years), as this would fit better with the maturity of their liabilities. Third, managers of CLOs and other investment vehicles usually pay floating rates on their liabilities. This is likely to provide incentives to buy leveraged loans that pay floating rates for their collateral assets rather than high-yield bonds, which pay fixed rate coupons.

Another noteworthy development in the leveraged loan market is the increase in the market share of covenant-lite loans in the institutional tranches, which rose from 1% in 2005 to 27% during the first half of 2007. It is possible that CLO manager behaviour might have had a role to play in this development because they have been more receptive to covenant-lite loans than banks, for a number of reasons. First, CLO managers may be less inclined to obtain confidential financial information from the borrower in the context of the operation of maintenance covenants because such information may turn CLO managers into “insiders” under securities regulations. Second, CLO managers may wish to avoid technical defaults that would necessitate a series of formal actions under the CLO mandate, including the disposal of loans in technical default. Finally, market information gathered by Working Group members suggests that newly established CLO managers were often forced to compromise on loan quality or covenants because they had to compete for assets in order to fill portfolios funded by the notes they had issued. A manager who waits to invest under such circumstances earns a negative spread on the uninvested portion of the vehicle, reducing CLO profits in the short run.

The environment of tightening credit spreads observed until mid-2007 also affected leveraged loan characteristics through CLO manager actions. For example, tightening credit spreads trigger faster prepayments of leveraged loans, which amounted to between 10% and 30% of outstanding loans per year. Further, a number of private equity deals have been refinanced or recapitalised in recent years, and private equity sponsors have been selling their acquisitions after two to three years rather than five to seven years, which used to be the norm. These actions also trigger faster prepayments that lead to greater reinvestment risk for CLO managers. During 2006–07, the credit spread on new loans of credit quality similar to that of the prepaid loans typically was lower than the spread on the prepaid loans. CLO managers were faced with the choice to either replace it with a loan of similar quality, but see the excess spread of the balance decrease, or to replace it with a loan with similar spread but of lower credit quality. Consequently, the dynamics created by prepayment may have caused CLO managers to compromise on loan quality in the primary market (especially at times when loans in the secondary market traded at a premium).

Indeed, in the face of tightening of leveraged loan spreads on the asset side (especially in the United States), CLO managers might have had an incentive to invest in more deeply subordinated loans in order to maintain excess spreads in their CLO vehicles at attractive levels for investors in equity tranches.<sup>20</sup> This could have contributed to the average credit

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<sup>20</sup> Data compiled by the Working Group show that 63% of European CLO managers held second-lien loans in 2007, compared to 48% in 2006 and 19% in 2005.

quality of loans backing CLOs deteriorating from BB in 2005 to B+ in 2006 and B in the first half of 2007.

#### **4.4 Impact on CLO issuance from recent market developments**

In the difficult credit market conditions prevailing since July 2007, CLO vehicles have lost appeal to investors. Increased investor risk aversion and valuation uncertainties surrounding structured credit products have contributed to the widening of the credit spreads of such products. As a result, the cost of CLO funding liabilities has increased substantially relative to the yield on the collateral assets, leading to a decline in CLO issuance, especially for the senior tranches. This in turn has affected leveraged loan issuance in the second half of 2007 both in Europe and in the United States. Moreover, demand for CLO liabilities from resecuritisation vehicles, such as ABS CDOs, SIVs and ABCP conduits, has also declined substantially in view of the funding difficulties they face.

CLO issuance showed some signs of recovery during the fourth quarter of 2007 (Graph 4.1, right-hand panel). This is perhaps related to the notable differences that exist between CLOs and resecuritisation schemes, as explained in Box 4.A. In particular, CLOs are a relatively simple form of securitisation whereby leveraged loans are pooled together (or risks of the underlying loans are aggregated through credit derivative transactions in the case of synthetic CLOs) and sliced into tranches with different risk profiles. The CLO collateral pool is more homogeneous than for many CDOs as it is composed primarily of leveraged loans. Finally, the maturity of the CLO liabilities is designed to match the maturity of underlying loans, thereby avoiding rollover risk. This is in contrast to SIVs and ABCP conduits, which have asset-liability mismatches as they seek funding in the short-term money market to hold longer-duration assets.

However, the temporary pickup in CLO issuance towards end-2007 has stalled, and the contraction in new issuance became more evident in the first quarter of 2008 (Graph 4.1, right-hand panel). CLO spreads, while still well below subprime RMBS and ABS CDO spreads, have been rising as economic conditions have weakened further and the risk of a significant increase in speculative grade corporate and LBO firm defaults has risen.

## **5. Risks and financial stability implications**

Until recently, the broadening of the investor base in leveraged finance markets and the growing commitments to private equity funds increased the availability of alternative sources of capital to businesses that have traditionally relied more heavily on bank financing. In this context, the growth in private equity and leveraged finance markets in recent years potentially enhanced the resilience of corporations to funding shocks. The ability of banks and other arrangers to hedge some of the leveraged loan exposures in the loan derivatives market also opened up opportunities to manage warehouse and pipeline risks associated with leveraged finance more efficiently.

Rapid market growth occurred at a time when a search for yield and high risk tolerance prevailed among investors supported by favourable macroeconomic conditions. The major banks that arrange leveraged financings now generally retain a smaller share of the exposure than in previous cycles, which may have weakened their screening and monitoring activities. Market participants and supervisory authorities should be alert to the possibility that the time profile and severity of credit losses may change as a result.

The changing nature, structure and characteristics of the leveraged finance markets have also exposed new risks, some of which have unfolded during the market turmoil since July 2007. This section discusses a number of these and other risks, and assesses to what extent the recent turmoil in financial markets has impaired the functioning of the leveraged finance market. It then draws attention to financial stability implications arising from these developments.

### **5.1 Near-term risks**

#### **5.1.1 Warehouse risk**

Banks continue to play an important role in the origination and distribution of leveraged loans. As investors have reappraised risks embedded within leveraged loans since July 2007 – indeed, within structured credit products in general – banks have been unable to distribute many of the large loans they had committed to fund, and the fee income banks have generated from this activity has declined considerably. Although the amount of undistributed loans and high-yield bonds has steadily declined from the levels seen in August 2007, private sector estimates indicate that about \$160 billion of leveraged loans and \$70 billion of high-yield bonds remained undistributed at end-2007. In one extreme scenario, all of these “warehoused” assets could remain on bank balance sheets. Such an outcome would not only increase bank funding costs and capital requirements, but might also crowd out new lending. Another scenario could be that banks distribute the warehoused loans at substantial discounts, incurring significant losses in the process. In March 2008, traded leveraged loan index prices were suggesting that such discounts could amount to 10% on average.

Losses arising from warehouse exposures appear so far not large enough to represent major balance sheet problems or threats to solvency for the banks in question. For example, a 10% markdown of the warehoused loans and bonds would amount to a \$25 billion loss to banks. This appears modest in relation to the total of about \$200 billion in losses banks have reported since the third quarter of 2007, but it has been concentrated at a few arranger banks. Moreover, undistributed loans on bank balance sheets tie up capital and liquidity, adding to a drag on credit supply, which has the potential to exacerbate any macroeconomic downturn. The magnitude of such credit restraint would depend on a number of factors that appear difficult to assess at present, including balance sheet pressures coming from increased liquidity risks, deteriorating credit quality and higher funding costs.

### **5.1.2 Liquidity and valuation issues**

Increased liquidity of leveraged loans and the availability of secondary market trading prices have improved the transparency of loan portfolio valuations and the ability of banks and other investors to manage portfolio risks. However, the ready availability of prices for some loans has created new challenges for asset valuation. First, valuations of those loans for which market prices are observable may fluctuate in line with changes in liquidity premia. Second, fair values of leveraged loans for which market prices are not available may also be influenced by market-average levels of liquidity premia.<sup>21</sup> Third, a widening valuation gap between loans recorded at accrued book value and mark to market value during periods of general market stress may raise questions about the validity of book values.

The recent market turmoil has sharpened concerns about unexpected consequences of valuations resulting from the use of observed prices in more liquid loan markets. Particularly in market conditions exacerbated by a lack of investor confidence and/or liquidity stress, prices of leveraged loans and loan indices may deviate considerably from their economic fundamentals as liquidity premia rise substantially during periods of market stress. This makes it more difficult for users of financial statements to accurately assess credit risk. For example, investors may interpret a reduction in the market value of portfolios as simply reflecting a deterioration in credit quality, ignoring liquidity effects. Such interpretations may amplify changes in liquidity premia and market stress as investors pull back provision of liquidity to major financial institutions and leveraged loan markets. Hence, valuation uncertainty seems to have been an important factor behind the tightening of funding conditions during the recent turmoil. The extent of the impact of such uncertainty on the leveraged loan market needs to be monitored carefully.

## **5.2 Medium-term risks**

### **5.2.1 Refinancing risk**

Risks associated with leveraged finance are rooted in the relatively high levels of default risk of borrowers in this market. Until mid-2007, LBO firms enjoyed very favourable financing conditions: exceptionally low credit risk premia, a relaxation of lending standards, an increase in the share of riskier loan types and an increase in leverage multiples. While the favourable macroeconomic backdrop supported these lending conditions and kept default rates of borrowers in the high-yield and leveraged loan markets at historical lows, weaker economic growth could trigger an increase in default rates. Given that the bulk of leveraged finance defaults have historically occurred around the time of a contraction in economic activity, the increasing risks of a global slowdown since the latter half of 2007 dictate heightened vigilance for credit risk. In particular, the high leverage multiples enjoyed by LBO firms under the exceptionally favourable financing conditions up to mid-2007 may aggravate problems once cash flow from the underlying business of the firm is eroded by the less favourable economic environment.

Meanwhile, a reduction in investor risk appetite and rising credit risk premia would probably add pressure on LBO firms with substantial debt refinancing needs. Rating agency estimates indicate that more than \$500 billion of leveraged loans and high-yield bonds need to be refinanced between 2008 and 2010.<sup>22</sup> A continuation of the tighter financing conditions seen

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<sup>21</sup> Such fair values frequently are produced by some form of pricing model. When loans were illiquid, loan pricing models focused on fundamentals. However, in recent years the outcomes of these models increasingly have been a reflection of value changes of loan indexes, which reflect (among other things) variations in the liquidity premia.

<sup>22</sup> See Fitch Ratings (2007).

since mid-2007 is likely to affect the prospects for successful refinancings by LBO firms, and this in turn could also contribute to a rise in defaults of LBO firms. This concern has gained further impetus following changes in market sentiment since early 2008, reflecting increased worries about a substantial slowdown of the world economy and the impact this will have on the health of LBO firms.

A lack of investor confidence in structured credit products has also affected demand for leveraged loans from CLO vehicles, which have been important buyers of the loans in recent years. With prospects for a recovery in demand from securitisation vehicles in 2008 remaining uncertain and banks having little capacity to fund new loans, refinancing risk remains a key challenge for many LBO firms. Because the outlook for the leveraged loan markets is still dependent on overall conditions in the market for structured finance products, the risk of a significant increase in LBO firm defaults in the next few years may have risen substantially.

### **5.2.2 *Changes in corporate capital structure***

The structure of LBO deals has shifted in recent years in favour of loans over bonds. Furthermore, increased institutional investor participation in the loan market has changed the terms and conditions of loans, which in some cases has led to weaker loan covenants. The associated changes in the capital structure of corporations might alter the risk-return characteristics of corporate debt. For example, as loans now represent a larger share of firms' debt and therefore enjoy less protection provided by effectively subordinated bonds, loan recovery rates in the future could be lower. This may in turn affect investor behaviour. Institutional investor demand for loans is believed to be motivated by the lower historical correlation of loans with other asset classes and the higher recovery rates on loans than for bonds.

Past data can be used to shed light on the question of expected recovery rates only if the impact of the changing characteristics of loans, such as weaker covenants, and the impact of changes in capital structure can be taken into account through appropriate modelling. As this modelling remains in its early stages, there is greater uncertainty about possible loan recovery rates. Finally, mark to market returns on leveraged loans during the recent credit market turmoil have tracked those on high-yield bonds to a much greater extent than in the past, raising questions about true diversification benefits of loans. Going forward, expectations about correlation patterns and recovery rates may change in the light of different outcomes as financial markets further adjust.

## **5.3 *Longer-term risks and structural influences***

### **5.3.1 *Corporate restructuring and workout mechanisms***

The broadening of the investor base in leveraged finance instruments facilitated by securitisation products largely reflects the positive development that credit risk can be tailored to meet a range of investor risk-return preferences. But this broader variety of investors also entails a greater heterogeneity of creditor objectives. This could lead to frictions in corporate restructuring and workouts. Agreements between creditors were often relatively easy to achieve when creditors were solely banks, but may be less straightforward when non-bank creditors are involved.

Securitisation and credit risk transfer instruments have further complicated the coordination of creditors. Their different objectives may make it more difficult to achieve consensus around the desired form of restructuring or workout. These differences in investor objectives may result in greater uncertainty for creditors about loan recovery rates, although arguably this should be reflected in the market prices of leveraged loans. They may also raise the duration and cost of the debt restructuring process, with potential implications for default risk

and the dynamics of the corporate credit cycle. However, it is important to note that the growth of leveraged finance has taken place against a broadly benign macroeconomic backdrop, and hence, many of these potential effects are untested.

### **5.3.2 Changes to the originate to distribute model**

In recent years, the leveraged finance market has benefited from two concurrent developments: a progressive shift among banks towards an OTD business model; and rapid growth in the market for structured finance products. Although these developments offer a number of benefits to loan originators, investors and borrowers, recent market events have exposed weaknesses in the risk transfer mechanism that is central to the viability and functioning of the OTD model. In fact, banks have ended up with significant direct and indirect exposure to many of the structured investment vehicles and conduits to which risk had apparently been transferred, through contingent credit lines, reputational links and counterparty credit exposures.

Other weaknesses of the OTD model that have surfaced include misaligned incentives along the securitisation line and a lack of transparency about the risks underlying securitised products. It is yet to be seen how modifications to the OTD model to address these weaknesses may affect the terms, conditions and availability of leveraged finance. If the modifications turn out to be substantial, access to funding for private equity deals might be more restrictive while private equity participants' ability to do large LBO deals will be adversely affected.

## **5.4 Implications for financial stability**

The growth of the leveraged finance market has contributed to a broader distribution of credit risk. This has improved the resilience of the financial system. However, private equity and leveraged finance markets may have changed in ways that will affect credit loss rates. For example, when loan originators and creditors operate at arm's length, and when loan originators retain little or no exposure, the screening and monitoring of borrowers' credit quality may suffer. In the leveraged loan market, the emergence of structures such as covenant-lite and pay-in-kind loans may be symptoms of weaknesses in the screening and monitoring of borrowers' credit quality in the market. It remains to be seen how any such weaknesses might impact the default and recovery rates for recently issued leveraged loans in the coming years.

Notwithstanding the rapid market growth of recent years, access to leveraged finance remains subject to fluctuations. One source of such fluctuations is the changing risk appetite of non-bank investors, who have now become the largest purchasers of leveraged loans. In the short term, banks will not be inclined to originate loans unless they are confident of managing loan warehouse exposures. At the same time, conditions in the banking system will also influence activity in the leveraged loan market because banks originate loans, and provide liquidity and bridge financing. As a consequence, costs of funding in the high-yield bond market rise at the same time as costs in the loan market. This might reduce the ability of the high-yield bond market to function as a "spare tyre" during contractions in the leveraged loan market.<sup>23</sup> In fact, issuance contracted in both the leveraged loan and high-yield bond markets during past economic recessions.<sup>24</sup> Overall, the capacity of banks to

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<sup>23</sup> The "spare tyre" analogy was used by Alan Greenspan to describe the lack of non-bank funding sources for corporates in Asia during the Asian financial crisis in the late 1990s.

<sup>24</sup> Whether the contraction is due to the market timing of issuance by corporations unwilling to issue at the high credit spread levels that prevail during recessions, or to quantity rationing, is a matter of continuing debate.

originate loans, and to provide liquidity and bridge financing, is an important precondition for the availability of leveraged finance. This capacity is likely to be influenced by the banks' reassessment of their business model.

Recent market events have shown the close interaction between credit risks on the one hand, and market and liquidity risks on the other. As a result, when the price of any one of these risks increases, market participants now often perceive that the price of all three types of risk has risen. This has increased the chance that financial volatility in one market may spill over into other financial markets or even lead to contractions in credit availability and economic activity.

Going forward, the Working Group believes that enhancing transparency and strengthening risk management practices require special attention. For example, more timely disclosure of balance sheet information might enhance transparency and improve creditors' ability to monitor borrower credit quality. In the area of risk management, improvements in stress testing warrant specific attention. The recent market turmoil has demonstrated that a number of the risks in the leveraged finance market are likely to materialise in combination with other financial market risks in stressed market conditions. At private institutions, stress testing scenarios would have to be reviewed and revised in the light of what has happened. In the public sector, there is a stronger case for developing early warning indicators and devoting more research efforts to modelling the dynamic relationships between risk factors with a view to understanding the interrelationships across markets and their impact on the financial sector.

## Mandate of the Working Group<sup>25</sup>

Leveraged finance markets have undergone dramatic growth in recent years, in large part driven by private equity-sponsored LBOs, substantially increasing their significance for the financial system. This growth has occurred under very favourable market circumstances, characterised by low interest rates, low risk premia and historically low default rates. It remains an open question, however, how these markets will behave if the presently benign circumstances were to deteriorate significantly, especially given that many leveraged finance markets are still in an early stage of development and appear rather untested. More specifically, there is a lack of consistent information on the role, importance and characteristics of the various market participants in the functioning of the private equity and leveraged finance markets. Obtaining such information is complicated by the extensive use of credit risk transfer instruments and by the increasing role of non-regulated entities. All this hampers insight into the channels through which a disruption in these markets could impact financial stability.

To contribute to a better understanding of these issues, the Working Group on *private equity and leveraged finance markets* would primarily:

- I. Provide an overview/stocktaking of existing work in this field, especially concerning:
  - a) the characteristics, structure and operations of leveraged finance markets;
  - b) the role and importance of the main market participants, including private equity firms, institutional investors and investment vehicles;
  - c) the main forces that have driven, and still are driving, the growth of leveraged finance markets, including differentiating between cyclical factors and more permanent structural changes; and
  - d) the potential impact on listed equity markets.
- II. Review the differences in the characteristics of leveraged finance and private equity markets in North America, Europe and Asia.
- III. Identify the aspects of the private equity and leveraged finance markets that give rise to potential financial stability concerns, based on their significance, vulnerability to changing market circumstances and taking into account prevailing risk mitigation techniques.
- IV. To further its understanding of the characteristics of the market and its vulnerabilities, including the potential for contagion through spillover effects to other markets, the Working Group may consider canvassing market participants for their views through a workshop and bilateral interviews after existing work has been reviewed.

The Working Group is expected to report to the CGFS at its meeting in March 2008.

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<sup>25</sup> The mandate was approved by the CGFS in March 2007.

## References

- Bank of France (2005): "Risks associated with the sharp increase in LBOs in Europe", *Financial Stability Review*, no 7, November.
- (2006): "Are risk transfer mechanisms sufficiently robust?", *Financial Stability Review*, no 9, December.
- Blundell-Wignall, A (2007): "The private equity boom: causes and policy issues", OECD, May.
- Cao, J and J Lerner (2007): "The performance of reverse leveraged buyouts", Boston College, working paper.
- Citigroup (2004): *The CLO handbook*, February.
- (2005): *Leveraged loan handbook: a guide to the corporate loan market*, June.
- (2007): "Who buys what in structured credit?", *Global structured credit strategy*, June.
- Committee on the Global Financial System (2003): *Credit risk transfer*, Bank for International Settlements.
- Cotter, J F and S W Peck (2001): "The structure of debt and active equity investors: the case of the buyout specialist", *Journal of Financial Economics*, vol 59, pp 101–47.
- Derivative Fitch (2007): "European CLO asset managers – survival of the fittest", *Structured credit special report*, January.
- Deutsche Bundesbank (2007): "Leveraged buyouts: the role of financial intermediaries and aspects of financial stability", *Monthly Report*, April.
- European Central Bank (2007): *Large banks and private equity-sponsored leveraged buyouts in the EU*, April.
- Financial Services Authority (2006): "Private equity: a discussion of risk and regulatory engagement", *Discussion Papers*, no 06/6, November.
- Fitch Ratings (2006): "Rating event risk: implications for LBO transactions", *Special Report*, November.
- (2006): "CLOs more concentrated in shareholder-friendly and covenant light loans", *Credit Markets Research*, December.
- (2007): "Loan issuance boom shifts refinancing risk strongly to loan markets", *Credit Markets Research*, July.
- Goldman Sachs (2007): "Private equity 'barbarians' are bigger and bolder, but not bad", *Global Economics Weekly*, no 07/10, March.
- IOSCO (2007): *Technical committee consultation report on private equity*, November.
- Jensen, M (1986): "Agency costs of free cash flow, corporate finance and takeovers", *American Economic Review*, vol 76(2), pp 323–9.
- Kaplan, S and A Schoar (2005): "Private equity performance: returns, persistence and capital flows", *Journal of Finance*, vol 60(4), pp 1791–1823.
- Keller, J (2007): "Agency problems in structured finance – a case study of European CLOs", National Bank of Belgium, mimeo.
- Lehman Brothers (2006): "European leveraged loan and CLO market", *Fixed Income Research*, October.
- McKinsey Global Institute (2007): *Private equity: eclipsing public capital markets?*, October.

- Mehran, H and S Peristiani (2007): *Financial visibility and the decision to go private*, Federal Reserve Bank of New York, mimeo.
- Mehran, H, S Peristiani, and G Zanjani (2007): *Leveraged buyouts, 1982–2007: what the past tells us about the current boom*, Federal Reserve Bank of New York, mimeo.
- Milken Institute (2004): *The US leveraged loan market: a primer*, October.
- Moody's Investors Service (2006): "Default and migration rates for private equity-sponsored issuers", special comment, November.
- Morgan Stanley (2006): "Morgan Stanley roundtable on private equity and its import for public companies", *Journal of Applied Corporate Finance*, vol 18, no 3, Summer.
- (2006): "Private equity", *Journal of Applied Corporate Finance*, vol 18, no 3, Summer.
- Reserve Bank of Australia (2007): "Private equity in Australia", *Financial Stability Review*, March.
- Riksbank (2005): "Private equity investment companies in Sweden", *Financial Stability Report*, January.
- Standard & Poor's (2007): *A guide to the loan market*, October.
- Wright, M, A Burrows, R Ball, L Scholes, M Burdett and K Tune (2006): *Management buy-outs 1986–2006: past achievements, future challenges*, Centre for Management Buy-Out Research, June.
- Wright, M, A Burrows, R Ball, L Scholes, M Meuleman, K Amess (2007): *The implications of alternative investment vehicles for corporate governance: a survey of empirical research*, OECD, July.
- Wright, M, L Rennboog, T Simons and L Scholes (2006): "Leveraged buyouts in the UK and continental Europe: retrospect and prospect", *Finance Working Paper*, no 126/2006, ECGI, July.

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