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## Private Equity: Boom and Bust?

by Viral V. Acharya, Julian Franks, and Henri Servaes,  
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**T**he private equity or the leveraged buyout (LBO) market has grown enormously over the last two decades. In 1991, new transactions were \$7.5 billion and by the latter part of 2005 and first part of 2006 they had reached \$500 billion. This annualized total is equivalent to 5% of the capitalization of the U.S. stock market and 1.4% of global GDP.<sup>1</sup>

Although the number of transactions has grown significantly, the striking feature is the growth in the value of both individual and aggregate transactions. In the U.S. the number of transactions almost doubled between 2000 and 2005, while the value rose four times (see Figure 1 for a history of these numbers from 1983-2003). This growth in value reflects the ability of private equity funds to finance large individual transactions, including purchases like the following: Harrah's Entertainment for \$27.4 billion (by Apollo and Texas Pacific); Freescale SemiConductor for \$17.6 billion (by

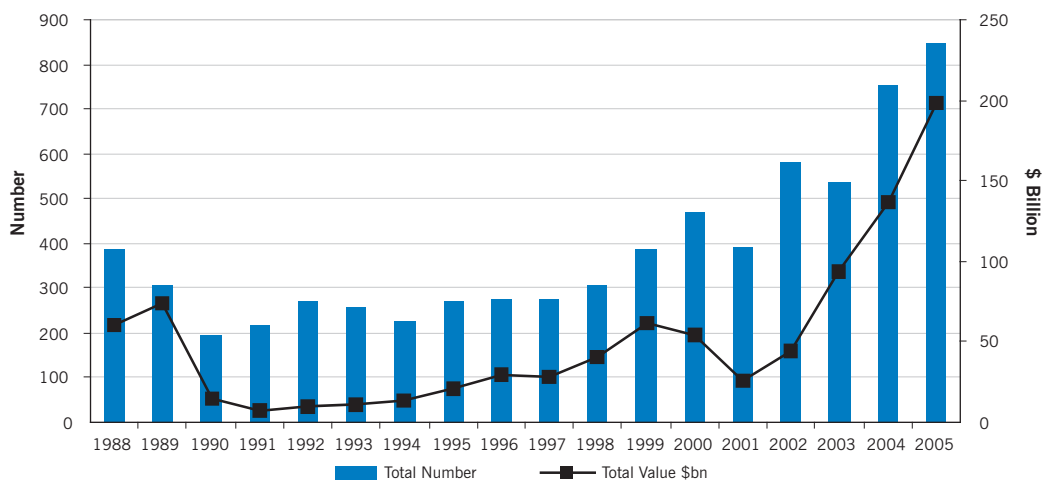
Blackstone, Carlyle, Permira and Texas Pacific); Hertz for \$15 billion (by Carlyle, Clayton Dubilier & Rice, Merrill Lynch); and BAA for \$20 billion (by Ferrovial and others). With the exception of the last transaction, which was a U.K. listed company acquired by Spanish interests, all the targets were U.S. companies.

A second feature of the market is the growth of private equity in Europe (as shown in Figures 2 and 3) from almost nothing in the 1980s to levels that are not very different from those of the U.S. For example, in 2005 new transactions in Europe totalled about €120 billion (\$140 billion at end of 2005 exchange rates), as compared to \$200 billion in the U.S. The European transactions were largely concentrated in the U.K., Germany, and France.<sup>2</sup>

Chief among the factors contributing to this boom have been the abundant liquidity in the credit market, the tremendous growth of private equity funds, and the rise in the

Figure 1 **U.S. Buy-outs**

Number and Value



Source: Thomson Financial and CMBOR

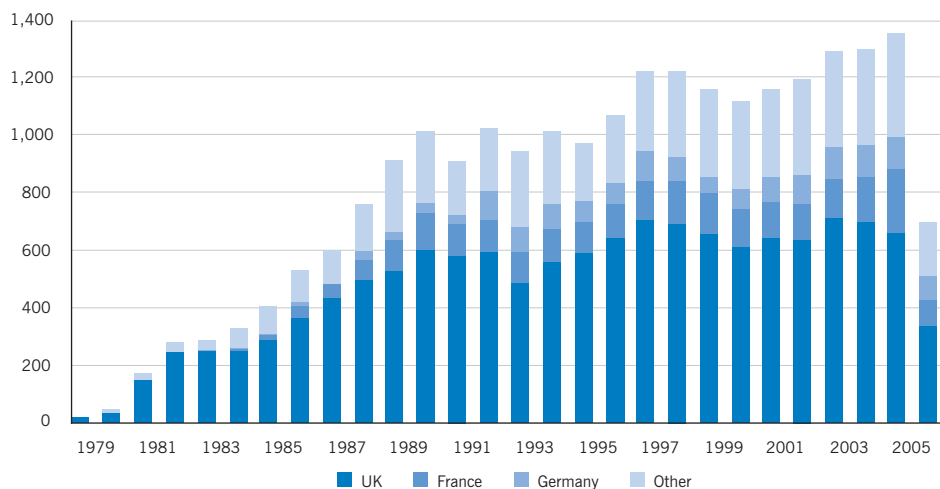
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for research assistance.

1. Source of statistics: Thomson Financial.

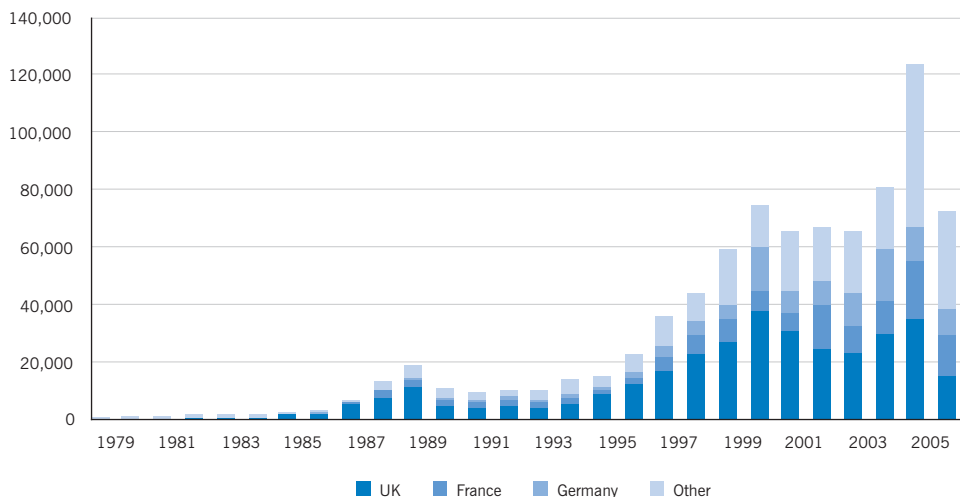
2. For an overview of the European LBO market, see Wright, Renneboog, Simons, and Scholes (2006), "Leveraged Buyouts in the U.K. and Continental Europe: Retro- >>

Figure 2 Total European Buy-out Numbers



Source: CMBOR \*2006 – first 6 months only

Figure 3 Total European Buy-out Value (€ million)



Source: \*2006 – first 6 months only

importance of hedge funds. The credit market, in particular, experienced an explosion in liquidity from 2003 until the start of the collapse of the subprime market in June of 2007, which fueled an unprecedented supply of leverage throughout the global financial system. The main sources of this liquidity boom have been increased levels of investment from petrodollars, huge government surpluses, particularly from Asia,

as well as pension, foundation, and private wealth.<sup>3</sup> What is particularly striking about this most recent boom in liquidity is the growth of investment in alternative products, notably private equity and hedge funds.

Compared with the LBO boom of the late 1980s, which was aided by rising stock prices and the development of the junk bond market, the most recent (2001–2006) LBO boom

spect and Prospects," *Journal of Applied Corporate Finance* 18 (3), 38-55.

3. See Edward Altman (2007), "Global Debt Markets in 2007: New Paradigm or the Great Credit Bubble?" *Journal of Applied Corporate Finance* 19 (3), 17-31.

has been driven primarily by the availability of syndicated bank debt. In 2006, \$125 billion of the \$233 billion of U.S. LBOs were funded by bank loans.<sup>4</sup> A large number of these syndicated loans are then traded in the secondary market or packaged into structured products such as collateralized loan obligations (CLOs). In CLOs the bundled pools of loans are sold to investors in various risk tranches. Searching for different returns from different markets, hedge funds have found fertile ground in the syndicated loan market, especially second-lien and mezzanine debt and payment-in-kind securities. According to Reuters Loan Pricing Corporation, institutions other than banks, but including hedge funds, bought more than 60% of loans issued in 2005.

What are the implications of this increasing size of the LBO market, and its funding with debt that is dispersed after origination to a large number of financial institutions other than the originating banks?

We suggest that there are at least two important implications. First, if loans do not remain the economic risks of the banks that originate them, the originating bankers' incentives to engage in effective screening and monitoring of deals are naturally weakened. This suggests that, as has been the case with subprime lending, there may be some risk of an excess in lending to LBOs as well.<sup>5</sup> While there have been no significant defaults in the LBO deals that occurred since the start of this century, some of the most recent transactions have occurred at very low EBITDA-to-capital ratios, reminiscent of the buyout boom and bust of the 1980s and early 1990s. There is also some evidence that the leverage at which LBO deals have been funded has been high due to the low levels of credit spreads since 2003, a result of the abundant liquidity in credit markets and the new originate-and-sell model of syndicated bank debt. Finally, a number of LBO deals have been funded with debt that has weak covenants, the so-called "covenant-lite" and "covenant-loose" loans. On the one hand, such weak covenants may make default less imminent. On the other hand, they may be a manifestation of weak lending standards and incentives to monitor.

To summarize, the first implication of the changing nature of LBO financing is the possibility that excess lending to LBOs has increased the economic risk that some, if not many, LBO deals may default, while others may face significant refinancing risk. The second implication concerns the opacity in the distribution of LBO debt across financial institutions that results from the originate-and-sell model. The lack of information about the identity of the ultimate holders

of the LBO debt has raised the risk that a few large defaults of LBO deals could cause a drying up of new funding for financial institutions. In view of the large numbers of institutional lenders and holders of securitized paper, such defaults would challenge the reorganization and bankruptcy procedures for the first time. But, more importantly, the bigger problem is likely to be that investors and markets (notably, the commercial paper and inter-bank markets) would not know if they are funding institutions with exposures to such losses. The end result could be that the veil covering the repackaging of LBO debt could convert a small shock to the LBO sector into a liquidity crisis for its financiers, which in turn could affect not just the financing and re-financing of LBO deals but also the financing of other asset classes, including lending by banks to public firms.

To an extent, the drying up of LBO financing in the past quarter has largely been the aftermath of an unrelated shock—the subprime lending collapse in the U.S., a small shock compared to the size of the global financial landscape, yet powerful enough to cause a liquidity freeze and a credit squeeze across most assets.<sup>6</sup> Perhaps it has just been sheer luck that some multi-billion mega LBO deals were not the first to trigger a similar crisis. While the strength of the real economy has prevented such an LBO-triggered crisis from manifesting itself, it may be prudent for policy-makers to examine, understand, and curtail the risk-taking incentives of banks and hedge funds that finance LBOs and, equally importantly, to foster mechanisms to improve the transparency of ultimate debt ownership (for example, through secondary trading platforms for CLO and CDO tranches and registers of institutional ownership of LBO debt).

While the 2001-02 period of high global default rates in the real sector had little impact on the financial sector, which illustrates the economic benefits of credit risk transfer, the lending excesses in the subprime and LBO markets and the collapse of the subprime market in 2007 have provided a somewhat sobering counterpoint. Risk-sharing is likely to be beneficial on average, but in a world with incentive and information problems, risk-sharing can also engender low-probability but high-intensity systemic crises, triggered by relatively small economic shocks. Viewed through this lens, the tradeoffs associated with financial innovations that have swept the LBO industry appear far less opaque than the innovations themselves!

The rest of the article is organized as follows. The section that follows provides a summary of the collapse of the LBO market in the late 1980s. The third section compares the

4. See Altman (2007), cited earlier. The broader figures for overall debt issuance show that there has indeed been a surge in syndicated debt financing relative to corporate bond issuance. In 2001, new issuances in both markets comprised around \$1.5 trillion, whereas in 2005 syndicated debt financing had grown to a total of \$3.75 trillion, which is about twice the size of corporate bond issuance at \$1.75 trillion. Source: Merrill Lynch Research based on the Dealogic database.

5. U.S. Treasury Secretary Hank Paulson has been repeatedly quoted in the media (see, for example, "Wake-up call for investors" in the *Financial Times*, July 28, 2007), saying that both the mortgage lending and leveraged buyout markets had been marked

by excessive lending until the sub-prime collapse in June 2007. Another article, "Rate cut calls miss the point after profound market change," in the *Financial Times* of August 27, 2007 notes that "in all this, the same theme recurs. The originators of risk—hedge funds, private equity, investment and commercial banks—are not in the business of holding it. That job falls to investors who are prepared for the long haul."

6. Two salient cases have been the lack of enough demand for £5bn worth of senior loans of Alliance Boots, the UK pharmacy chain, and the inability of banks to redistribute the \$12bn worth of debt for Chrysler, the US carmaker.

valuation ratios of the recent LBO wave to those of 1980s. The fourth section discusses the leverage of recent LBOs, including the levels, the providers, and the embedded features. The fifth section considers the likely consequences of a bust, or possibly even a few significant defaults. And the article concludes with some policy recommendations and open issues for future investigation.

### The Collapse of the LBO Market in the Late 1980s

In 1993, Steven Kaplan and Jeremy Stein<sup>7</sup> analyzed the collapse of the LBO market in the late 1980s and very early 1990s. The severity of the collapse is reflected in the statistics on defaults and bankruptcies. In 1991, 26 of the 83 large LBOs completed between 1985 and 1989 had defaulted and 18 had entered Chapter 11 bankruptcy proceedings. Besides the immediate costs of these failures, they were followed by a large contraction in LBO volume, which fell from \$88 billion in 1988 to only \$7.5 billion in 1991, a drop of more than 90%. It took 13 years, until 2003, for the LBO market to exceed the total value reached in 1989.

What caused this collapse? According to Kaplan and Stein, there were five causes. First, the prices paid for transactions increased. Second, debt levels also increased to 90% or more of total capital. Third, banks accelerated their principal repayments, leading to a substantial decline in the ability of firms to service their debt. Fourth, a substantial amount of debt was of junk (non-investment grade) status, often with payment-in-kind provisions (PIK) so as to postpone any default. And fifth, much of it was sold by banks to private investors through the public debt markets.

The prominent role of the public debt markets was an important contributor to the collapse since it had the result of reducing the banks' incentives to properly evaluate the risks of default. Since the banks that originated the debt often then sold it to other parties, there was a serious misalignment of their incentives to certify the quality of the transaction relative to their desire for fees. The size of the debt held by the public debt markets also led to coordination problems when it came to a default and the restructuring of the debt. It is likely, as we explain below, that this led to more bankruptcies and higher distress costs.

Notwithstanding this evidence, a more recent (1998) study by Kaplan with Gregor Andrade<sup>8</sup> suggests that even LBOs that default tend to be value-increasing transactions on balance, particularly when one considers the acquisition premiums paid to the selling shareholders. Using a sample of defaults during the 1980s, they provide evidence that the companies were still more valuable after the resolution of distress than they were before they were acquired. They also conclude that distress costs are comparatively low—between

10 and 20% of firm value—and that those costs are largely confined to those LBOs that experienced “economic distress” (for example, a sudden deterioration of the economics of their business or industry) as opposed to “financial distress” (for example, distressed asset sales or postponed investments attributable to pressure from debt service).

The question we wish to examine in this article is how different the recent trends are from those during the last boom and bust analyzed by Kaplan and Stein. Are we at a similar tipping point to the late 1980s, or is the business model fundamentally different? We provide a comparison along four dimensions:

- How similar are recent valuation ratios compared with those in the last collapse?
- How high are leverage ratios today? And who holds the debt?
- How would the equity and debt markets respond to a reduction in profitability of the LBO market and could this have systemic consequences?
- How would bankruptcy codes and workout procedures cope with large-scale defaults?

These issues are even more important today than in 1990, since the LBO-private equity market is so much larger than it was at that time. Indeed, the collapse of such a market would raise issues of systemic risk, similar to the collapse of the subprime market earlier this year. The value of assets under management by private equity firms is something of the order of \$1.2 trillion, which far exceeds the size of the subprime debt market.

### A Comparison of Valuation Ratios

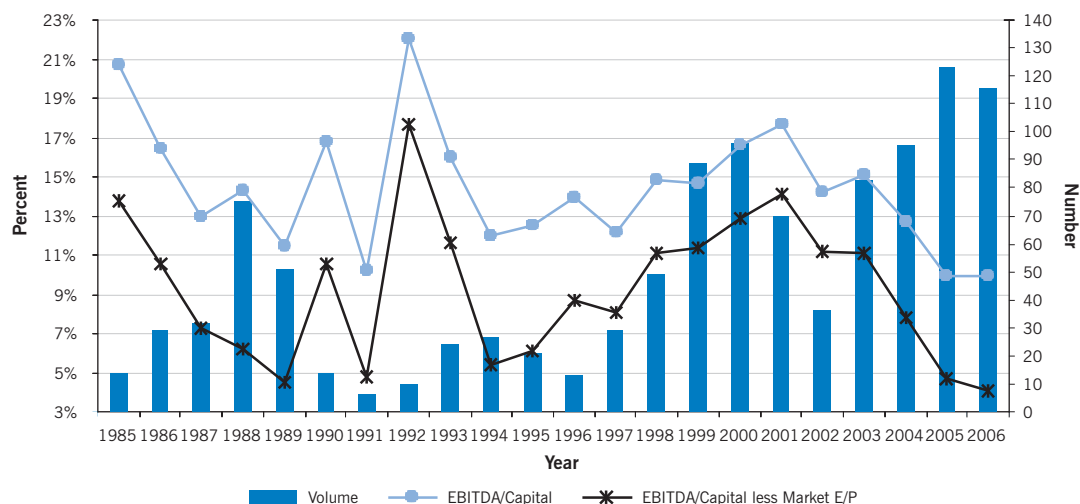
Kaplan and Stein report that after the collapse of the market, the recovery in the 1990s was accompanied by a decline in prices. For example, price multiples declined by a third to 5-6 times EBITDA from 7-8 times at the height of the boom. Leverage also became more conservative, and debt ratios came down to 80%, as compared to 90% or more at the height of the boom.

To make comparisons between the last collapse and the most recent period, we collected data from Thompson One Banker for all LBO transactions worldwide valued at more than \$10 million over the period 1985-2006. For those transactions for which the data are available, we calculated the ratio of EBITDA to capital invested (the value of the transaction) for each year during the entire 22-year period. To adjust for the fact that such a ratio might be affected by changes in market prices and multiples in the stock market generally, we also calculated a market-adjusted ratio, where we subtract from the EBITDA-to-capital ratio the earnings-to-price ratio (or earnings yield) of the S&P 500 index. While not exactly

7. Steven N. Kaplan and Jeremy C. Stein, “The Evolution of Buyout Pricing and Financial Structure in the 1980s,” *Quarterly Journal of Economics* 108, 313-357.

8. Gregor Andrade and Steven N. Kaplan, 1998, “How Costly is Financial (Not Economic) Distress? Evidence from Highly Leveraged Transactions that Became Distressed,” *Journal of Finance* 53, 1443-1493.

Figure 4 EBITDA to Capital Ratios: Unadjusted and Adjusted for the S&P 500 (Median Values)



equivalent to the ratio of EBITDA to capital, subtracting the earnings yield is sufficient for our purpose, which is to provide some indication of relative pricing. This market-adjusted ratio is expected to tell us if prices are high for LBOs relative to the price levels of the market generally.

In Figure 4, we report the time series medians for the two ratios, together with the number of transactions. They provide the striking result that both the unadjusted and adjusted ratios of EBITDA to capital are at their lowest in 2006, and the prices (the reciprocal of the ratio) are therefore at their highest, for the entire 22-year time series. For example, the unadjusted EBITDA-to-capital ratio was 10% in 2006, as compared to 13% in 1987 and 11.5% in 1989. After subtracting out the earnings yield of the market equity index, the market-adjusted ratio was 4% in 2006, as compared to 6% in 1988 and 5% in 1989.

Even more striking is the steep decline in the ratios (and therefore sharp increase in prices) that occurred between 2003 and 2006. The median market-adjusted ratio fell from 11% in 2003 to 4% in 2006. As we shall discuss below, this decline in EBITDA to capital for LBO transactions is closely related to trends in the credit market.

### A Comparison of Leverage

Even if prices are high by historical standards, this does not necessarily mean they are at a tipping point. For example, high prices may be driven in part by larger expected value gains from the transactions; that is, LBOs may be more profitable today than they were in the late 1980s. But prices were also driven higher by low interest rates, reduced credit spreads,

and generally favorable credit market conditions. The concern here is that, despite the inexpensive funding made possible by such conditions, the recent deterioration of credit markets has now made those prices appear too high, resulting in a decline in values.

On the other hand, the recent repricing of credit risks may not have such dire consequences if leverage ratios are lower than in the '80s deals. If that is the case, then declines in values and subsequent losses will be borne more by equity holders and less by banks and other lenders. However, even if that were the case, the market is so much larger today that the number of defaults and bankruptcies is likely to be greater.

An important characteristic of this leverage story is the composition of the debt used to finance the LBOs and who holds it. If a large proportion of the debt has been sold into the public debt markets, then there could be serious problems in getting debtholders to agree to restructure their claims. Because of such coordination problems, which would be exacerbated by public debtholders' lesser sophistication and ability to evaluate risks, today's distressed LBO firms would be more likely to resort to formal bankruptcy procedures instead of private restructurings. And, as a result, the costs of resolving financial distress would increase.

These issues were examined in a recent study by Ulf Axelson, Tim Jenkinson, Per Strömberg, and Michael Weisbach that examined 153 buyouts by five top private equity firms in eight countries over the period 1980 to 2006.<sup>9</sup> This period covers the previous boom and bust analysed by Kaplan and Stein. The sponsors of these deals include KKR, Blackstone, Permira, Bain Capital, and CVC Capital. The

9. Ulf Axelson, Tim Jenkinson, Per Strömberg, and Michael S. Weisbach, "Leverage and Pricing in Buyouts: An Empirical Analysis," July 2007 working paper, SIFR, Stockholm, Sweden.

transactions were predominantly public-to-private transactions, but also included buyouts of private companies. A little over half (78) of the deals involved U.S. or Canadian companies, while most of the rest (72) involved European targets.

One important finding of this study is that the debt ratio (total debt divided by enterprise value) of recent transactions (2004-2006) at the closing of the deal was 73%, which is not very different from their estimate of 77% for the 1985-1989 period. Thus, based on their figures, debt ratios are now nearly as high as they were in the previous boom. (The debt ratios reported for the 1980s are somewhat lower than those reported by Kaplan and Stein cited previously, which is probably driven by differences in the sample.)

The terms and composition of the debt are also interesting. The majority of the debt is interest-only with a bullet payment at maturity. There is also a considerable amount of subordinated and mezzanine debt, as well as debt with PIK provisions.

In an attempt to explain what is driving these high debt ratios, Axelson et al. reported that the debt ratios in their LBO sample are very different from and completely unrelated to those in similar publicly listed companies, both in the amount of debt and its composition. If it is so different, what is driving the choice of leverage? When they estimated regressions of leverage on firm characteristics, aggregate market conditions, and the characteristics of the buyout funds, the study's authors find no single firm-specific characteristic that is consistently related to the amount of debt used by the LBO firms. Instead, the key determinant of leverage is the real interest cost of the loans, measured as the local real interest rate plus the spread for leveraged debt. The lower this cost, the higher the level of debt. This negative correlation is especially significant when debt is measured as a multiple of EBITDA, implying that low real interest costs allow companies to service more debt. But when they estimated the same regressions on a sample of publicly listed firms, they found that leverage is not sensitive to real interest rates and conditions in the credit markets, but determined rather by variables such as R&D spending, measures of operating risk, and profitability.

A critical question posed by Axelson et al. is whether the conditions that seem to produce higher leverage among LBOs also drive the pricing of these transactions. As one would expect, they find that pricing is significantly related to the level of interest rates: the lower the interest rates, the higher

the prices being paid. This relationship does not hold for the pricing of other publicly listed companies. In short, low (real) interest rates appear to drive private equity firms to use more leverage and pay higher prices in their LBO transactions.

Another relevant development has been the relaxation in the nature of covenants in LBO loans, the so-called "covenant-lite" loans that, although less visible in Europe, have featured in a number of U.S. deals. Covenant-lite loans have none of the three standard types of "maintenance" covenants (cash flow coverage, interest coverage, and overall leverage). In contrast, they do have the usual "incurrence-only" covenants, which allow lenders to apply leverage or other tests when the borrower wants to pay dividends, take on new debt, or engage in a merger or acquisition.<sup>10</sup>

Thus, when an LBO deal is financed by covenant-lite loans, a default is likely to happen only when the borrower is no longer able to pay the debt, as opposed to when covenants are violated. Whether such a delay works to increase or decrease value is a matter of some debate. Steven Kaplan has argued that "the deals of the past few years are much less fragile than they were in the 1980s. The use of covenant-lite structures means that barring a catastrophic occurrence, you are going to see much fewer defaults than in the late 1980s."<sup>11</sup> On the other hand, the lack of covenants could reduce the monitoring incentives of lenders and prevent them from seeing early warnings of default. Also, in the lower likelihood that a default occurs on a covenant-lite loan, the recovery rate for lenders is likely to be much lower.<sup>12</sup> That is, while covenant-lite structures may be a contractual response to avoiding inefficient default and renegotiation, such structures may be necessary mainly because the deals have excessive default risk to start with and reflect the risk-taking incentives of LBO lenders.

In sum, both the level of debt and the weak covenant structure have led to concerns about the implications of a shock to the profitability of LBO firms. But, in assessing the implications of a large-scale default, it is also important to know who holds the debt. Is it held by banks, by public bondholders, or other financial institutions?

Ed Altman, in a recent analysis of the financing of LBO and other market transactions,<sup>13</sup> reported that many of the LBO loans are held not by banks, but by other institutions such as hedge funds. That is, although banks may still be originating much of the debt, they subsequently sell a large slice to other institutions.<sup>14</sup>

10. "Loose Instruments without Warning Signs," (*Financial Times*, July 25, 2007) lists a number of LBO deals during the period March-July 2007 that employed cov-lite loans: PTS, Trader Media, Biomet, Jupiter, SIG Holdings, Mauser, and Kloeckner Pentaplast. The covenant-lite loans, however, have already fallen out of favor with investors following the subprime collapse and a number of such planned loans had to add a few covenants making them "covenant-loose" loans (e.g., Thomson Learning, taken over by APAX, and Altadis debt financing planned by CVC). Even if no new covenant-lite debt is issued, the amount currently outstanding is substantial.

11. Source: "Not Dancing Anymore: How the Music Stopped for Buy-out Buccaneers," *Financial Times*, August 14, 2007.

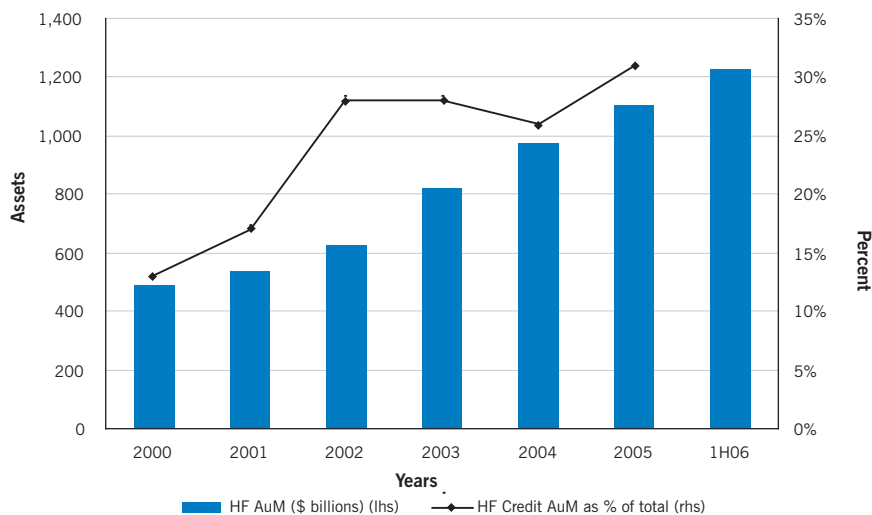
12. Historically, the recovery rates on bank debt have been close to par. Viral V. Acharya, Sreedhar Bharath and Anand Srivivasan, ("Does Industry-wide Distress Affect De-

faulted Firms? Evidence from Creditor Recoveries, *Journal of Financial Economics*, 2007, 85(3), 787-821), find that the median recovery on bank loans in the United States over the period 1982-1999 exceeds 90 cents on the dollar.

13. Discussion of the article by Axelson et al., "Leverage and Pricing in Buyouts: An Empirical Analysis," by Ed Altman, July 25, 2007, CEPR Summer Symposium.

14. It is relatively straightforward for banks to sell their loans. Often borrower consent is required, but standard loan templates say that "the consent of the company (i.e., the borrower) to an assignment must not be reasonably withheld or delayed" and "the company will have deemed to have given its consent five business days after the existing lender has requested it unless it is expressly refused by the company within that time." Loan Market Association, Multicurrency Terms and Revolving Facilities Agreement, May 2007.

Figure 5 Hedge Fund Assets Under Management (AUM) and the Proportion Debt Financed (HF Credit)



Source: IMF, Hedge Fund Research

As shown in Figure 5, the proportion of hedge fund assets accounted for by debt instruments has been rising sharply over the period 2000 to 2005, and reached about 30% of assets during 2005. The increase in the proportion held has also gone hand-in-hand with a large increase in the amount of assets under management, which has more than doubled over the same period to \$1.2 trillion.

The fact that less debt is held by banks and more by unregulated institutions may not be bad news for financial markets. If the debt is more dispersed, then there are more pockets to absorb the losses. Also, these institutions are not like public bondholders, who tend to be uncoordinated and have been blamed for precipitating the bankruptcy and inefficient restructurings of LBOs during the downturn of the early 1990s. However, the fact that debt is not held by originating banks but widely dispersed among other institutions also has the potential to create a severe information problem for the universe of players who fund the LBO debt.

In the next section, we elaborate on the likely consequences of an LBO collapse.

### Consequences of a Collapse Can bankruptcy codes cope?

Before the recent changes in credit markets, both leverage ratios and prices paid in the LBO market were either approaching or had reached all-time highs. Combined with

the very large transaction volume, both in numbers and in dollars, this evidence suggests that any downturn in profitability caused by a recession or a repricing of risk would cause more defaults and restructurings, leading to more private reorganizations and formal bankruptcies. Thus, the potential losses to the capital markets could be much larger than in the previous boom and bust. At the same time, however, defaults will likely occur later in the cycle of decline because of weaker covenants.

Kaplan and Stein reported that the majority of the defaults in the 1980s ended up in formal bankruptcy proceedings such as Chapter 11 of the U.S. Bankruptcy Code. One reason for the high incidence of formal procedures was that much of the debt was held in the public capital markets and, as a result, attempts at private workouts were frustrated by coordination failures. And such failures often result in both excessive delays in liquidating or changing control of inefficient enterprises and premature liquidations of viable going concerns.<sup>15</sup>

Also, since the debt taken out in the recent LBO transactions is held by banks and other non-bank institutions such as hedge funds, coordination problems should not be as great as in the previous bust. As a result, we expect to see more private restructurings than formal bankruptcies, with a lower likelihood of inefficient liquidations.<sup>16</sup> This outcome may also be facilitated by the earlier restructuring of debt that accompanies highly leveraged firms, albeit an effect partly undone

15. For a detailed discussion of such coordination failures, see Robert Gertner and David Scharfstein (1991), "A Theory of Workouts and the Effects of Reorganization Law," *Journal of Finance*, 4, 1189-1222.

16. Of the kind described by Gertner and Scharfstein (1991). The Andrade and Kaplan evidence cited earlier provides some comfort in this respect.



by weaker covenants. An optimistic view is that the earlier restructuring coincides with an early stage in the company's decline and as a result makes liquidation less likely.

There are at least two reasons to question this optimistic outlook. First, the volume of transactions and the consequent defaults and restructuring could expose the capital market to systemic risks. After all, the volume of LBO transactions is about 5% of the capitalization of the U.S. stock market. Second, the volume of restructuring might test the efficiency of the workout markets and the respective country bankruptcy codes.

Many of these transactions are in Europe where bankruptcy regimes have not always performed well when dealing with large-scale insolvencies. In the U.K. in the early 1990s, it is generally accepted wisdom that in the face of widespread defaults, banks precipitated far too many firms into formal bankruptcy proceedings and insolvency practitioners could not cope with the volume of work. The result was the large-scale liquidation of companies accompanied by fire-sales of assets that depressed prices, lowered recovery rates, and led to high costs for both banks and borrowers.

Two features have changed since then. First, banks have responded to these events by establishing centralized departments for dealing with firms whose loans are distressed or in default, and those departments are staffed by far more skilled and experienced management than previously. And this centralization improves the banks' ability to coordinate the sale of distressed assets and avoid fire-sales. On the other hand, the U.K. has not experienced anything like the level of defaults in the early 1990s. In other words, the new system for dealing with corporate defaults put in place by the banks is untested.

Second, there have been changes in the corporate bankruptcy code in the U.K. The new procedures impose on those administering bankruptcy proceedings a duty of care to all creditors, not simply the senior secured creditors, as was the case previously. In principle, this should mean fewer inefficient liquidations since previously administrators (called "receivers") of insolvent businesses were required to run the business to ensure repayment of only the secured debt and could virtually ignore the interests of unsecured creditors. The result was recovery rates for unsecured creditors that approached zero. There was also a perception that the failure to safeguard the interests of unsecured creditors encouraged a liquidation bias among administrators.<sup>17</sup>

The U.S. code and reorganization practices have also undergone many changes in the past two decades. Donald

Bernstein, in another article in this issue, argues that over the past 20 years a much broader range of options have emerged for firms in distress.<sup>18</sup> As a result, reorganization has become more efficient, the sale of the enterprise has become more achievable, and claims are sold more easily to those able to bear the risks and negotiate terms. At the same time, he also recognizes that the greater dispersion of claims and use of "second-lien" (or junior secured) debt could create major obstacles to efficient reorganization.

France and Germany have also changed their bankruptcy codes. The French code has become less court-controlled and hostile to creditors, while the German code has become more streamlined with greater control given to senior creditors. It is too early to evaluate the impact of these changes.<sup>19</sup>

### Systemic Risks

These issues concerning the resolution of potential defaults are likely to be a concern only if there were to be a substantial bust of the LBO boom. The current strength of the real sector across the globe suggests that the likelihood that this will materialize is rather small. However, we argue below that given the nature of LBO debt financing in this boom, even a small shock to the solvency of LBO firms can lead to a systemic liquidity crisis.

One of the prominent features of the recent LBO boom is the nature of the debt financing. Much of the debt is syndicated by banks and sold off to other banks, including other financial institutions e.g., hedge funds. This is done in creative ways through CLOs that allow buyers to target specific risk exposures. While it appears that the ability to pass on and share the risks should increase overall welfare, there are two sets of consequences.

First, when risks are sliced up very finely, it is possible to get exposure to extremely high risks of default in exchange for extremely high yields. An institution could potentially invest a large fraction of its assets in such securities. And in such cases, a small number of defaults could lead to substantial losses and imperil the institution.

Second, because the debt is so freely traded, nobody knows who has the exposure. That, we believe, is the most serious problem with the recent wave of LBO financing, and it very much mirrors what happened in the subprime mortgage market earlier this year. In this case, however, the exposures are likely to be much larger. The lack of transparency about who will bear these losses could cause liquidity problems for even solvent lenders when they try to raise financing from markets and banks (e.g., prime brokers lending to hedge funds, or banks providing liquidity to each other in inter-

17. For an empirical study of the efficiency of the UK bankruptcy code, see Julian Franks and Oren Sussman, 2005, "Financial Distress and Bank Restructuring of Small to Medium Sized UK Companies," *Review of Finance* 9, 65-96.

18. Donald S. Bernstein, "Towards a New Corporate Reorganization Paradigm," *Journal of Applied Corporate Finance*, 19 (4), Fall 2007.

19. For an empirical study of European bankruptcy codes see Julian Franks and Sergei Davydenko, "Do Bankruptcy Codes Matter? A Study of France, Germany and the UK," *Journal of Finance*, forthcoming.

bank markets). In other words, a small shock to the LBO markets—for example, the default of a few large deals—has the potential to cause repercussions in global financial markets comparable to those experienced during the recent collapse of the subprime market.<sup>20</sup>

In a recent article titled “Where’s Waldo? Where’s W?” in the PIMCO Investment Outlook, Bill Gross summarized the issue well in discussing the subprime crisis:

*“[T]he bond and stock market problem is the same one [that] puzzle players confront during a game of ‘Where’s Waldo?’ – Waldo in this case being the bad loans and defaulting subprime paper of the U.S. mortgage market. While market analysts can guesstimate how many Waldos might actually show their face over the next few years – 100 to 200 billion dollars worth is a reasonable estimate – no one really knows where they are hidden... In such an environment, markets become incredibly volatile as more and more financial institutions reach their risk limits at the same time. Waldo morphs and becomes a man with a thousand faces. All assets with the exception of U.S. Treasuries look suspiciously like every other. They are all Waldos now...”*

This systemic risk potential from dispersed LBO financing also has similarities to the traditional bank run. A typical bank run is the manifestation of some negative signal about the quality of assets or the management of a bank (or a branch) that triggers the withdrawal of funds by dispersed and uncoordinated depositors. As the withdrawal queues start building up, the information is perceived to be more ominous by remaining depositors and a “run” ensues. Next, the run may also translate into runs on banks with similar types of assets, resulting in an information contagion (for example, from Northern Rock to Alliance and Leicester and Bradford and Bingley, in the recent bank run in the U.K.). The drying up of liquidity in the event of large LBO defaults (and the drying up in the wake of the subprime collapse) is likely to trace this familiar path even though the setting is somewhat different.

First, the increasingly dispersed nature of LBO creditors has made them more reliant on signals of other creditors. Second, as early creditors receiving bad news on default risk withdraw from financing or rolling over the existing debt of affected borrowers, other creditors revise their priors and reduce their lending. Third, and most important, the lack of transparency as to which institution is holding which asset could cause the illiquidity to spill over to other borrowers who do not necessarily hold distressed assets, but have had a

reasonable opportunity to do so. The result would be a run in the wholesale funding markets (commercial paper, inter-bank loans, prime brokerage).

In this way, the financial innovations that have enabled institutional debt to be parcelled around for risk-transfer purposes may have rendered the wholesale funding markets as vulnerable to information-based runs as the retail funding markets.

### Concluding Remarks and Policy Recommendations

The recent boom in the LBO market is unprecedented. It has been fuelled by a combination of cheap credit, huge levels of liquidity, and higher valuations than at the start of the century. However, it does share a number of features with the previous LBO peak of the late 1980s. Both the prices being paid and the levels of debt being used are on the increase, just as they were two decades ago. But there are also a number of important differences. First, a much larger fraction of the financing has come from bank debt, much of which has been sold in the syndicated market, or through structured products (CLOs). Second, a larger fraction of this debt is covenant-light. These features have a number of worrisome consequences.

First, because much of the debt is syndicated, banks have less of an incentive to monitor the borrowers and more of an incentive to lend to generate fee income. As a result, lending could become excessive. Second, the paucity of covenants on the debt will not trigger defaults unless the companies are unable to service the debt. As a result, recovery rates are likely to be lower. Third, the lack of transparency as to who actually has exposure to the debt, and what slice of the debt, could lead to systemic problems, even if just a few defaults occur. In particular, the lack of information about who has LBO debt exposure could lead providers of credit to financial institutions to withdraw future funding. This, in turn, would force these institutions to substantially tighten their own funding, which could lead to problems for those transactions where debt needs to be refinanced, and trigger further defaults. Fourth, even without tightening of credit, the high levels of leverage recently being employed could lead to high default levels, particularly if we experience an economic shock similar to what happened at the start of the 1990s in the U.S. This could put serious strain on the bankruptcy systems in much of Continental Europe and the U.K. Whether they will be able to handle the cases efficiently and whether firm value will be maximized when bankruptcy occurs is an open question.

While the subprime crisis has dealt a serious blow to

20. One of the repercussions of the subprime fiasco, of course, has been the dramatic change in the terms of LBO financing. See the article, “Fears Mount of End to Private Equity-fuelled Buy-out Boom,” the *Financial Times*, July 28/29 2007, which provides the following list of the debt woes of a large number of buyout deals following the subprime collapse: Cadbury Schweppes delays £7bn US drinks sales because of extreme volatility in debt markets; Banks stuck with £5bn of debt after KKR’s Alliance Boots buy-out; Chances lessen of private equity bid battle for £1.1bn Virgin Media; Terra

Firma and EMI spend week scrambling to secure backing for £2.4bn deal; Barclays and Mizuho, underwriters of £4.8bn of debt for AA and Saga merger, have not attracted other banks to syndicate though deal is not delayed; CVC will find it difficult to compete with Imperial Tobacco’s £1.1bn takeover offer for Altadis, bankers say, because of credit markets; Interest margin increased on debt backing Advent International’s £550m purchase of Lloyd TSB’s share registration division; and so on.

new LBO financing, the problems we describe relate to the debt that is already out there. What can be done to avoid the problems? We think it is difficult to regulate excessive lending. The participants in the syndicated loan market and other purchasers of loans or slices of loan portfolios should be aware of the incentives of the banks packaging and selling off the risks.

One possible solution is, of course, changes in capital requirements. Under Basle II, a bank's capital requirements depend on the probability of default, and the loss and exposure at default. A lot of these can be determined by the bank, based on historical data. But do we really have enough history to estimate these parameters accurately, especially for covenant-lite loans? Bank regulators could impose higher capital requirements for high yield exposures. But unless implemented appropriately, they run the risk of encouraging some new forms of regulatory arbitrage (the forms in the recent crisis being complex CDO structures and special investment vehicles and conduits). Besides, such requirements are not binding on unregulated lenders such as hedge funds.

Hence, another, and perhaps more practical solution, is to provide more information about who actually has the exposure, given that the major problem is transparency. This can be done through secondary trading platforms for CLO tranches and registers of institutional ownership of LBO debt. The former would reduce the problem of institutions not

knowing the market values of their CLO exposures, whereas the latter would ensure that lenders—that is, banks and prime brokers—would know whether they are lending to those who are exposed to distress-affected sectors.<sup>21</sup>

Overall, while we do not believe that a collapse of the LBO market is imminent, it is certainly a possibility, even if the shock to the global economy is only minor. Risk-sharing is likely to be beneficial in that case. But, in a world with moral hazard and adverse selection, risk-sharing could also lead to low-probability systemic crises that are triggered by relatively small economic shocks.

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21. The call for such transparency in ownership and pricing of CLOs and CDOs has been unanimous from practitioners, regulators as well as the media. See, for example, Wolfgang Munchau, "Stability for the Markets is Just the Start," *Financial Times*, September 10, 2007; "So What is it Worth? Financiers and Accountants Wrangle over Credit Pricing," *Financial Times*, September 13, 2007; and "Dodge Sees Clarity as Route Out of Turmoil," *Financial Times*, September 14, 2007.

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