Special Comment

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Second Lien Debt Historical Recovery

Position within capital structure and family loss are recovery drivers

A Product of Moody's Standing Committee on Priority of Claim and Notching Practices

Executive Summary

This report summarizes historical second lien discounted ultimate recoveries for the 72 issuers in Moody's Ultimate Loss Given Default (LGD) database with second lien debt in the capital structure. Second lien debt recoveries averaged 60.5% but this average is deceptive as there was wide variability in recoveries at the family and instrument level. Debt structure was influential as second lien recoveries averaged 72.1% when the issuer's capital structure included unsecured debt – much higher than the 40.1% average recovery when second lien creditors had no debt cushion. We believe this highlights the risk of investing in second lien debt that has no loss-absorbing junior ranking obligations and reinforces the importance of the priority of claim analysis underlying Moody's LGD assessment rating methodology for speculative-grade issuers. The key findings of our historical review of second lien recovery rates are:

- Family recovery and debt cushion were the most influential factors affecting second lien debt recoveries;
- Lien subordination held – first lien recoveries were higher in every instance than second lien recoveries *within the same defaulting issuer family* (except when both first and second lien classes had full recovery);
- Second lien had priority of claim value – second lien recoveries were higher in every instance than unsecured debt recoveries *within the same defaulting issuer family* (except in two cases where both second lien and unsecured debt had zero recovery);
- Second lien debt recoveries were moderately higher (within 7 percentage points on average) than recoveries for similarly positioned unsecured debt holders in *separate defaulting issuer families*.

Moody's Investors Service

Second Lien Debt Historical Recovery

Investing in second lien debt – particularly if it is the most junior ranking obligation within a capital structure – does not assure protection against loss in a default. Because a number of second lien obligations issued in the last few years have no debt cushion and could lack sufficient collateral protection in default, recovery experience going forward could be considerably less than the 60.5% historical average.

Capital mix and family recovery were influential recovery determinants. This does not imply security is meaningless and collateral value is an important component of Moody's rating analysis. At a minimum, collateral analysis is integral to determining priority of claim (including post-petition interest) as collateral positions secured creditors ahead of unsecured obligations (both senior unsecured and senior subordinate) with respect to the value underlying the collateral. Any debt that is deemed undersecured is split into a secured claim to the extent of the collateral and an unsecured deficiency claim with respect to any residual debt not deemed covered by the collateral. The amount of cash flows from the operation or sale of collateral can also affect the probability of default and the family recovery. In most instances, however, all assets of defaulting firms were pledged to creditors; hence, the rank-ordering of claims overall (with secured creditors realizing value before unsecured creditors, and first lien secured creditors before second lien secured creditors) proved the dominant factor influencing relative recoveries. When only a portion of assets are pledged, the quality of the assets relative to the liability underlying this claim is clearly a primary analytic consideration. Collateral in these instances meaningfully influences debt holder recovery – the creditor would not benefit from a "senior" ranking position with respect to unsecured creditors for claims against the firm's other, unpledged assets. The importance of collateral relative to firm-wide valuation grows the larger the percentage of assets residing outside the collateral pool.

Recovery in this report refers to value received discounted at the stated coupon rate as *a percentage of principal at the time of the last payment*. Structural differences (such as maintenance covenants) between second lien and unsecured debt afford second lien creditors greater ability to affect the timing of default (and potentially the family recovery) and extract fees and/or reduce their credit exposure in advance of default. Because of such rights, the amount of principal at the date of the last payment could be lower than the principal at origination. Recovery as *a percentage of principal at origination* measures the effect of these structural features more comprehensively and will be a key area of focus in Moody's ongoing evaluation of ultimate recovery as origination is most closely aligned with the time of Moody's initial rating assignments.

Introduction

The significant expansion in second lien debt issuance over the last five years is prompting a related increase in market participants' interest in the performance of second lien debt in default. In particular, market participants want to understand whether second lien debt provides a superior risk-return trade-off relative to other potential investments – chiefly unsecured debt. We review herein key questions relating to second lien recovery that should allow investors to refine their risk-return expectations. Recoveries in this report are discounted recoveries, which is (a) the nominal value received at emergence discounted to the date of the last payment at the stated coupon rate divided by (b) the principal at the time of the last payment. Note that recoveries are measured as a percentage of the full principal amount of the second lien debt rather than the principal amount of the allowed second lien claim, which could differ if a portion of the second lien debt was deemed undersecured and, thus, given unsecured claim status in bankruptcy.

Second Lien Ultimate Recovery – Historical Summary

The 72 second lien obligations in Moody's Ultimate LGD database (see Appendix A for a list of the 72 issuers) had an average recovery of 60.5% (see Figure 1) when there was a default at some level within the issuer family. The recovery was slightly lower (56.9%) for the 66 second lien obligations that actually defaulted, which excludes six issuer families that completed a distressed exchange of unsecured debt where the second lien debt did not default but remained outstanding or was refinanced with no loss.

Second Lien Debt Historical Recovery

Figure 1: Second Lien Debt Historical Recoveries

Defaults with second lien debt in capital structure, 1988 – present

	All reorganizations involving 2nd lien debt			Reorganizations where 2nd lien defaulted (a)		
	Simple capital structures (b)	Complex capital structures (b)	Total	Simple capital structures (b)	Complex capital structures (b)	Total
# default events	26	46	72	26	40	66
Average debt mix:						
% 1st lien debt	51.6%	35.7%	41.5%	51.6%	34.8%	41.5%
% 2nd lien debt	48.4%	19.0%	29.6%	48.4%	20.5%	31.5%
% debt below 2nd lien	n/a	45.3%	28.9%	n/a	44.7%	27.1%
Average recovery:						
Family	57.2%	57.4%	57.3%	57.2%	54.3%	55.5%
1st lien	85.5%	95.9%	92.1%	85.5%	95.3%	91.4%
2nd lien	40.1%	72.1%	60.5%	40.1%	67.9%	56.9%
Unsecured debt	n/a	21.5%	21.5%	n/a	17.9%	17.9%
Std. deviation of recovery:						
Family	29.3%	21.7%	24.5%	29.3%	20.8%	24.3%
1st lien	28.1%	13.3%	20.4%	28.1%	14.1%	21.2%
2nd lien	32.9%	36.2%	38.1%	32.9%	37.0%	37.8%
Unsecured debt	n/a	27.2%	27.2%	n/a	24.2%	24.2%

(a) Excludes six issuers that completed a distressed exchange of unsecured debt where the 2nd lien did not default. Includes three issuers that completed a distressed exchange where the 2nd lien defaulted.

(b) Simple capital structures consist only of two layers of debt (such as first and second lien secured debt); complex capital structures consist of first and second lien secured debt and at least one layer of unsecured debt.

The 60.5% average recovery is deceptive as there was wide variation in the actual recovery experience. Second lien recoveries tended to be much higher in complex capital structures[1] than in simple capital structures (72% vs. 40%; see Figure 1). This is driven largely by the much higher likelihood of full recovery for second lien debt holders having at least one loss-absorbing layer of junior debt capital. We believe this is strong evidence of the influence of debt cushion on second lien recovery. Prior to default, the priority of claim of the second lien obligation within the capital structure is the most observable ex-ante recovery driver. We believe omitting this important recovery consideration could lead investors to vastly different recovery experience than anticipated, particularly if a portfolio is heavily weighted to second lien obligations with no debt cushion.

[1] Simple capital structures consist only of two layers of debt (such as first and second lien secured debt); complex capital structures consist of first and second lien secured debt and at least one layer of unsecured debt.

Second Lien Debt Historical Recovery

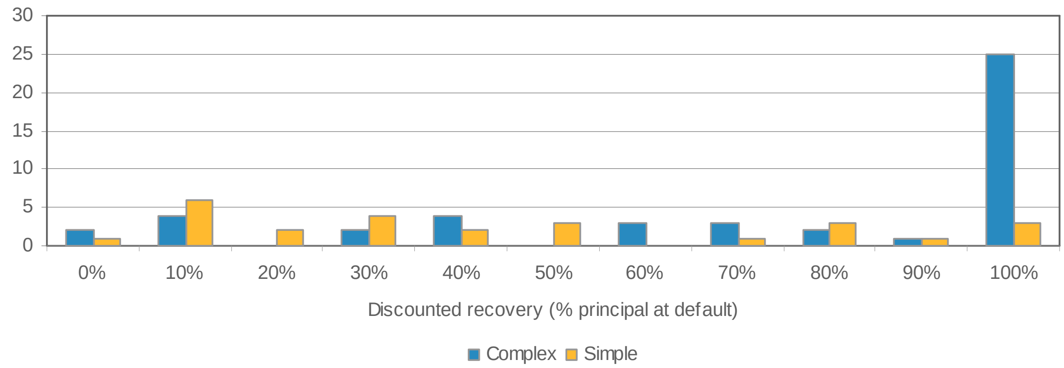
Moody's Ultimate LGD Database contains information on over 3,500 loans and bonds that defaulted between 1988 and 2007 in the U.S. Recovery rates in the database are calculated using several methods, including an analysis of instruments received in settlement and the value of pre-petition debt at the time that an obligor emerged from default. As noted previously, we utilized discounted recoveries in this report.

There are 72 issuer families within our Ultimate LGD Database that included second lien debt in the capital structure. The majority of those cases (54 of the 72) involved reorganizations since 2000, including 29 since the beginning of 2004. Total debt at default for the 72 issuer families was $47.6 billion covering 365 loans and bonds including approximately $9.1 billion of second lien instruments. Moody's rated 32 of the issuer families, which covered approximately $34.1 billion of debt and $5.9 billion of second lien instruments.

We are continuing to add to the Ultimate LGD Database and will periodically update the statistics included in this report as coverage of second liens increases and as we expand the data on recovery as a percentage of principal at origination.

The standard deviation of second lien recoveries was high in both absolute amount (38%) and relative to other debt classes (see Figure 1). This is driven by a limited "middle ground" as a large number of the second lien debt recoveries were at the extremes of a 0%-100% recovery distribution (see Figure 2) [2]. We believe the wide distribution warrants caution against over-reliance on average recovery rates. Second lien recovery standard deviation was also slightly higher in complex capital structures (36.2% standard deviation) than simple structures (32.9%) because of the higher incidence of full recovery (see Figure 2).

Figure 2: Second Lien Recovery Distribution
Simple vs. complex capital structures: debt cushion matters



The breadth of collateral did not meaningfully influence second lien recoveries, but we do not view this as conclusive. The number of cases with less than a full collateral package (66 of the 72 defaults involved a second lien secured by "all assets") is too small to draw any definitive conclusions on the importance of collateral package breadth.

Collateral nevertheless remains an important rating consideration. At a minimum, collateral analysis is integral to determining priority of claim (including post-petition interest) as collateral positions secured creditors ahead of unsecured obligations (both senior unsecured and senior subordinate) with respect to the value underlying the collateral. Any debt that is deemed undersecured is split into a secured claim to the extent of the collateral and an unsecured deficiency claim with respect to any residual debt not deemed covered by the collateral [3]. The amount of cash flows from the operation or sale of collateral can also affect the probability of default and the family recovery. In most instances, however, all assets of defaulting firms were pledged to creditors; hence, the rank-ordering of claims overall (with secured creditors realizing value before unsecured creditors, and first lien secured creditors before second lien secured creditors) proved the dominant factor influencing relative recoveries. When only a portion of assets are pledged, the quality of the assets relative to the liability

[2] See Appendix B for a comparison of the recovery distributions of first lien and unsecured debt for the 72 issuer families with second lien obligations in the capital structure.
[3] See "Moody's Approach to Assigning Ratings on Second Lien Obligations," Special Comment, Moody's Investors Service, November 2006.

underlying this claim is clearly a primary analytic consideration. Collateral in these instances meaningfully influences debt holder recovery — the creditor would not benefit from a "senior" ranking position with respect to unsecured creditors for claims against the firm's other, unpledged assets. The importance of collateral relative to firm-wide valuation grows the larger the percentage of assets residing outside the collateral pool.

Average family recovery rates were similar (approximately 57%, see Figure 1) in both complex and simple capital structures. For the eight issuers with only first and second lien bank loans, the average family recovery was 65%. We suspect this is attributable to second lien creditors' ability to trigger an earlier default due to the existence of maintenance covenants, but the sample is small.

Considerable variability in family recovery existed with higher variability in simple capital structures (29.3% standard deviation vs. 21.7% in complex structures).

Family Recovery and Priority of Claim are Key Drivers

Family recovery and debt cushion behind the second lien obligation were the most influential factors affecting second lien holder recoveries. These two factors explained approximately two-thirds of the variation in the historical recoveries for second lien instruments. Collateral valuation is of course integral to determining enterprise and liquidation values that drive family recovery.

That a higher family recovery leads to a higher second lien recovery is an intuitive outcome (a rising tide lifts all boats). However, we note that family recovery is difficult to forecast accurately in advance[4]. Because of this variability, Moody's LGD assessment methodology uses a probability-weighted family recovery rate distribution[5].

Debt cushion also heavily influences recovery as it is a function of the relative claim on the assets and cash flow of the firm. Recovery on a second lien obligation tends to be higher the larger the percentage of junior ranking debt. As noted, collateral valuation is integral to determining the priority of claim of a secured obligation.

Numerous other factors can affect second lien recovery, but with less consistency in what typically amounts to fine tuning the recovery that is largely dictated by family recovery and debt cushion. These factors include:

- type of restructuring: liquidation, bankruptcy reorganization or distressed exchange;
- holders of the debt instruments, particularly if ownership crosses classes or an entity with a blocking position in a particular debt class negotiates aggressively;
- certainty and time sensitivity of family recovery to the economic environment or individual firm circumstances;
- company liquidity needs;
- cross-border considerations (restructurings involving multi-national firms);
- size and importance of non-debt liabilities (trade payables, pension, leases, legal and other contingent claims);
- taxes;
- federal or local regulations.

Each reorganizing company has distinct sets of claimants and underlying operating fundamentals, and the relative importance of these "fine tuning" factors on recoveries varies from case to case.

[4] See "Probability of Default Ratings and Loss Given Default Assessments for Non-Financial Speculative-Grade Corporate Obligors in the United States and Canada" Rating Methodology, Moody's Investors Service, August 2006.
[5] For the majority of issuers, we utilize a binomial distribution of family recovery rates with a 50% mean and 26% standard deviation in our expected-loss based notching framework. See "Probability of Default Ratings and Loss Given Default Assessments for Non-Financial Speculative-Grade Corporate Obligors in the United States and Canada" Rating Methodology, Moody's Investors Service, August 2006.

Second Lien Debt Historical Recovery

Regression Model

Family recovery and debt cushion to the second lien explained approximately two-thirds of the variation in second lien recoveries with both factors significant (t-stats exceeded 6.5). The regression formula (including % of debt above) for the 72 second lien instruments in Moody's Ultimate LGD database is as follows:

2nd lien recovery ~ -0.125 + 1.027 * family recovery % + 0.703 * % debt below 2nd lien -
(-1.41) (9.02) (6.53)

0.139 * % debt above 2nd lien
(-1.03)

The overall r-square was 66.9% but the r-square was much lower for each factor in isolation against second lien recovery: 33.0% for family recovery, 27.1% for cushion below the second lien and 0.1% for debt above the second lien. In combination, these variables strengthen the fit. The r-square was also higher than the r-square for a regression of first lien recovery (57.9%) against family recovery and % cushion below the first lien debt.

Second Lien vs. Other Creditor Class Ultimate Recovery

Recovery differentials existed consistently between the (1) first and second lien creditor classes and (2) second lien creditors and unsecured debt holders. This was true in aggregate and within each defaulting issuer family.

First vs. Second Lien: Lien Priority Holds

The recovery on first lien debt was equal to or greater than the recovery on second lien debt in each of the 72 issuer families with second lien debt in Moody's Ultimate LGD database. Aggressive second lien creditors might attempt to dispute the lien subordination provisions to harmonize the recovery of first and second lien debt. While we monitor case law to identify potential weaknesses in lien subordination provisions, we did not see consistent evidence in the 72 defaults with second lien debt that the lien priorities were not sustained [6].

Both the first and second lien creditors received full recovery in 27 cases (see Figure 3). First lien creditors received a higher recovery than second lien creditors in each of the remaining 45 defaults. Within those 45 default events, average second lien recovery was considerably lower (18.1%) in the 13 instances where first lien debt holders received less than full recovery than in the 32 cases where the first lien debt received full recovery (45.4%, see Figure 3). High step-down ratios (the ratio of first to second lien debt recovery) were also common including 5 instances where second lien debt had minimal recovery (less than 10%) and first lien debt received full recovery.

Figure 3: Second lien vs. first lien debt recovery

Recovery when first and second lien debt are in the same defaulting issuer family

	# default events	Avg. 1st lien recovery	Avg. 2nd lien recovery
1st and 2nd lien: both full recovery	27	100.0%	100.0%
1st lien recovery > 2nd lien recovery:			
1st lien full recovery	32	100.0%	45.4%
1st lien less than full recovery	13	56.1%	18.1%
Subtotal	45	87.3%	37.5%
2nd lien recovery > 1st lien recovery	0	n/a	n/a
Total	**72**	**92.1%**	**60.5%**

[6] Moody's evaluates the distinct terms and conditions of second lien obligations as detailed in credit and intercreditor agreements in assigning ratings on second lien debt. See "Moody's Approach to Assigning Ratings on Second Lien Obligations" Special Comment, Moody's Investors Service, November 2006.

Second Lien Debt Historical Recovery

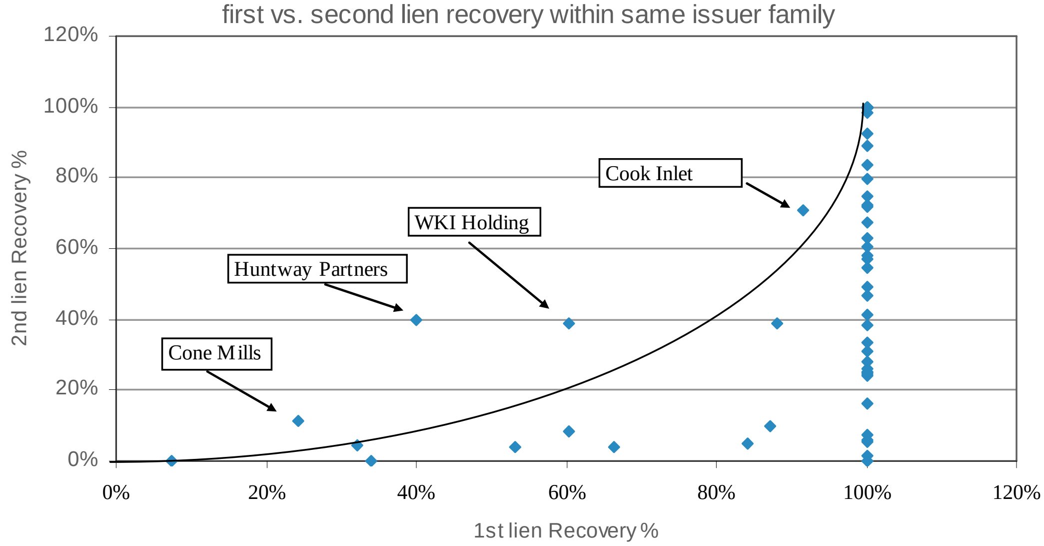
Figure 4 plots the recovery relationship between first and second lien debt, demonstrating the strong influence of priority of claim on recovery. If absolute priority held, the recovery relationship between the two secured creditor classes in Figure 4 would be a right angle (extending horizontally from 0% to 100% along the x-axis and then vertically from the point of 100% on the x-axis) wherein second lien holders receive no recovery until the first lien debt is repaid in full. In practice, junior debt claims realize value exceeding what the absolute priority principal would suggest because:

- the U.S. bankruptcy code requires approval of junior debt classes (a majority of holders and 2/3rds of principal) for bankruptcy confirmation; and
- this provides creditors in junior debt classes nuisance value that is exploited to extract some allocation from senior debt holders in exchange for timely reorganization plan approval.

Because of this trade-off, the recovery relationship between secured creditors is convex (see Figure 4) [7]. The typical recovery relationship should fall below and to the right of the curve depicted with the marginal willingness of first lien lenders to agree to a higher distribution to second lien creditors in exchange for timely plan confirmation increasing as first lien and family recovery rises.

Figure 4: First lien lenders consistently fared much better than second lien creditors

first vs. second lien recovery within same issuer family



Recovery relationships above and to the left of the curve are less typical. The four outliers noted are discussed below:

- Cone Mills (emerged 5/2/05) – second lien was large (58% of debt), providing "holdout" negotiating leverage; nevertheless, the second lien received a minimal 11% recovery as both the first and second lien debt fared poorly.
- Huntway Partners (emerged 12/30/96) – first and second lien debt (and common stock) were under common ownership; the recovery allocations among these commonly-owned classes were arbitrarily made equal;
- WKI Holding (emerged 2/3/03) – first lien was large (>70% of total debt) and received cash, new bank debt, subordinate notes and equity (4.5 mln shares) whereas the second lien was small (3% of debt) and

[7] The deviations from absolute priority are consistent with Moody's LGD assessment methodology and rating framework of using a broad distribution of possible enterprise value-to-liability family recovery estimates. The convex curve in Figures 4 and 5 is for illustration purposes – representing the upper limit of a hypothetical "trade-off" between maximizing recovery and timely plan confirmation – and is not meant to depict a derived statistical relationship.

received only a modest equity distribution (615k shares); the small absolute dollar value received by second lien debt holders would not have materially altered the first lien recovery (would increase to 62% from 60.3%) had first lien creditors received all of the equity;

- Cook Inlet (emerged 8/12/93) – small amount of first lien bank debt (<$7 million) received full discounted recovery but three series of first lien secured notes held by affiliates received preferred stock that was valued at slightly below face value in the secondary market; second lien debt received a 70% recovery from a distribution of preferred stock.

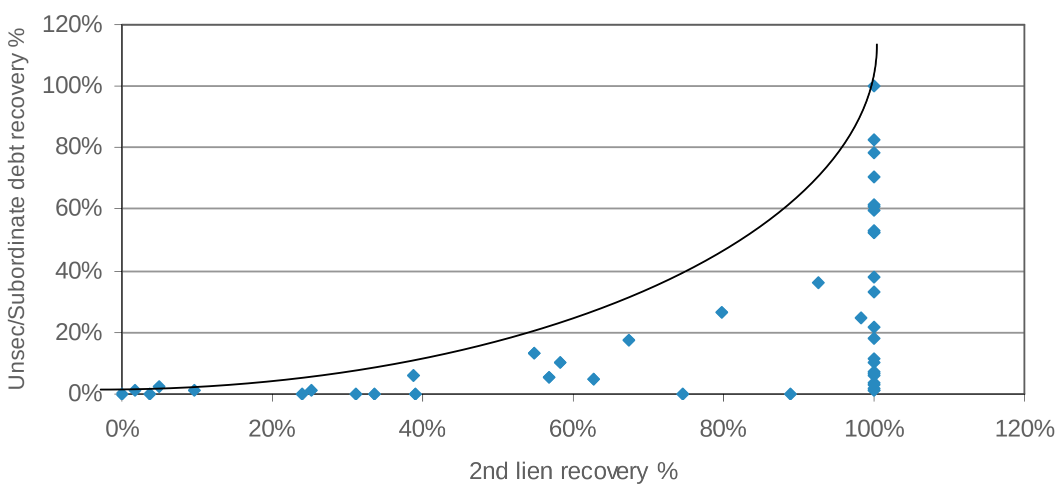
Note that breadth of collateral coverage was not a factor as each of the four cases involved a comprehensive all assets pledge to the first and second lien debt holders. Accordingly, the "outlier" status was not caused by assets being excluded from the first and second lien collateral package where exclusion would result in both debt classes having an identical unsecured claim on the assets.

Second Lien Consistently Recovers more than Unsecured Debt within same Issuer Family

The recovery on second lien debt was much higher than the recovery on unsecured debt residing in the same issuer family (see Figure 5)[8]. We found little evidence that the effective subordination of unsecured debt holders to second lien debt does not hold. This also suggests that collateral value was usually sufficient for second lien debt holders to maintain their higher priority of claim position relative to unsecured debt. As noted previously, while the majority of cases involved an "all asset" pledge, collateral valuation is important.

Second lien and unsecured debt recovery largely conformed to the expected relationship (see Figure 5). The recovery on unsecured debt was typically negligible until second lien recovery was in a 50-60% range at which point the hold out value of unsecured debt holders increased, allowing for modest recovery. There were no material outliers - unsecured debt holder recovery was within a reasonable range given the normal give-and-take negotiations among creditors.

Figure 5:
Second lien creditors fared better than unsecured debt holders
2nd lien vs. unsecured debt recovery within same issuer family



[8] We combine the results for senior unsecured and senior subordinate debt in Figures 5 and 6. However, the results in Figures 5 and 6 are similar when plotting separately second lien vs. senior unsecured debt and second lien vs. senior subordinate debt, although senior subordinate debt also clearly has a contractually subordinate claim to senior debt.

Second Lien Debt Historical Recovery

Figure 6 summarizes the relative debt class recoveries within a defaulting issuer family broken down by how the second lien fared relative to unsecured debt. There was a higher average recovery on second lien debt (48%) than unsecured debt (8%) in the 21 instances where the second lien debt had less than a full recovery. In the other 25 cases with unsecured debt in the capital structure, the second lien received full recovery (23 cases) or had an equal zero percent recovery (2 cases) as unsecured creditors.

Figure 6: Second lien vs. unsecured debt recovery

Recovery when second lien and unsecured debt are in the same defaulting issuer family

	# default events	Avg. family recovery	Avg. 1st lien recovery	Avg. 2nd lien recovery	Avg. Unsec. recovery
2nd lien recovery > unsec debt recovery					
2nd lien full recovery	24	64%	100%	100%	35%
2nd lien less than full recovery	20	52%	94%	47%	8%
Subtotal	44	59%	97%	76%	22%
Zero recovery on 2nd lien and unsecured debt	2	31%	67%	0%	0%
Unsec. debt recovery > 2nd lien recovery	0	n/a	n/a	n/a	n/a
No senior unsecured debt	26	57%	86%	40%	n/a
Total	**72**	**57%**	**92%**	**61%**	**21%**

General unsecured claim recovery can exceed Second Lien recovery for good business reasons

There were 19 instances where general unsecured (GU) claimant [9] recovery was higher than that of second lien creditors. There was little evidence, however, that GU claimants were systematically being treated the same as second lien creditors. Rather, secured lenders allowed for good GU recovery for business reasons. Common themes in the second lien — GU recovery relationships included:

- prepackaged reorganizations where there was value in reinstating GU creditors to support good supplier relationships upon emergence; in furtherance of that collaboration, prepacks typically resulted in pre-petition second lien lenders holding an equity interest in the reorganized company;
- second lien and GU recoveries were both very low;
- the size of the GU class was small relative to the amount of debt; thus, the amount of the GU recovery did not significantly alter the recovery on second lien debt;
- in selected instances, the collateral value did not fully support the second lien obligation, which resulted in the second lien debt being split into secured and unsecured claims;
- there was no or minimal cash distributed to reinstated GU creditors so no cash was given up by second lien creditors;

In cases where the GU claim was sizable and there was significant value at stake, the recovery to second lien holders generally exceeded that of GU creditors. A high proportion of GU recoveries were in the extreme tails of the distribution – recovery was either 100% or minimal (<15%). This suggests that GU claims (trade creditors in particular) were either reinstated because of a prepackaged reorganization, business relationship or small size, or fared poorly when there was something material over which to negotiate. Factoring in the time value of money also reduces the discounted recovery on pre-petition GU claims.

[9] GU claims consist of non-debt liabilities such as trade payables, lease rejection claims, pension obligations and litigation/environmental or other contingent liabilities.

Second Lien Debt Historical Recovery

Second Lien vs. Similarly Positioned Unsecured Debt

Second lien recovery was higher than the recovery on similarly positioned unsecured debt[10] (see sidebar), but the difference was moderate – within 7-percentage points on average. We suspect the incremental recovery reflects the benefit of collateral positioning the second lien creditors ahead of GU claimants.

Regression Model

A regression of recovery including a dummy variable for second lien debt indicates that holding the second lien rather than a similarly positioned unsecured bond only improved recovery by approximately 7.6-percentage points. The second lien dummy variable has a t-statistic of 2.79 indicating significance at the 90% level. The effect of the second lien was smaller and less significant than the influence of family recovery and debt cushion. The regression equation is:

Instrument ~ -0.080 + 0.998 * family recovery % + 0.566 * % debt below -
recovery (-2.65) (22.99) (12.00)

0.306 * % debt above + 0.076 * second lien indicator (1 = yes; 0 = no)
(-5.98) (2.79)

Instrument recovery refers to second lien when the second lien indicator is "1" and unsecured debt when the second lien indicator is "0". The data set includes 290 defaulting issuer families (we excluded capital structures consisting of one class of secured debt and a subordinate note) and the regression formula has an overall r-square of 73.4%.

To achieve the same recovery on an unsecured bond as holding a similarly positioned second lien obligation, the (1) family recovery would need to be roughly 7.6-percentage points higher; or (2) debt cushion would need to be 13.4-percentage points larger.

Simple Capital Structures (two layers of debt)

Family recovery accounts for a sizable amount of the variation in junior debt recovery in simple capital structures. This held true regardless of whether the junior debt was a second lien obligation or unsecured debt (see Figure 7). Second lien debt with no debt cushion absorbs the first loss and thus has the potential for significant loss if the family recovery is not relatively high.

As first lien secured creditors approach full recovery, the junior debt is the "swing layer" that captures the majority of the marginal increase in family recovery value. Second lien debt recovery in simple capital structures was progressively higher as family recovery increased — ranging from an average of 78.4% when the family recovery exceeded 80% to just 5.6% when the family recovery was 20% or lower (see Figure 6).

Senior unsecured recovery varied with family recovery in a similar manner when it was the most junior debt class. The average senior unsecured recovery was 33.7% but it was much higher (75.4%) in the 22 cases when family recovery exceeded 80% than when family recovery was 20% or lower (1.9% recovery in 17 cases). Average recovery on second lien debt and unsecured debt was similar (within 3.5-7.0 percentage points) at each family recovery bucket (see Figure 7). The largest differential occurred when family recovery was 61-80% (recovery was 42.7% for second lien and 50.1% for senior unsecured debt).

[10] Similarly positioned means unsecured debt in one issuer family that has a similar debt cushion to the second lien debt in an unrelated issuer family.

Second Lien Debt Historical Recovery

Figure 7: Recovery on Second Lien vs. Similarly Positioned Unsecured Debt in Simple Capital Structures

	First lien — second lien only structures				Secured — senior unsecured only structures			
Family recovery	# default events	Avg. 1st lien recovery	Avg 2nd lien recovery	Avg 1st lien % of total debt	# default events	Avg. Sr Secured recovery	Avg Sr Unsec. Recovery	Avg Sr Sec % of total debt
0-20%	3	43.8%	5.6%	46.4%	17	43.9%	1.9%	33.6%
21-40%	5	86.4%	11.7%	33.4%	24	85.6%	14.0%	26.4%
41-60%	6	77.8%	28.2%	47.5%	38	94.9%	26.8%	33.5%
61-80%	4	100.0%	42.7%	41.0%	22	98.3%	50.1%	35.1%
81-100%	8	98.9%	78.4%	73.3%	22	100.0%	75.4%	45.1%
	26	85.5%	40.1%	51.6%	123	87.7%	33.7%	34.5%

Complex Capital Structures (at least three layers of debt)

Recoveries on second lien and unsecured debt in complex capital structures [11] tend to be progressively higher and similar in amount as debt cushion increases (see Figure 8), although isolating the influence of debt cushion in complex structures is less clear as family recovery also varies. For example, the 73% average second lien recovery at 21-40% debt cushion exceeded the 65% average recovery at 41-60% debt cushion largely due to a higher family recovery – 69.1% vs. 49.5%.

Where both debt cushion and family recovery were in a similar range, the recovery on second lien and unsecured debt were also within the 7-percentage point differential noted previously. For example, the 40.5% average second lien recovery at a debt cushion of less than 20% (58.8% average family recovery) was 7.8-percentage points higher than the 32.7% recovery on similarly positioned unsecured debt (some of this difference is explained by the slightly lower 52.3% average family recovery).

[11] In complex capital structures, the junior layer of debt is unsecured and/or subordinate bonds when the middle layer of debt is a second lien obligation. When the middle layer of debt is senior unsecured bonds in a complex structure, the junior layer of debt is a contractually subordinate bond.

Second Lien Debt Historical Recovery

Figure 8: Recovery on Second Lien vs. Similarly Positioned Unsecured Debt in Complex Capital Structures

First lien, second lien and unsecured/subordinate debt (a)

Debt cushion:	# default events	Avg. family recovery	Avg. 1st lien recovery	Avg 2nd lien recovery	Avg. Unsec. Debt recovery	Avg 2nd % of total debt
0-20%	8	58.8%	90.3%	40.5%	7.3%	42.2%
21-40%	11	69.1%	92.1%	75.1%	18.6%	16.0%
41-60%	12	49.5%	97.6%	63.8%	14.5%	14.8%
61-80%	11	55.4%	100.0%	90.6%	35.6%	15.4%
81-100%	4	51.8%	100.0%	100.0%	39.9%	3.4%
	46	57.4%	95.9%	72.1%	21.5%	19.0%

First lien, unsecured and subordinate debt (b)

Debt cushion:	# default events	Avg. family recovery	Avg. 1st lien recovery	Avg. Unsec. Debt recovery	Avg. Subordinate debt recovery	Avg Unsec. % of total debt
0-20%	29	52.3%	82.2%	32.7%	19.3%	43.5%
21-40%	32	48.5%	81.2%	47.3%	15.1%	30.3%
41-60%	14	46.9%	94.5%	55.1%	21.8%	21.2%
61-80%	13	67.3%	98.1%	92.4%	54.4%	17.0%
81-100%	7	44.2%	88.0%	77.0%	38.7%	7.2%
	95	51.7%	86.3%	52.4%	24.5%	29.4%

(a) Debt cushion refers to % of unsecured debt (senor unsecured and subordinate debt) below the second lien.

(b) Debt cushion refers to % of subordinate debt below the unsecured debt.

Conclusion

Moody's historical analysis of second lien debt ultimate LGD indicates that second lien obligations perform as a distinct layer of debt with recovery below that of first lien but higher than unsecured debt. Second lien recovery is marginally better (approximately 7-percentage points) than similarly positioned unsecured debt in a different issuer family due to priority over unsecured claimants; however, debt cushion and family recovery (ie, collateral valuation) are the most influential recovery determinants.

We believe these findings reinforce Moody's LGD methodology for incorporating severity rate expectations into expected-loss based instrument ratings. Priority of claim within the capital structure is the key ex-ante variable affecting second lien debt recovery reasonably evident in advance of default. Family recovery is also an important second lien debt recovery driver but wide variation makes family recovery difficult to predict accurately in advance of default. Moody's notching methodology incorporates this uncertainty through a probability-weighted distribution of possible family recovery values.

We will continue to analyze the loss experience of second lien debt as the recent wave of second lien debt issuance creates an expanded potential defaulting issuer data set during the next credit cycle downturn. Moody's will also focus future second lien research on *recovery as a percentage of principal at origination*. We believe this will provide an important complement to Moody's rich data set on *second lien discounted recovery as a percentage of principal at the time of the last payment* as origination most closely approximates the timing of Moody's initial rating assignments.

Second Lien Debt Historical Recovery

Appendix A – Second Lien Issuers in Moody's Ultimate LGD Database

Issuer	Structure	2nd lien type	Date of 2nd lien default	Date emerged	Collateral	Type of Default
aaiPharma Inc.	simple	note	5/10/05	3/7/06	All assets	Bankruptcy
Abraxas Petroleum Corp - 2003	simple	note	1/24/03	1/24/03	All assets	Distressed Exchange
Acterna Corp. - 2002	complex	note	8/9/02	8/9/02	All assets	Distressed Exchange (a)
Acterna Corp. - 2003	complex	note	5/6/03	10/15/03	All assets	Bankruptcy
American Restaurant Group Inc. - 2004	complex	loan	9/28/04	7/12/05	All assets	Bankruptcy
Ameriserve Food Distribution Inc	complex	loan	1/31/00	12/1/00	All assets	Bankruptcy
ANC Rental Corp.	complex	loan	11/13/01	2/3/05	All assets	Bankruptcy
Anker Coal Group Inc,	simple	note	4/1/02	10/10/03	All assets	Bankruptcy
Anthony Crane Rentals LP	complex	loan	7/31/03	7/31/03	First/Second	Distressed Exchange (a)
Atkins Nutritionals Inc.	simple	loan	7/31/05	1/10/06	All assets	Bankruptcy
Atlantic Express Transportation Inc.	simple	note	8/16/02	12/24/03	All assets	Bankruptcy
Audio Visual Services Corp.	simple	loan	12/17/01	3/5/02	All assets	Bankruptcy
Bally's Grand, Inc.	complex	note	11/26/91	8/20/93	All assets	Bankruptcy
Barry's Jewelers Inc. - 1997	simple	note	5/12/97	10/2/98	All assets	Bankruptcy
Bradlees Stores, Inc.	simple	loan	12/26/00	12/18/01	All assets	Bankruptcy
Burnham Broadcasting Co., LP	complex	note	4/14/93	4/14/93	All assets	Distressed Exchange
Charter Communications Inc.	complex	note	9/27/05	9/27/05	All assets	Distressed Exchange (a)
Choice One Communications Inc.	simple	note	10/5/04	11/18/04	All assets	Bankruptcy
Cone Mills Corp	simple	note	9/24/03	5/2/05	All assets	Bankruptcy
Converse Inc.	complex	note	1/21/01	7/31/02	All assets	Bankruptcy
Cook Inlet Communications Corp.	simple	note	7/8/93	8/12/93	All assets	Bankruptcy
Crown Books Corp. - 2001	simple	loan	2/12/01	10/20/01	All assets	Bankruptcy
Discovery Zone Inc. - 1996	simple	note	4/20/99	6/29/99	All assets	Bankruptcy
Drypers Corp.	complex	loan	10/10/00	8/14/01	All assets	Bankruptcy
Elsinore Corp.	complex	note	10/31/95	2/28/97	All assets	Bankruptcy
Fairmont Communications Corp.	complex	note	8/25/92	12/31/94	All assets	Bankruptcy
FAO Inc. - December 2003	simple	note	12/4/03	11/18/04	All assets	Bankruptcy
FAO Inc. - January 2003	simple	note	1/13/03	4/23/03	All assets	Bankruptcy
Flooring America Inc.	simple	note	6/15/00	6/11/03	Rec/Inv	Bankruptcy
Friede Goldman Halter Inc.	complex	loan	4/19/01	1/13/04	All assets	Bankruptcy
Fruehauf Trailer Corporation	complex	loan	10/7/96	10/27/98	All assets	Bankruptcy
Garden Ridge Corp	simple	loan	2/7/04	5/17/05	All assets	Bankruptcy
General Development Corp.	complex	note	4/6/90	3/31/92	All assets	Bankruptcy
Golden Northwest Aluminum Inc.	simple	note	12/22/03	4/14/05	All assets	Bankruptcy
Harrah's Jazz Co.	simple	note	11/22/95	10/30/98	All assets	Bankruptcy
Harvard Industries Inc. - 2004	simple	loan	1/15/02	11/17/04	All assets	Bankruptcy
Huntway Partners LP	simple	note	11/14/96	12/30/96	All assets	Bankruptcy

(a) Second lien did not default and continued on same terms and/or refinanced in full as part of the distressed exchange.

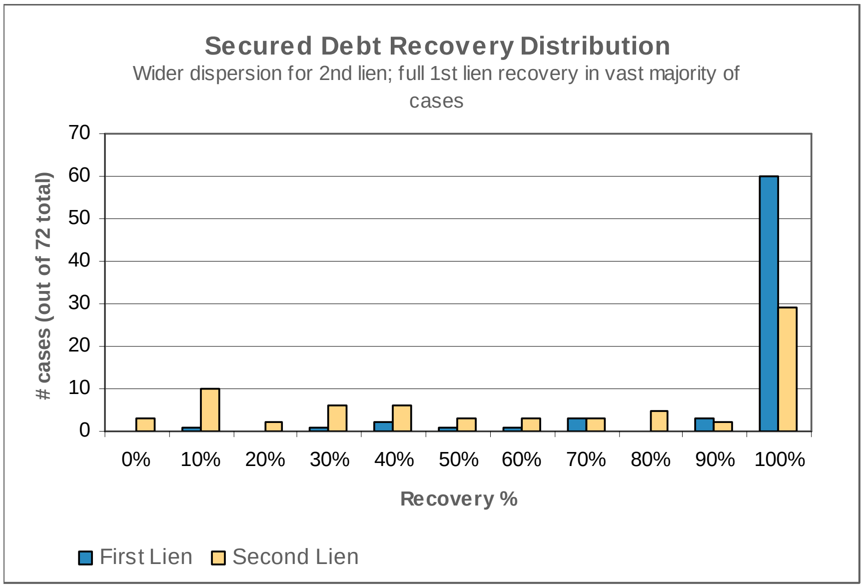
Second Lien Debt Historical Recovery

Issuer	Structure	2nd lien type	Date of 2nd lien default	Date emerged	Collateral	Type of Default
J.L. French Automotive Castings Inc. (2004)	complex	loan	8/24/04	8/24/04	All assets	Distressed Exchange (a)
J.L. French Automotive Castings Inc. (2006)	complex	loan	2/10/06	6/30/06	All assets	Bankruptcy
Jackson Products Inc	complex	note	1/12/04	2/12/04	All assets	Bankruptcy
Jordan Industries	complex	note	2/18/04	2/18/04	All assets	Distressed Exchange (a)
Just for Feet Inc.	complex	loan	11/4/99	2/21/00	All assets	Bankruptcy
K.B. Toys, Inc.	complex	loan	1/14/04	8/30/05	All assets	Bankruptcy
Keystone Consolidated Industries Inc.	complex	note	2/26/04	8/31/05	All assets	Bankruptcy
Marketing Specialists Corp.	complex	loan	5/24/01	5/26/02	All assets	Bankruptcy
Maxim Crane Works LP	complex	loan	6/14/04	1/25/05	All assets	Bankruptcy
McLeod USA Inc.- 2005	simple	loan	10/28/05	1/6/06	All assets	Bankruptcy
MCMS Inc.	complex	loan	9/18/01	1/13/04	All assets	Bankruptcy
Meridian Automotive Systems Inc.	complex	loan	4/26/05	12/29/06	All assets	Bankruptcy
Metal Management Inc.	complex	note	11/20/00	6/29/01	All assets	Bankruptcy
Michigan General Corp. - 1990	complex	note	8/22/90	9/15/92	All assets	Bankruptcy
National Steel Corp.	complex	loan	3/6/02	12/19/03	Rec/Inv	Bankruptcy
Nexpak Corp.	complex	loan	7/18/04	12/31/04	All assets	Bankruptcy
Oglebay Norton Company	complex	note	2/23/04	1/31/05	All assets	Bankruptcy
Peregrine Systems Inc.	complex	loan	9/22/02	8/7/03	All assets	Bankruptcy
Pliant Corp.	complex	note	1/3/06	7/18/06	All assets (1st lien: R/C & note have inv/AR; another note has PP&E)	Bankruptcy
PSF Finance L.P. / Premium Standard Farms, Inc.	simple	note	7/2/96	9/17/96	All assets	Bankruptcy
Public Service Co. of New Hampshire	complex	note	1/28/88	5/16/91	All assets	Bankruptcy
Rand McNally & Co.	simple	loan	2/11/03	4/7/03	All assets	Bankruptcy
RCN Corp.	complex	loan	5/27/04	12/22/04	All assets	Bankruptcy
Recoton Corp.	complex	loan	4/8/03	5/21/04	All assets	Bankruptcy
Republic Health Corp./REPH Acquisition Comp.	complex	note	12/15/89	5/1/90	All assets	Bankruptcy
Salant Corp. - 1998	simple	note	12/29/98	5/1/99	All assets	Bankruptcy
Scott Cable Communications, Inc.	complex	note	2/14/96	12/18/96	All assets	Bankruptcy
Silicon Graphics Inc.	complex	note	5/8/06	10/17/06	All assets	Bankruptcy
Spectravision Inc.	complex	note	6/8/95	10/8/96	All assets	Bankruptcy
Sterling Chemicals Holdings Inc.	complex	note	7/16/01	12/19/02	All assets	Bankruptcy
Telex Communications Inc.	complex	loan	11/21/01	11/21/01	All assets	Distressed Exchange (a)
TransTexas Gas Corp.- 2002	simple	note	11/14/02	8/28/03	Rec/Inv, Reserves	Bankruptcy
Weirton Steel Corp. - 2002	complex	note	6/18/02	6/18/02	Rec/Inv	Distressed Exchange
Weirton Steel Corp. - 2003	complex	note	5/19/03	5/17/04	All assets	Bankruptcy
WKI Holding Company Inc	complex	loan	5/31/02	2/3/03	All assets	Bankruptcy

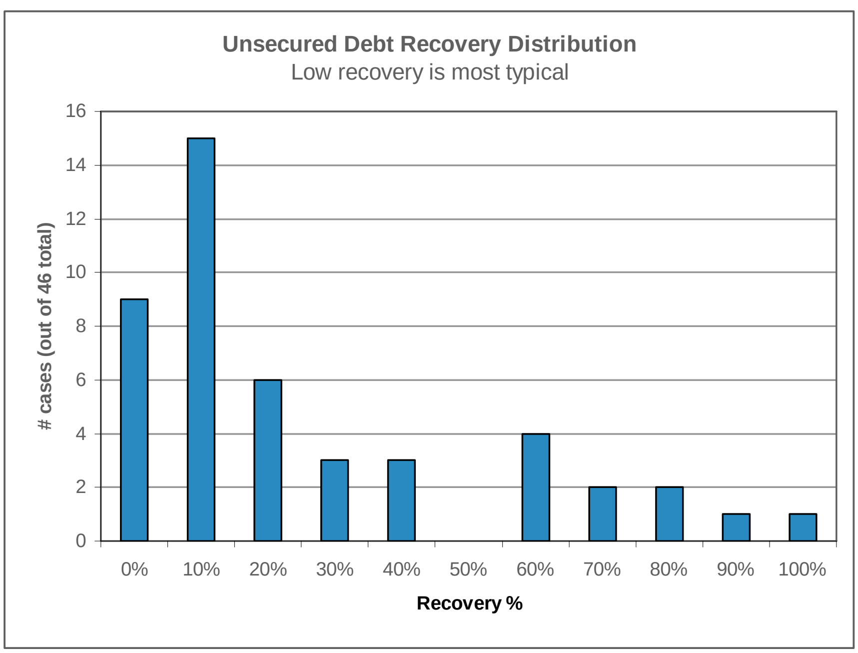
(a) Second lien did not default and continued on same terms and/or refinanced in full as part of the distressed exchange.

Appendix B: Recovery distribution by debt layer for the 72 issuers in Moody's Ultimate LGD database having second lien debt in the capital structure.

Second lien debt had full recovery in a number of cases, but impairment was more frequent and recovery more widely distributed than first lien debt. First lien debt recovered 100% in the vast majority of cases – demonstrating the importance of debt cushion in distress. Selected instances of less than full recovery on first lien debt were driven by very low family enterprise value relative to debt (leading to low family recovery).



Recovery on unsecured debt in the 46 cases with second lien debt in the capital structure is depicted in the chart below. The absence of meaningful debt cushion to absorb losses in default resulted in low recovery in the majority of instances.



Appendix C: Description of Moody's Ultimate Loss Given Default Database

- **Large U.S. corporate debt**
- **More than $500 billion in defaulted debt**
- **Currently has over 730 issuers and 3,500+ instruments**
- **1988 – today**
- **Three methodologies to calculate Ultimate Recovery, all three provided in:**
    - Nominal *recovery*
    - *Discounted* recovery
- **Currently available in Excel and Access**
- **Data used to create the Moody's LGD Rating Model**

Moody's Related Research

Special Comments:

- Moody's Approach to Assigning Ratings on Second Lien Obligations, November 2006 (100518)
- Responses to Frequently Asked Questions about Moody's Loss-Given-Default Assessments and Probability-of-Default Ratings, August 2006 (98683)
- Summary Guidance for Notching Secured Bonds, Subordinated Bonds, and Preferred Stocks of Corporate Issuers, September 2001 (70456)
- Credit Loss Rates on Similarly Rated Loans and Bonds, December 2004 (89981)
- Loss Given Default Analytics: Users' Guide Prioritizing Claims and Applying the LGD Model, September 2006 (99071)

Rating Methodologies:

- Probability of Default Ratings and Loss Given Default Assessments for Non-Financial Speculative-Grade Corporate Obligors in the United States and Canada, August 2006 (98771)
- CLO RFC: Proposal to Adapt U.S. Cash-flow CLO Rating Metholodogy to LGD/PDR Initiative, August 2006
- Moody's Analytical Framework for Speculative Grade Ratings: Senior Implied Ratings-A Tool That Facilitates the Assignment of Debt Ratings, May 1999 (40026)

Special Report:

- CLO FAQ: Responses to Frequently Asked Questions about U.S. CLOs and Proposed Changes to Moody's U.S. Laon Rating Methodology, March 2006

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

Second Lien Debt Historical Recovery

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