Are Securitizations in Substance Sales or Secured Borrowings:

Capital Market Evidence

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Abstract

Two standard setting approaches have emerged globally to guide the choice of accounting for securitizations: the control and components approach (FAS125/FAS140) and the risks and rewards transfer approach (IAS39). A lack of consensus about derecognition accounting is a major impediment to achieving convergence in global standards that must be resolved. Thus, both FAS140 and IAS39 will be re-examined and evidence pertinent to the debate is timely and important. In this study, we present evidence consistent with the view of credit rating analysts, who view securitizations as in substance secured borrowings. Specifically, for a sample of originators applying sale accounting guidance in FAS125/140 during the period 1997-2003, we show that off-balance sheet debt related to securitizations has the same risk relevance for explaining market measures of risk (i.e., CAPM beta) as on-balance sheet debt. We also find that, in a returns and earnings association framework, the pricing multiple on securitization gains declines as the amount of off-balance sheet debt increases, implying that investors take OBS debt into account when assessing the valuation relevance of such gains. It would appear that current gain recognition is premature for the high levels of financial leverage implicit in many securitization deals.

1. Introduction

> *"If a company retains the subordinated piece of a transaction, or retains a level of recourse close to the expected level of loss, essentially all the economic risk remains with the seller. There is no rating benefit that is deserved because there is no significant transfer of risk and there is no point analyzing such a company differently from the way it would be analyzed if it had kept the receivables on the balance sheet. Another serious concern is "moral recourse", the reality that companies feel that they must bail out a troubled securitization although there is no legal requirement for them to do so. Companies that depend on securitizations as a funding source may be especially prone to taking such actions. In many situations, this expectation undermines the notion of securitization as a risk transfer mechanism".*

(Standard and Poor's Corporate Ratings Criteria. 2001, p.106)

Asset securitization involves pooling groups of assets, such as mortgages, trade or credit card receivables, and financing them with securities that are sold to investors. As the above quotation implies, credit analysts generally adopt a secured borrowing view of securitizations and have algorithms for adjusting the balance sheet of the originator to bring the transferred assets and related off-balance sheet (OBS) debt back on to the balance sheet. The analysts have criticized sale accounting treatment for securitization deals, arguing that most or all of the risk of the transferred assets remains with the originator. This accounting is the focus of debate among standard setters around the globe.

Two standard setting approaches have emerged globally to guide the choice between sale accounting and secured borrowing accounting for securitizations. The two approaches are characterized as follows: (1) assets are derecognized on the basis of transfers of control, with sale accounting applied to transferred components (control and components approach). (2) assets are derecognized on the basis of transfer of risks and rewards, with sale

accounting applied to assets for which the entity has transferred substantially all risks and rewards (risks and rewards transfer approach).

The current U.S. standard, FAS140, is based on a transfer of control approach and adopts separate components accounting if a control transfer test is met. In contrast, the current International Accounting Standard, IAS39, is based primarily on an analysis of risks and rewards transfer. The international accounting standard setting partnership (IASB, FASB and other major national standard setters) has identified a lack of consensus about derecognition accounting as a major impediment to achieving convergence in global standards that must be resolved.[1] Thus, both FAS140 and IAS39 will be re-examined and evidence pertinent to the issues to be debated is timely.[2]

In this study, we present evidence consistent with the notion that originators, on average, retain most if not all of the risks related to the transfer of receivables. Specifically, for a sample of originators applying the sale accounting guidance in FAS125/140 during the period 1997-2003, we show that off-balance sheet debt related to securitizations has the same risk relevance for explaining market measures of risk (i.e., CAPM beta) as on-balance sheet debt.[3] This is consistent with the view of credit rating analysts, who view securitizations as in substance secured borrowings. Thus, advocates of the risks and rewards transfer approach to accounting for securitizations could cite our evidence as supporting secured borrowing accounting for securitizations.

We also present additional evidence supporting the above findings: in a returns and

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[1] Derecognition refers to the removal of financial assets or liabilities from the balance sheet.
[2] The boards [IASB and FASB] recently directed staff to begin a research project to develop an approach to derecognition that would be an improvement to both IAS39 and FAS140. *IASB Update,* April 2005.
[3] FAS140 became effective in 2001. While FAS140 expanded disclosure requirements, it carried over most of FAS125's measurement provisions.

earnings association framework, the pricing multiple for securitization gains declines as the amount of off-balance sheet debt increases, implying that investors take OBS debt into account when assessing the valuation relevance of such gains. It would appear that current gain recognition is premature for the high levels of financial leverage implicit in many securitization deals.

Related concurrent studies on securitization accounting using FAS125 samples, by Shakespeare (2003) and Karaoglu (2004), and one study using a FAS140 sample by Dechow, Myers and Shakespeare (2005) hypothesize and find evidence consistent with originators using the discretion afforded by FAS125/140 to value retained interests in an opportunistic manner to achieve earnings management objectives, thus pointing to problems with the control and components approach that relies heavily on reliable fair value estimates of components sold and retained. Their evidence, when combined with our OBS debt evidence, suggests that it might be better to leave transferred assets on the originator's balance sheet and recognize income as the cash is received.

The rest of the paper proceeds as follows. Section 2 provides some institutional background information. Section 3 reviews the related literature. Section 4 develops the hypotheses. Empirical models and variable measurement are described in Section 5. Section 6 describes the sample and Section 7 discusses the results. Finally, Section 8 concludes and discusses limitations of the study.

2. Background

2.1. The securitization process - a simple example

The mechanics of asset securitization can be complex. Typically, the originator sells the pool of assets to a Special Purpose Entity (SPE). The SPE uses the proceeds from the securities it has

issued backed by the pool of assets, to pay for the purchase of those assets from the originator. Securities marketed in this manner are referred to as Asset Backed Securities (ABS).[4]

Many scholars believe that the rapid growth of securitizations is due to its numerous benefits. For example, originators can achieve better asset portfolio diversification and sale accounting results in off-balance sheet financing. One benefit of this form of financing is that the SPE can typically raise financing at a lower cost of capital, compared to the originator, due to lower expected bankruptcy costs (see Gorton and Souleles, 2005). Typically, most of the SPE's debt is issued to public investors who require that the senior securities be highly rated (generally AAA or AA). In order to achieve these high ratings for the senior securities, the SPE must obtain credit enhancements that insulate senior securities from the risk of default on the underlying financial assets. Such credit enhancements are usually provided by the originators in the form of cash collateral account, reserve fund, commitments to purchase assets in default, recourse provisions, or holding the most junior securities issued by the SPE.

Asset securitization has expanded dramatically over the last decade, and is now being applied by a variety of firms, from financial institutions to manufacturing firms. The total issuance of asset-backed securities totaled $896 billion in 2004, up from $100 billion in 1995 (the Bond Market Association, Research Quarterly. February 2005). Clearly, these are economically important developments and the accounting issues are drawing a fair amount of attention from various regulatory bodies.

Figure 1 illustrates how the balance sheet of the originator can be very different depending on whether sale or secured borrowing accounting is used. Under sale accounting, the $100 of transferred receivables are removed from the balance sheet (for simplicity, we assume a zero gain on sale), replaced by consideration consisting of the subordinated tranche ($30) plus

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[4] For a detailed discussion of the technical and legal aspects of securitization structures, see Obay (2000).

cash ($70). The book debt-to-equity ratio in this instance is zero, implying no financial leverage. The off-balance sheet debt in this instance is $70, which is the $100 of transferred receivables minus the $30 of subordinated debt securities held by the originator, which provides credit support to the senior securities holders and takes the first loss position. In effect, $70 is the amount of implicit liability to public investors who purchased senior debt securities. Under secured borrowing accounting, the $70 is reflected as secured borrowing and the $100 of receivables remain on the originator's balance sheet. The book debt-to-equity ratio in this instance is $70/200 = 35\%$. While simplistic, this example illustrates that the book debt-to-equity ratio under secured borrowing accounting will be higher than under sale accounting. The actual difference between the two methods for originator is typically far more dramatic (see Standard and Poor's Corporate Rating Criteria, 2001). The primary empirical question we pose is as follows: which accounting approach, sales versus secured borrowing accounting, yields a measure of financial leverage which better explains market equity beta for our sample of originators?

Finally, Figure 1 illustrates another point of importance to our paper. The explicit recourse in our example is the first loss position of $30. Why then would there be a liability for the remaining $70? Gorton and Souleles (2005) refer to the $70 as involving implicit recourse: if the first $30 is wiped out by default losses, holders of the Tranche A securities issued by the SPE will look to the originator to absorb any additional losses, up to the full $100. The originator will feel compelled to do so, if it intends to go back to investors with subsequent securitization deals.

[Insert figure 1 here]

2.2. Accounting for transfers of financial assets under FAS125/140

The FASB adopted the control and components approach when it issued FAS125 in 1996. In 2001, FAS125 was replaced by FAS140, which expands disclosure requirements but carries over most of FAS125's measurement provisions. Upon completion of a transfer, FAS125/140 requires the transferred assets to be decomposed into separate components retained and sold. In its simplest form, the fair values of parts of the transferred assets sold and retained are estimated, and the relative fair values are used to pro-rate the original carrying value between the parts sold and the parts retained. The gain on sale is the difference between the net cash proceeds and the carrying value of the parts of the assets sold.[5]

Critics of FAS125/140 have expressed concerns over the reliability of this decomposition process and whether investors can depend on the reported balance sheet and income statement information to assess the substance of securitization firms' risk and earnings. First of all, FAS125/140 requires the estimation of fair values of retained interests (e.g., the $30 subordinated securities in Figure 1) that absorb the loss first when there is a default risk. Because fair value estimates involve uncertain future events (e.g., borrower default rate, prepayment rate, and appropriate discount rates), the subjectivity in the estimation process provides originators discretionary opportunities to overestimate the fair value of retained interests, resulting in an overstatement of the securitization-related gains. As a consequence, subsequent earnings restatements may be required during unanticipated business environments (Scism, 1998).

Perhaps the most serious challenge to FAS125/140 accounting arises from implicit recourse. For example, Higgins and Mason (2004) document sizable events of voluntary support of

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[5] The securitization gains represent the present value of the interest spreads expected to be earned by the originator on the receivables. See Dechow et al. (2005).

credit card securitizations by commercial banks in the mid-1990's. The following reflects the

concerns of rating analysts:

> *"The most dramatic risk is the moral imperative to protect a securitization from default.*
> *Although not legally required, there is a pattern of behaviour that strongly suggests*
> *finance companies and other entities will take whatever measures available to support*
> *their transactions and ensure continued market success."*
>
> (Implications of Securitization for Finance Companies. Fitch Inc. Research Reports.
> 1999, p.5)

Implicit recourse, if it exists, negates the FAS125/140 premise that the originator has

surrendered control to the SPE. However, FAS125/140 considers explicit (i.e., contractual)

recourse, but not implicit recourse, in tests of whether control has been transferred.

3. Literature review

The formal theory and evidence supporting the existence of implicit recourse appears in

Gorton and Souleles (2005). They use commitment on the part of the originator as a mechanism

to resolve the adverse selection problem in a two-person game involving the originator and the

SPE investor. The commitment takes the form of an expectation that the originator will subsidize

the SPE investor for any default losses related to the transferred receivables. What sustains the

commitment is the repeated context of the game and the threat by the SPE investor to not take

the originator's debt in the future if the originator deviates from the implicit contract. Gorton and

Souleles (2005) stress that the understanding must not be a formal contract, since a formal

contract would violate accounting and regulator rules allowing sale accounting.

One important implication of the above theory is that SPE investors care about the

bankruptcy risk of the originator because the originator must stay in business in order to honour

its implicit guarantee. They test this idea empirically with a sample of credit card securitizations

and show that the yields on SPE debt reflect the bond ratings of the originator. This represents indirect evidence consistent with the existence of implicit recourse.

This study complements the findings from several other studies examining the capital market implications of accounting for securitizations per FAS125 or FAS140 requirements. Using FAS125 data for the period 1997-1999, Shakespeare (2003) examines whether managers use their discretion to meet earnings targets by either managing the securitization volume or by managing the assumptions used to estimate the fair values of the retained interests. She finds evidence of earnings management to meet or beat targets with fair value estimates relating to the retained interests, but not with the securitization volume. Karaoglu (2004) examines regulatory filings between 1997 and 2000 and finds evidence that banks use gains from securitization to manage both regulatory capital and accounting earnings. Dechow et al. (2005) examine the gain on sale reported in the income statement, the retained interest reported on the balance sheet, and the adverse change disclosures under FAS140 reported in the notes. Like Shakespeare (2003), the authors conclude that originators manage assumptions used to estimate the fair values of retained interests in order to achieve earnings management objectives. Specifically, larger gains on sale are recorded when pre-securitization earnings are low. Their results suggest that firms with stronger corporate governance tend to report smaller gains.

4. Hypotheses

4.1. Assessment of OBS debt from securitizations

The implicit recourse argument supports our primary empirical hypotheses, namely, that investors take off-balance sheet liabilities related to securitization into account when assessing

the financial leverage and systematic equity risk of the firm. Returning to our simple example discussed in section 2.1, it is the net of the transferred receivables minus any retained interests on the balance sheet of the originator that represents the originator's implicit recourse liability to the holders of senior SPE debt. To the extent that sale accounting results in unrecorded financial leverage, the following hypothesis is implied (in alternate form):

> *H1: Measures of OBS risk are positively associated with systematic equity risk.*

Consistent with the view that originators retain most if not all the risks associated with transferred assets, the economic substance of many securitizations is in fact secured borrowing (see Ryan 2002, p. 168). If investors view OBS liabilities to be equivalent to on- balance sheet leverage, the following hypothesis is implied (stated in the null):

> *H2: There is no difference in the risk relevance of OBS liabilities and debt on the balance sheet.*

4.2. The interaction of gain on sales with perceived OBS debt from securitization

As noted by Shakespeare (2003) and Dechow et al. (2005), aggressive estimates regarding the fair value of retained interests impact directly on the valuation relevance of securitization gains. Prior to the adoption of FAS140, disclosure of managerial estimates used to determine the estimated fair value of retained interests was not required. In 1997, several securitizing firms announced losses resulting from downward adjustments to previously recorded retained interests. The adjustments occurred since securitized assets were prepaid more quickly than the seller's original estimates. The losses added to the concern of equity analysts regarding securitization gains (Scism 1998; Fabozzi 1998, p.129).

We predict that the valuation relevance of securitization-related earnings is perceived to be lower when firms have more OBS risk. Given possible estimation errors regarding the fair value of retained interests, the potential for future losses to wipe out present securitization gains increases as the off-balance sheet book of business increases.[6] Hence, our next hypothesis (in the alternate form) is as follows:

> *H3: The association between securitization gains and stock returns is lower for firms with more OBS risk from securitization.*

5. Models

5.1. The model used for testing the OBS debt hypotheses

We consider several possible alternative measures of equity risk, the dependent variable in our risk relevance model. There is evidence that beta is an appropriate, though noisy, measure of systemic risk. For instance, Kothari and Shanken (1995) demonstrate a positive relation between beta and average returns in a cross-sectional setting, although Fama and French (1992) show that measures of systematic equity risk are unable to fully explain expected returns. We opt for CAPM beta as our dependent variable because the Fama and French risk factors lack theoretical support. Moreover, the extant accounting risk relevance literature also uses CAPM beta. The following model was originated by Hamada (1972) and was further developed and implemented by Bowman (1979), Dhaliwal (1986) and Kimmel and Warfield (1995).

We begin with the well known result in Hamada (1972):

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[6] As noted by Ryan (2002, p.167), the unreported financial leverage arising from sale accounting for securitizations is analogous to an off-balance sheet derivative. Small variances of actual default rates from estimates can result in substantial write downs of retained interests (e.g., the $30 in Figure 1) for the originator. See Dechow et al (2005) for a numerical example.

$$\beta_L = \left[1 + (1-\tau)\frac{D_L}{S_L}\right]\beta_U \tag{1}$$

Where β_L, β_U are the CAPM betas of a levered and unlevered firm, respectively, τ is the

corporate tax rate, and D_L/S_L denotes the debt-to-equity leverage ratio.

Equation (1) states that the equity beta of a levered form is equal to the equity beta of an

unlevered firm times one plus the leverage ratio adjusted for the interest rate tax shelter.

Bowman (1979) shows that, given certain assumptions, one can use accounting beta, β_O

as a proxy for β_U. Accounting beta is the covariability of a firm's accounting earnings before

interest and taxes with the corresponding earnings of the market portfolio. Bowman is clear that

β_O measures β_U with noise, in part due to the error with which accounting income proxies for

economic income (i.e. stock return). Substituting β_O for β_U, Bowman (1980, p.250) derives the

following multiplicative empirical specification from equation (1):

$$\beta = \gamma_0 + \gamma_1\beta_O + \gamma_2\beta_O(1-\tau)\frac{D}{S} + \mu \tag{2}$$

Absent measurement error in accounting beta, the predicted coefficients for γ_1 and γ_2 are

unity. However, measurement error in β_O will cause the slope coefficients to be biased

downwards towards zero. This is problematic, especially for studies like ours where we examine

various candidates for the debt-to-equity ratio. To avoid having the variable of interest (D/S)

being interacted with a variable known to contain (potentially serious) measurement error,

Bowman (1980, p.250) proposes the following additive empirical specification as a modification

of equation (2):

$$\beta = \theta_0 + \theta_1\beta_O + \theta_2(1-\tau)\frac{D}{S} + \varepsilon \tag{3}$$

The additive specification has the advantage that the variable measured with error, β_O, is isolated and only θ_1 is biased downwards. This permits reliable inferences regarding the estimated coefficient of interest, D/S. Equation (3) is our primary empirical specification. We report robustness checks using the multiplicative empirical specification. Since our primary interest is the OBS debt related to securitization transactions, the total debt, D, can be further decomposed into on-balance sheet liabilities (D_{BS}) and off-balance-sheet liabilities related to securitization, (D_{OBS}), measuring the implicit recourse liability to SPE debt holders. Thus, we have:

$$D = D_{BS} + D_{OBS} \tag{4}$$

Substituting equation (4) into equation (3) results in our primary empirical specification for testing our off-balance-sheet debt hypotheses:[7]

$$\beta = \theta_0 + \theta_1 \beta_O + \theta_2 (1-\tau)\frac{D_{BS}}{S} + \theta_3 \frac{D_{OBS}}{S} + \varepsilon \tag{5}$$

In equation (5), θ_3 is used to test H1. If most or all risk remains with the originator through retained interests and implicit recourse, and investors view the economic substance of securitization to be that of secured borrowing, then we would predict that $\theta_3 > 0$ and $\theta_2 = \theta_3$, which are implied by H1 and H2.

Market beta in equation (5) is estimated based on a market model regression of daily firm returns on daily market portfolio returns. CRSP daily return data for the fiscal year corresponding to the period for which the financial data are reported is used in the estimation period. The CRSP value-weighted index for the corresponding period is used to measure the return on the market portfolio. To avoid potential bias in estimating betas for smaller firms due to non-synchronous trading for daily

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[7] As discussed by Gorton and Souleles (2005), the originator does not enjoy any tax interest shield related to D_{OBS}. Thus, $(1-\tau)$ is not multiplied by D_{OBS} in equation (5).

returns, market model parameters are adjusted by using the Scholes and Williams (1977) one lag and one lead model.

Following prior studies (e.g., Dhaliwal, 1986; Kimmel and Warfield, 1995), we define operating beta as follows:

$$\beta_{O,it} = \frac{COV(OE_{it}, OE_{mt})}{VAR(OE_{mt})} \tag{6}$$

where: $\beta_{O,it}$ is the operating beta for firm i in period t, OE_{it} is the operating earnings of firm i in period t and OE_{mt} is the operating earnings for a market portfolio in period t.

Firm i's operating earnings (OE_{it}) are defined as operating income before depreciation, interest and tax expense, deflated by the beginning period total assets. The corresponding market measure (OE_{mt}) is similarly constructed as the S & P 500 value-weighted operating income deflated by the beginning period total assets. A firm's operating beta, β_O, is then estimated for each period by running a time-series regression of operating earnings on market operating earnings. In order to allow sufficient observations in the estimation regression, we use quarterly data up to the year of interest to calculate operating betas. At least 10 and up to 56 quarters of data during the period of 1983 to 2002 are used to estimate the operating beta for each firm-year observation.

On-balance sheet leverage (D_{BS}) is measured by total (current and long-term) debt net of the interest tax shield as of the fiscal year-end. Following Dhaliwal (1986) and Kimmel and Warfield (1995), we measure the tax rate as the total income taxes divided by pre-tax income.[8] We define credit enhancements to refer to retained interests (such as the subordinated securities shown in Figure 1), and other forms of contractual recourse. We measure D_{OBS} as the

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[8] Following prior studies (e.g., Plesko, 2003), we set the tax rate to be zero if either tax expense or pre-tax income is negative.

outstanding principal amount of financial assets securitized after subtracting the credit

enhancements outstanding as of the fiscal year end, disclosed in firms' annual reports.[9]

5.2. The model used for testing the earnings hypothesis

Following prior studies (e.g., Easton and Harris, 1991), we use the following returns-earnings

association model to test our third hypothesis:

$$R_{it} = \alpha_0 + \alpha_1 E_{it} + \alpha_2 \Delta E_{it} + \omega_{it} \tag{7}$$

Where: R_{it} = raw annual stock return for firm i in year t
$\quad\quad E_{it}$ = earnings for firm i in year t
$\quad\quad \Delta E_{it}$ = annual change in earnings for firm i from year t-1 to year t

To examine the valuation relevance of securitization-related earnings, we decompose

total earnings into the net of tax amount of securitization-related earnings (GOS) and other

earnings (NI_GOS) as follows (the firm and year subscripts are dropped for simplicity):

$$R = \alpha_0 + \alpha_1(NI\_GOS) + \alpha_2 \Delta(NI\_GOS) + \alpha_3 GOS + \alpha_4 \Delta(GOS) + \omega \tag{8}$$

All variables are deflated by the market value of equity at the start of the fiscal year. The

coefficients on GOS and ΔGOS measure the association between returns and the level and changes

in securitization-related earnings. Allowing off-balance sheet debt to be interacted with GOS results

in the following regression equation

$$R = \alpha_0 + \alpha_1(NI\_GOS) + \alpha_2 \Delta(NI\_GOS) + \alpha_3 GOS + \alpha_4 \Delta(GOS) + \alpha_5(GOS \cdot D_{OBSDUM})$$
$$+ \alpha_6 (\Delta GOS \cdot D_{OBSDUM}) + \omega \tag{9}$$

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[9] As discussed in section 2.1, the entire amount of assets transferred to SPEs, net of the amount of credit support explicitly specified according to the structure of securitization deals, represents OBS leverage which the originator is implicitly responsible for. Other forms of contractual recourse include, for example, cash set aside by the originator to absorb credit losses.

In equation (9), D_{OBSDUM} is a dummy variable, which is 1 if D_{OBS} is above the sample median and 0 otherwise. H3 predicts that the association between securitization gains and stock returns is lower for firms with more OBS risk. Thus, our predicted interaction effects are that $\alpha_5 < 0$ and $\alpha_6 < 0$.

6. Sample

SFA125 became effective for fiscal year beginning after December 15, 1996, and FAS140 was effective beginning 2001. The sample selection involves identifying as many as possible U.S. firms that pursued securitization activities and applied FAS125/140 accounting during any year from 1997 to 2003.

Our sample consists of 535 firm-year observations for the 1997-2003 period, generated by 103 firms, with a complete panel of data available for 41 firms. To be included the firm had to be a listed company with data on Compustat and CRSP and the firm had to disclose sufficient securitization information in order for us to calculate implicit and contractual recourse.[10] We use the maximum number of observations available for each test, and the number of observations thus varies across tests.

Table 1 shows the sample distribution by industry. Similar to the sample of Dechow et al. (2005), the intensity of securitization-related transactions in the traditional financial sector is stronger than in the other sectors, with roughly 35% of our sample consisting of banks, savings and loan companies and insurance companies (compared to 33% for Dechow et al. 2005). Consistent with the rapid spread of securitizations, our sample consists of many other industries in addition to financial

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[10] We acknowledge that, like other empirical studies, our sample is based on firms who disclose securitization information. To the extent that firms with more OBS risk opt to disclose less information, this sampling criterion biases against finding our hypothesized results.

sector.[11] In the sensitivity analysis section, we also partition our sample between traditional financial institutions and other firms to ascertain whether our empirical results differ by industry.

[Insert Table 1 here]

7. Results

7.1. Results from testing the OBS debt hypothesis

Table 2, Panel A provides descriptive statistics for the primary variables used to test the OBS debt hypothesis.[12] Panel A of Table 2 indicates that the mean market beta for the sample is 0.99. Panel A also indicates that securitization appears to be an economically significant event, as shown by a mean D_{OBS} of 4.3, implying that the outstanding amount of transferred receivables minus the related credit enhancements represents 4.3 times the market value of equity of originators, on average. This implies that the mean book debt-to-equity ratio goes from 5.9 (Table 2, Panel A) using sales accounting to 10.2 using secured borrowing accounting, representing a substantial difference between the two methods as claimed by debt rating agencies. Of particular interest in Panel A is the ratio (CRD) of dollar amounts of outstanding credit enhancements provided by an originating firm to the dollar amounts of outstanding financial assets securitized by that firm. The mean ratio of CRD is 18.2%, implying that the dollar amounts of credit enhancements such as retained interests represent almost 20% of the dollar amounts of transferred receivables. As noted by Ryan (2002, p. 168), a ratio of this magnitude for our sample suggests that, on average, retained interests and other credit enhancements represent a large portion of the principal of the transferred receivables, pointing to secured borrowing accounting better capturing substance, relative to sale accounting. Panel B of

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[11] The implicit recourse argument of Gorton and Souleles (2005) assumes originators do securitization deals on an on-going basis. Our sample of originators satisfies this assumption. Of our 103 sample firms, all but 8 are in the sample for 3 or more years during 1997-2003.

[12] To reduce the impact of extreme observations, all variables used in the study are winsorized at the 2.5[th] and 97.5[th] percentiles.

Table 2 presents a correlation matrix of variables used to test the OBS debt hypothesis. As expected, there is a positive association between β_O and market beta at the 1% level. D_{BS} and D_{OBS} are also positively associated with the market beta. Diagnostics in Panel B indicate that collinearity is not a serious concern, since all the VIF statistics are below the threshold level.

[Insert Table 2 here]

In this paper, we estimate our regression models by running annual regressions and reporting mean regression coefficients and the cross-temporal t-statistic (Z_1 and Z_2 test), following Barth et al. (1998).[13] As a check, we also provide the estimation results based on panel regression methodology (Kmenta 1986) using a complete panel firms over the sample period. A complete panel design allows each sample firm to serve as its own control, thereby eliminating any differences that might result from temporal variation in sample composition.[14]

Table 3 reports the mean regression coefficients of tests of the market perception of OBS risk related with securitization and the corresponding Z_1 and Z_2 tests. The results from the annual regressions indicate that both the operating risk proxy (β_O) and the on-balance sheet leverage measure (D_{BS}) explain a significant amount of the variation in equity risk with coefficient magnitudes similar to those in prior studies (Dhaliwal 1986; Rosett 2001). We examine our OBS debt hypothesis by focussing on the estimated coefficient on D_{OBS}. The results reveal that θ_3 is significantly positive, suggesting that our OBS leverage measure, D_{OBS}, captures risk-relevant

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[13] The Z_1 statistic, which assumes residual independence is calculated as $(1/\sqrt{T}) \sum_{j=1}^{T} (t_j/[k_j/(k_j-2)]^{1/2})$, where t_j is the White's (1980) t-statistic for year j, k_j is degrees of freedom for year j, and T is number of years. The Z_2 statistic, which accounts for cross-sectional and temporal residual dependence is defined as: Mean t-statistic/(Std. Dev. of t statistic/$\sqrt{T-1}$); thus, more efficient estimates can be obtained.

[14] The pooling technique introduced by Kmenta (1986) employs a set of assumptions about the disturbance covariance matrix that gives a cross-sectionally heteroskedastic and time wise autoregressive model. Then, an estimator is obtained by a Generalized Least Square (GLS) procedure.

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information, incremental to on-balance sheet leverage and operating risk measures. The mean coefficient for D_{OBS} is positive and significant (0.012; $Z_1 = 3.007$; $Z_2 = 3.014$). Therefore, the evidence is consistent with H1. In addition, there is no significant difference between the coefficients on D_{BS} and D_{OBS} (t = 0.501), implying that investors perceive the risk relevance of OBS debt to be equivalent with on-balance sheet leverage, a view consistent with that of analysts. Thus the evidence is consistent with H2.

The findings from the panel regression based on 41 panel firms in Table 3 are similar to those obtained from annual regressions. Specifically, there is a significant association between the proxy for the OBS risk related to securitization (D_{OBS}) and the equity beta. As well, there is no significant difference between the coefficient on D_{BS} and on D_{OBS}, suggesting that OBS leverage affects systematic risk in a manner similar to on-balance sheet leverage. The result is consistent with the claim of Mian and Smith (1994) among others that there is very little actual transfer of credit risk when originators transfer receivables.

[Insert Table 3 here]

7.2. Results from testing the earnings hypothesis

Table 4 presents descriptive statistics for the variables used in the returns and earnings association tests. Panel A of Table 4 indicates that the median deflated securitization gain is 0.026, suggesting that securitization gains are a significant component of total income for such companies. The median gain represents 36% (0.026/0.072) of net income before securitizations. It is apparent from panel A that NI_GOS is negative for at least 25% of the sample firm years. Untabulated analyses reveal that NI_GOS is negative for 208 of the 549 firm-years, but net income is negative for

only 95 firm years, suggesting that securitization gains are used by managers to smooth income (an observation also made by Shakespeare, 2003).

Panel B reports the correlations of variables used in the returns and earnings regression. Panel B shows some strong correlations between the components of earnings and their changes, although diagnostics in Panel B indicate that collinearity is not a serious concern, since the largest VIF is below the threshold level. As expected, the correlation between returns and the interaction of securitization gains and OBS debt (GOS·D_{OBSDUM}) is significantly negative. There are also very strong negative associations between NI_GOS and GOS, suggesting, once again, that GOS is used for income smoothing.

[Insert Table 4 here]

Our main results testing the interaction between securitization gains and OBS risk appear in Table 5. Panel A presents the mean coefficients and cross-temporal t-statistics from annual regressions based on 549 firm-year observations, and Panel B provides the results from panel regressions based on 38 firms.

For the main effects model, the mean coefficients for both NI_GOS and Δ(NI_GOS) in the separate year regressions have the expected signs and are statistically significant, with magnitudes comparable to prior studies (e.g., Easton and Harris, 1991). The coefficient for GOS is significantly positive (0.191; $Z_1 = 2.693$; $Z_2 = 1.789$), suggesting that the current levels of gain on sale from securitization are relevant for explaining returns. Unreported results indicate that the coefficient on NI_GOS is significantly greater than that of GOS, suggesting that investors perceive the valuation relevance of securitization gains to be less than that of earnings excluding such gains. For the complete model, Panel A indicates that the coefficient on the interaction term, GOS·D_{OBSDUM}, is

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negative and significant (-0.432, Z_1 = -2.785; Z_2 = -2.195), as predicted by H3. In addition, a test of the linear restriction that $\alpha_3 + \alpha_5$ =0 cannot be rejected, indicating that securitization gains have zero value relevance for firms with D_{OBS} above the sample median.[15]

Panel B of Table 5 reports the corresponding panel regression results. Consistent with the results from the annual regressions, the unreported t-tests indicate that coefficient on NI_GOS is significantly greater than that of GOS. In addition, we find a negative association between GOS·D_{OBSDUM} and stock return (-0.207; t = -2.144), as expected. Once again, the linear restriction that $\alpha_3 + \alpha_5$ =0 cannot be rejected.

Overall, the results support hypothesis 3 and suggest that investors assign lower valuation multiples to securitization-related earnings for firms with a higher perceived level of OBS risk. The value relevance of securitization gains is zero for 50 percent of our firm-year observations, the partition with substantial off-balance sheet debt. These findings are consistent with the criticism of analysts related to the low valuation relevance of securitization gains, especially as the volume of securitization business increases.

[Insert Table 5 here]

7.3. Alternative model specifications and sensitivity analysis

We conduct the following sensitivity checks on our OBS model: using the multiplicative model specification; partitioning our sample between financial institutions and other firms and controlling for other risk relevant factors documented in prior studies. We also conduct additional tests on our returns and earnings association model: partitioning our sample between financial institutions and other firms; controlling for other factors documented in prior returns and earnings

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[15] Specifically, the p-values for a test that $\alpha_3 + \alpha_5$ =0 are insignificant for our panel regression (Table 5, Panel B) and for 6 out of 7 annual regressions (Table 5, Panel A).

studies, examining whether the lower earnings multiple is due to higher discount rate, and dropping

observations with negative net income and negative income before securitization gains.

7.3.1. OBS debt analysis

Using the multiplicative version of the Hamada (1972) model. As discussed in section 4, to

minimize potential measurement errors related with operating beta, our main results are based on the

additive version of Hamada (1972) suggested by Bowman (1980). We also estimate the following

multiplicative model using both annual regression and panel regressions.

$$\beta = \gamma_0 + \gamma_1\beta_O + \gamma_2\beta_O(1-\tau)D_{BS} + \gamma_3\beta_O D_{OBS} + \mu \quad\quad\quad (10)$$

The untabulated results indicate that our main inferences are not sensitive to using the

multiplicative version of the model: there is a significant association between OBS risk and market

beta (the coefficient estimate of γ_3 in equation (10) is 0.004, Z_1=1.83; Z_2=1.50), and there is no

statistically significant difference between the coefficient estimates for γ_2 and γ_3 in equation (10) for

both our annual regressions (t=0.53) and panel regression (t=0.23).

Following Kimmel and Warfield (1995), we also estimate the multiplicative version of the

model after taking a log transform of all right hand side variables to reduce the influence of variables

measured with error. Although the coefficients on operating beta, leverage and OBS debt are larger

in magnitude than the corresponding coefficients in the case when no such transformation is

performed, our main results are qualitatively similar.

Controlling for financial institutions. To minimize the concerns that our results are driven by

financial institutions, we partition our sample and repeat our tests.[16] We estimate the panel regression

reported in Table 3 after allowing both the intercept and slope coefficients to differ for financial

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[16] Following Dechow et al. (2005), we define financial institutions as banks, saving and loans companies and
insurance companies (SIC codes of 6021, 6022, 6035, 6036, 6361, and 6321).

institutions. Our main inferences regarding H1 and H2 are not sensitive to controlling for financial institutions. Referring to equation (5), we find that, for non-financial institutions, the estimated $\theta_3 > 0$ and the estimated θ_3 is insignificantly different from θ_2.

Controlling for other risk relevant factors. Our OBS risk inferences assume other risk related factors are adequately controlled for. We include proxies for firm size (the natural logarithm of total assets) and dividend payout (cash dividends divided by income before extraordinary items) in the OBS model reported in Table 3, since previous research (e.g., Beaver et al. 1970) documents both theoretically and empirically that firm size and dividend payout ratio are relevant in investors' risk assessments. Untabulated results indicate that the inclusion of these two additional variables does not significantly change the results reported in Table 3.

7.3.2. Sensitivity tests for our returns and earnings association

Controlling for financial institutions. We estimate the panel regression reported in Table 5 after once again allowing both the intercept and slope coefficients to differ for financial institutions. Our results are qualitatively similar to those reported in Table 5.

Controlling for other factors as documented in prior earnings and returns studies. Previous returns and earnings association studies in the literature have identified several returns-earnings association determinants, such as systematic risk (e.g., Collins and Kothari, 1989; Lipe, 1990); growth (e.g., Collins and Kothari, 1989; Martikainen, 1997); persistence (e.g., Collins and Kothari, 1989; Lipe, 1990); and size (e.g., Collins, Kothari and Rayburn, 1987). To ensure that our Table 5 results are not confounded by the omission of these variables, we partition our firms based on the risk indicator variable (D_{OBSDUM}) and analyze firm characteristics such as market beta, size (natural logarithm of total assets at year end), growth (market-to-book ratio at year-

end), and persistence (absolute value of NI_GOS, GOS and their changes) for the two D_{OBSDUM} partitions.[17] We conduct t-tests on means and z-tests on medians (untabulated) and find that there is no significant difference between size, growth, and persistence across these two groups, although we find that mean market beta in the high D_{OBSDUM} partition (1.17, untabulated) is significantly higher than the corresponding metric in the low D_{OBSDUM} partition (0.84). This is to be expected, given our results reported in Table 3.

Ascertaining whether our Table 5 inferences are driven by discount rates. To further examine whether our returns and earnings results reported in Table 5 are driven by discount rates rather than by the valuation relevance of securitization gains, we augment the empirical model reported in Table 5 by interacting D_{OBSDUM} with both the level and changes of NI_GOS. If the discount rate effect dominates, we would expect lower earnings multiples on earnings levels and changes that exclude securitization gains.[18] The untabulated results indicate that the coefficients on the two additional interactive variables are not significantly different from zero; while our main hypothesized results reported in Table 5 remain qualitatively the same.

Dropping observations with negative net income and negative income before securitization gains. Previous research indicates (e.g., Hayn, 1995) that the association between earnings and returns differs between profits and losses. To examine whether our results in Table 5 are driven by negative earnings observations, we eliminate observations with negative net income for the year, and repeat our regression analysis reported in Table 5.[19] We conducted the analysis for both annual regressions and the panel regression. While the results (untabulated) are

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[17] We use absolute value of NI_GOS and GOS and their changes to measure persistence because prior studies indicate that large magnitude earnings innovations have less persistence (see Freeman and Tse, 1992)

[18] Specifically, we estimate the following model using both annual regressions and panel regression:
$R = \alpha_0 + \alpha_1 (NI\_GOS) + \alpha_2 \Delta(NI\_GOS) + \alpha_3 GOS + \alpha_4 \Delta(GOS) + \alpha_5 (GOS \cdot D_{OBSDUM}) + \alpha_6 (\Delta GOS \cdot D_{OBSDUM}) + \alpha_7 (NI\_GOS) \cdot D_{OBSDUM} + \alpha_8 \Delta(NI\_GOS) \cdot D_{OBSDUM} + \omega$

[19] We drop 95 observations with negative net income when we estimate the annual regressions, and we drop 23 panel firms when we estimate the panel regression.

generally weaker, they are qualitatively similar to those reported in Table 5. To further examine

whether our results are sensitive to excluding observations with negative earnings excluding

securitization gains, we also drop observations with negative income before securitization gains,

and re-estimate our annual regressions and the panel regression. [20] Once again, our results are not

materially affected by this additional robustness check.

In summary, as expected, we find that OBS debt related to securitizations has the same

risk relevance for explaining market measures of risk as on-balance sheet debt. In addition, the

valuation relevance of securitization gains declines as the amount of OBS debt increases. Our

inferences do not appear to be sensitive to alternative model specifications and research design

choices. [21]

8. Conclusions

Two standard setting approaches have emerged globally to guide the choice

between sale accounting and secured borrowing accounting for securitizations: (1) the control

and components approach, by which assets are recognized and derecognized on the basis of the

transfer of control over the assets. (2) the risk and rewards transfer approach, by which assets are

derecognized on the basis of transfer of risks and rewards, with sale accounting applied to assets

for which the entity has transferred substantially all risks and rewards (IAS39).

The international accounting standard setting partnership (IASB, FASB and other major

national standard setters) has identified that these differences must be resolved as one of the

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[20] We drop 208 observations with negative NI_GOS for the year when we estimate the annual regressions, and drop 30 panel firms when we estimate the panel regression.
[21] Our results are also robust to separate estimation across the FAS125 and FAS140 periods. Specifically, when we estimate the Table 3 and Table 5 models separately for the periods (1997-2000, 2001-2003), our key inferences remain unchanged.

steps to achieving common global standards. Thus, both FAS140 and IAS39 will be re-examined and evidence pertinent to the issues to be debated is timely.

In this study, we present evidence consistent with the notion that, on average, originators retain most if not all of the risks related to the transfer of receivables. Specifically, for a sample of originators applying the guidance in FAS125/140 during the period 1997-2003, we show that off-balance sheet debt related to securitizations has the same risk relevance for explaining market measures of risk (i.e., CAPM beta) as on-balance sheet debt. This is consistent with the view of credit rating analysts, who view securitizations as in substance secured borrowings. In addition, our results are consistent with the theory and evidence in Gorton and Souleles (2005) that implicit recourse exists for the entire amount of transferred receivables. To the extent that implicit recourse exists, the FAS140 approach based on a transfer of control test is invalid. Thus, advocates of the risks and rewards transfer approach to accounting for securitizations could cite our evidence as supporting secured borrowing accounting for securitizations.

We also present additional evidence supporting the above findings. We find that the pricing multiple for securitization gains declines as the amount of off-balance sheet debt increases, implying lower valuation relevance of gains on sale as OBS risk increases. The value relevance of securitization gains is zero for 50 percent of our firm-year observations, the partition with substantial off-balance sheet debt. It appears that recognizing current gains on sale is premature for the high levels of financial leverage implicit in many securitization deals. Our findings are robust to several sensitivity checks, alternative model specifications and research design variations such as annual cross-sectional regressions and panel regressions, and controlling for other relevant factors as documented in prior studies.

Several concurrent research studies on securitization accounting (e.g., Shakespeare, 2003; Karaoglu, 2004; and Dechow et al. 2005) hypothesize and find evidence consistent with originators using the discretion afforded by FAS125/140 to value retained interests in an opportunistic manner to achieve earnings management objectives, thus pointing to problems with the control and components approach that relies heavily on reliable fair value estimates of components sold and retained. Their evidence, when combined with our OBS debt evidence, suggests that it might be better to leave transferred assets on the originator's balance sheet and recognize income as the cash is received from realization of those assets.

This study does not speak to the debate centering on the limitation of information provided by balance sheets. It might be argued that information regarding risk involvements from complex financial transactions such as securitizations would be better left to supplementary disclosures rather than balance sheet measures of assets and liabilities. Nevertheless, our results, when combined with those of concurrent FAS125/140 studies, challenge the extant measurement standards in FAS125/140. The debate surrounding FAS125/140 accounting will, we suspect, continue for some time to come.

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Figure 1: Securitization Structure

Originator's Initial Balance Sheet

Receivables $200   Owner's equity $200

Originator's Balance Sheet After
Transfer $100 of Receivables to SPE
(Sale Accounting)

Receivables $100

Retained interest $30
Cash $70   Owner's Equity $200
                   $200 $200

Book debt-to-equity ratio: nil

Originator's Balance Sheet After
Transfer $100 of Receivables to SPE
(Secured Borrowing Accounting)

Receivable $200   Debt $70

Cash $70   Owner's Equity $200
             $270 $270

Book debt-to-equity ratio: 70/200 = 35%

SPE's Balance Sheet After
$100 of Receivables Transferred to It

Receivables $100   Debt, Tranche A $70

                     Debt, Tranche B $30
              $100 $100

Borrowers

$ | Receivables

Loan Originator
(e.g. finance company)

$

Retained Interest
(Tranche B)

Sale of
Receivables

Special Purpose Entity
(e.g. trust)

$

Securities
Tranche A – To Investors
Tranche B – To Originator

Investors
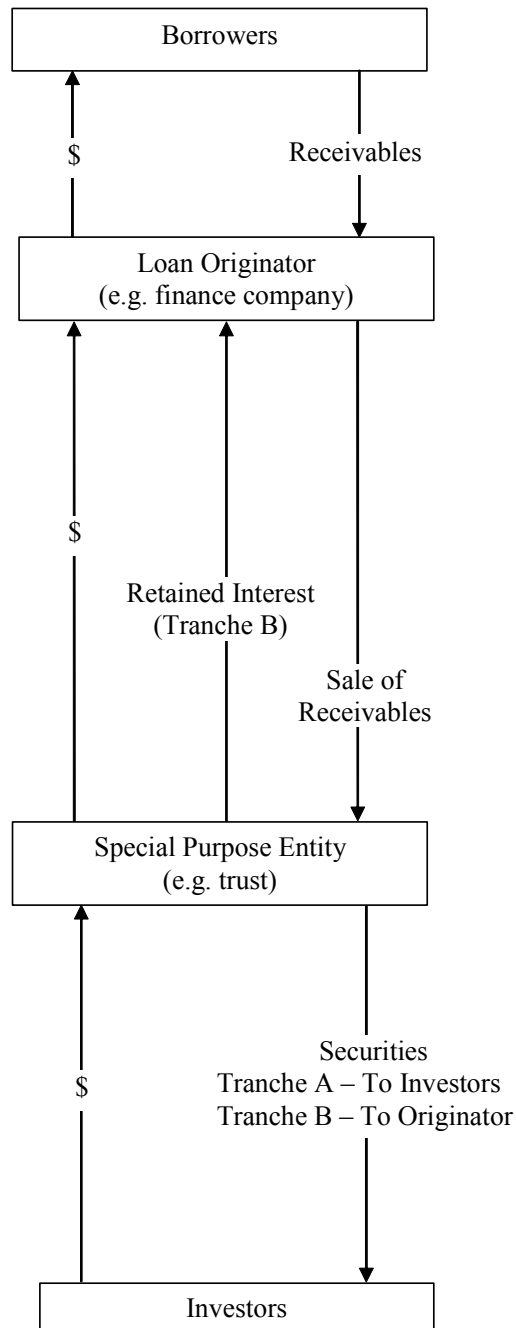
Table 1 - Sample Distribution by Industry

SIC Code	SIC Name	N	Frequency (%)
6162	Mortgage bankers and loan correspondents	82	15.3
6021	National commercial banks	66	12.3
6022	State commercial banks	54	10.1
6141	Personal credit institutions	42	7.9
6798	Real estate investment trusts	33	6.2
6035	Savings institutions, federally chartered	30	5.6
6159	Miscellaneous business credit institutions	21	3.9
6172	Finance lessors	14	2.6
6036	Savings institutions, not federally chartered	13	2.4
2451	Mobile homes	13	2.4
6321	Accident and health insurance	13	2.4
6153	Short-term business credit institutions, except agricultural	11	2.1
6531	Real estate agents and managers	11	2.1
5311	Department stores	7	1.3
6199	Finance – services	7	1.3
3711	Motor vehicles and passenger car bodies	7	1.3
5731	Radio, television, and consumer electronic stores	7	1.3
1531	Operative builders	7	1.3
2911	Petroleum refining	7	1.3
3350	Rolling drawing & extruding of nonferrous metals	7	1.3
4813	Telephone Communications (No Radiotelephone)	7	1.3
5040	Wholesale-Professional & Commercial Equipment & Supplies	7	1.3
6020	Financial institutions	7	1.3
7363	Help supply services	7	1.3
6361	Title insurance	6	1.1
4911	Electric services	5	0.9
6311	Life insurance	4	0.7
6726	Unit investment trusts	4	0.7
1381	Drilling oil and gas wells	4	0.7
5712	Furniture stores	4	0.7
6794	Patent owners and lessors	4	0.7
3531	Construction machinery and equipment	3	0.6
3523	Farm machinery and equipment	3	0.6
5500	Auto dealers, gas stations	3	0.6
3724	Aircraft engine, engine parts	3	0.6
5084	Wholesale-industrial machinery & equipment	3	0.6
6282	Investment advice	3	0.6
6736	Other	3	0.6
7389	Services-business services, NEC	3	0.6
	Total	535	100%

Table 2
Descriptive statistics of variables used to test the OBS debt hypothesis

Panel A: Descriptive statistics

	N	Mean	Median	Std. Dev.	Min	Q1	Q3	Max
β	535	0.993	1.011	0.961	-1.682	0.641	1.495	3.260
β_O	535	1.816	2.249	0.907	0.193	0.893	2.396	3.261
D_{BS}	535	5.973	3.902	6.699	0.147	1.584	8.185	32.600
D_{OBS}	535	4.348	0.820	8.489	0.000	0.001	3.949	37.000
CRD	535	0.182	0.063	0.245	0.000	0.001	0.226	0.980

Panel B: Correlation matrix of variables [a]

	β	β_O	D_{BS}	D_{OBS}
β	1	0.424***	0.394***	0.444***
β_O	0.301***	1	0.272**	0.320***
D_{BS}	0.375***	0.253**	1	0.333***
D_{OBS}	0.451***	0.197**	0.192**	1
VIF [b]	1.493	1.266	1.242	1.321

Notes:
[a] Pearson (Spearman) correlations are reported above (below) the diagonal. *, **, *** Indicates significance at the 10%, 5% and 1% levels (two-tailed).
[b] Variance Inflation Index (VIF) was used to test the collinearity among variables. A rule of thumb is that collinearity is a serious problem if VIF>10.

Variable definitions:
β = Market betas estimated by using the Scholes-Williams (1977) method, where the CRSP value-weighted market index is used.
B_O = Operating betas, estimated each quarter by running a time-series regression of quarterly operating earnings on market operating earnings using available past data.
D_{BS} = Total on-balance sheet leverage, net of interest tax shield, deflated by fiscal year end market value of equity.
D_{OBS} = Outstanding dollar amount of financial assets securitized as of the fiscal year-end, after subtracting securitizing firms' dollar amount of credit enhancements, which include retained interests and other forms of contractual recourse as of the fiscal year end, deflated by fiscal year end market value of equity.

Table 3
Tests of the OBS debt hypothesis: regression estimates from annual regressions and panel regression

This panel presents the mean coefficient estimates and cross-temporal t-statistics from the annual regressions. The last two columns also report the panel regression estimates.[a]

$$\beta = \theta_0 + \theta_1\beta_O + \theta_2 D_{BS} + \theta_3 D_{OBS} + \varepsilon \qquad (5)$$

Variable	Sign	Mean coefficient estimates from annual regressions (N=535)			Panel regression estimates (41 panel firms)	
		Mean Coefficient	Z_1 statistic [b]	Z_2 statistic [c]	Coefficient	t-stat
Intercept	?	0.023	0.219	0.117	0.551	7.056
β_O	+	0.535	7.548***	4.088***	0.103	2.806***
D_{BS}	+	0.024	4.850***	3.826***	0.031	6.391***
D_{OBS}	+	0.012	3.007***	3.014***	0.033	9.930***
H_0: $D_{BS} = D_{OBS}$			t-stat: 0.501			t-stat: -0.44
Mean Adj. R^2		24.5%			BUSE R^2	45.8%

Notes:

[a] *, ** ,*** Indicates significance at the 10%, 5% and 1% level (one-tailed).

[b] The Z_1 statistic which assumes residual independence is $(1/\sqrt{T}) \sum_{j=1}^{T}(t_j/[k_j/(k_j-2)]^{1/2})$, where t_j is the White's (1980) t-statistic for year j, k_j is degrees of freedom for year j, and T is number of years.

[c] The Z_2 statistic which accounts for cross-sectional and temporal residual dependence is defined as: Mean t-statistic/(Std. Dev. of t-statistics/$\sqrt{T-1}$).

Variable definitions:
β = Market betas estimated by using the Scholes-Williams (1977) method, where the CRSP value-weighted market index is used.

B_O = Operating betas, estimated each quarter by running a time-series regression of quarterly operating earnings on market operating earnings using available past data.

D_{BS} = Total on-balance sheet leverage, net of interest tax shield, deflated by fiscal year end market value of equity.

D_{OBS} = Outstanding dollar amount of financial assets securitized as of the fiscal year-end, after subtracting securitizing firms' dollar amount of credit enhancements, which include retained interests and other forms of contractual recourse as of the fiscal year end, deflated by fiscal year end market value of equity.

Table 4
Descriptive statistics of variables used to test the returns and earnings association

Panel A: Descriptive statistics

	N	Mean	Median	Std. Dev.	Min.	Q1	Q3	Max
R	549	0.019	-0.018	0.525	-1.322	-0.336	0.309	2.056
NI_GOS	549	-0.115	0.072	0.768	-4.721	-0.151	0.202	1.789
Δ(NI_GOS)	549	-0.004	0.015	0.809	-4.010	-0.108	0.102	4.012
GOS	549	0.242	0.026	0.613	-0.701	0.000	0.0191	4.191
ΔGOS	549	0.003	0.001	0.610	-4.112	-0.012	0.053	2.931
GOS $\cdot D_{OBSDUM}$	549	0.157	0.000	0.460	-0.697	0.000	0.106	4.187
ΔGOS$\cdot D_{OBSDUM}$	549	0.006	0.000	0.367	-3.232	0.000	0.007	2.930

Panel B: Correlation matrix of variables [a]

	R	NI_GOS	Δ(NI_GOS)	GOS	ΔGOS	GOS $\cdot D_{OBSDUM}$	ΔGOS $\cdot D_{OBSDUM}$
R	1	0.323***	0.235**	-0.079*	0.046	-0.138**	-0.063
NI_GOS	0.337***	1	0.348***	-0.663***	0.001	-0.501***	-0.117*
Δ(NI_GOS)	0.291***	0.513***	1	-0.119***	-0.460***	-0.028	-0.325***
GOS	-0.163*	-0.446***	-0.231***	1	0.222***	0.703***	0.207**
ΔGOS	0.050	-0.137**	-0.345***	0.490***	1	0.025	0.597***
GOS $\cdot D_{OBSDUM}$	-0.167**	-0.281***	-0.091*	0.639***	0.250***	1	0.279***
ΔGOS$\cdot D_{OBSDUM}$	0.015	-0.083*	-0.174**	0.334***	0.713***	0.450***	1
VIF [b]	1.193	2.735	1.763	3.579	2.457	2.421	1.857

Notes:
[a] Pearson (Spearman) correlations are reported above (below) the diagonal. *, **, *** Indicates significance at the 10%, 5% and 1% levels (two-tailed).
[b] Variance Inflation Index (VIF) was used to test the collinearity among variables. A rule of thumb is that collinearity is a serious problem if VIF>10.

Variable definitions:

R　　　　= The return on a share over the 12 months extending from three month after the last fiscal year-end to three month after current fiscal year-end.

NI_GOS　= Pre-tax income other than securitization-related income, net of taxes, deflated by the market value of equity at the start of the year.

ΔNI_GOS = Year to year change of NI_GOS.

GOS　　　= Securitization-related gain, deflated by the market value of equity at the start of the year.

ΔGOS　　= Year to year change of GOS.

D_{OBSDUM} = Indicator, coded as 1 if D_{OBS} (defined in Table 2) is above the sample median, and 0 otherwise.

GOS· D_{OBSDUM}, ΔGOS ·D_{OBSDUM} = Interactive variables.

Table 5
Tests of the returns and earnings association: regression estimates from annual regressions and panel regression

Panel A presents the mean coefficient estimates and cross-temporal t-statistics from the annual regressions. Panel B reports the panel regression estimates.[a]

$$R = \alpha_0 + \alpha_1(NI\_GOS) + \alpha_2\Delta(NI\_GOS) + \alpha_3 GOS + \alpha_4 \Delta(GOS) + \alpha_5(GOS \cdot D_{OBSDUM})$$
$$+ \alpha_6 (\Delta GOS \cdot D_{OBSDUM}) + \omega \qquad (9)$$

Panel A: Annual regressions. [a]

Variable	Sign	Mean coefficients from annual Regressions (N=549)			Mean coefficients from annual regressions (N=549)		
		Mean Coefficient	Z_1 statistic [b]	Z_2 statistic [c]	Mean Coefficient	Z_1 statistic [b]	Z_2 statistic [c]
Intercept	?	0.056	0.608	0.142	0.058	0.158	0.035
NI_GOS	+	0.290	5.403***	2.948***	0.305	5.518***	3.216***
Δ(NI_GOS)	+	0.069	2.951***	1.314*	0.043	2.963***	1.388*
GOS	+	0.191	2.693***	1.789**	0.251	3.112***	2.178**
ΔGOS	+	0.038	1.053	0.549	-0.379	0.492	0.301
GOS $\cdot D_{OBSDUM}$	-				-0.432	-2.785***	-2.195**
ΔGOS $\cdot D_{OBSDUM}$	-				0.429	1.665	1.303
Mean Adj. R^2		18.9%			19.2%		

Panel B: Panel Regressions [a]

Variable	Sign	Panel regression estimates (38 panel firms)	Panel regression estimates (38 panel firms)
		Coefficient	Coefficient
Intercept	?	0.045 (2.133)	0.051 (2.390)
NI_GOS	+	0.336 (5.504)***	0.328 (4.906)**
Δ(NI_GOS)	+	0.024 (0.370)	0.031 (0.442)
GOS	+	0.294 (6.282)***	0.306 (4.967)***
ΔGOS	+	-0.046 (-0.560)	-0.082 (-0.948)
GOS $\cdot D_{OBSDUM}$	-		-0.207 (-2.144)**
ΔGOS $\cdot D_{OBSDUM}$	-		0.145 (1.050)
BUSE R^2		18.9%	21.3%

Notes:
[a] *, **, ***: Indicates significance at the 10%, 5% and 1% level (one-tailed).

[b] The Z_1 statistic which assumes residual independence is $(1/\sqrt{T})\sum_{j=1}^{T}(t_j/[k_j/(k_j-2)]^{1/2})$, where t_j is the White's

(1980) t-statistic for year j, k_j is degrees of freedom for year j, and T is number of years.
[c] The Z_2 statistic which accounts for cross-sectional and temporal residual dependence is defined as:
Mean t-statistic/(Std. Dev. of t-statistics/$\sqrt{T-1}$).

Variable definitions:
R   = The return on a share over the 12 months extending from three month after the last fiscal year-end to three month after current fiscal year-end.
NI_GOS   = Pre-tax income other than securitization-related income, net of taxes, deflated by the market value of equity at the start of the year.
ΔNI_GOS = Year to year change of NI_GOS.
GOS   = Securitization-related gain, deflated by the market value of equity at the start of the year.
ΔGOS   = Year to year change of GOS.
D_{OBSDUM} = Indicator, coded as 1 if D_{OBS} (defined in Table 2) is above the sample median, and 0 otherwise.
GOS$\cdot D_{OBSDUM}$, ΔGOS $\cdot D_{OBSDUM}$ = Interactive variables.