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Abstract

In this study we provide empirical evidence demonstrating a relationship between the nature of the assets and the primary market spread. The model also provides predictions on how other pricing characteristics affect spread, since little is known about how and why spreads of asset-backed securities are influenced by loan tranche characteristics. We find that default and recovery risk characteristics represent the most important group in explaining loan spread variability. Within this group, the credit rating dummies are the most important variables to determine loan spread at issue. Nonetheless, credit rating is not a sufficient statistic for the determination of spreads. We find that the nature of the assets has a substantial impact on the spread across all samples, indicating that primary market spread with backing assets that cannot easily be replaced is significantly higher relative to issues with assets that can easily be obtained. Of the remaining characteristics, only marketability explains a significant portion of the spreads' variability. In addition, variations of the specifications were estimated in order to asses the robustness of the conclusions concerning the determinants of loan spreads.

Keywords: asset securitization, asset-backed securitisation, bank lending, default risk, risk management, leveraged financing.
JEL classification: G21, G24, G32

AN EMPIRICAL ANALYSIS OF ASSET-BACKED SECURITIZATION

1. Introduction

This working paper presents the results of an empirical investigation into the pricing of asset securitization issues. Securitization is a technique developed to finance a collection of assets which by their very nature are non-tradable and therefore non-liquid. The central element of an asset securitization issue is the fact that repayment depends only or primarily on the assets and cash flows pledged as collateral to the issue, and not on the overall financial strengths of the originator (sponsor or parent company). In the context of this study, asset securitization is defined as the process in which assets are refinanced in the capital market by issuing securities sold to investors by a bankruptcy-remote special purpose vehicle (SPV). The primary objective of the SPV is to facilitate the securitization of the assets and to ensure that the SPV is established for bankruptcy purposes as a legal entity separate from the seller (Blum and DiAngelo 1997, p.244). Choudhry and Fabozzi (2004, p.5) mention that the capital market in which these securities are issued and traded consists of three main classes: asset-backed securities (ABS), mortgage-backed securities (MBS), and collateralized debt obligations (CDO). As a rule of thumb, securitization issues backed by mortgages are called MBS, and securitization issues backed by debt obligations are called CDO[1] (see Nomura, 2004, and Fitch Ratings, 2004). Securitization issues backed by consumer-backed products - car loans, consumer loans and credit cards, among others - are called ABS (see Moody's Investors Service, 2002).

Securitization was first introduced on U.S. mortgage markets in the 1970s. The market for mortgage-backed securities was boosted by the government agencies that endorsed these securities. In 1985, securitization techniques that had been developed in the mortgage market were initially applied to a class of non-mortgage assets - car loans. After the success of this initial transaction, securitization issues

[1] Ultimately, all debt obligations in a CDO portfolio can be classified as bonds or loans, although both types of debt come in various forms with their own unique characteristics. Generally speaking, bonds are fixed income, tradable, and relatively liquid debt obligations issued by an entity seeking external capital in debt markets, be it a sovereign, corporate or financial institution. Loans are less fungible instruments in comparison with bonds since they are generally less liquid, and therefore less tradable, and will usually be held by a smaller group of investors (lenders) than is the case with bonds (see Fitch Ratings, 2004).

were backed by an increasingly diverse and ever-expanding array of assets, including corporate assets such as lease receivables and bank assets such as payments associated with corporate loans. Since then, the securitization market has grown to become one of the most prominent fixed income sectors in the U.S. and in fact one of the fastest evolving sectors around the world. Securitization can be found both in developed and in emerging countries (Standard & Poor's, 2006).

Given its increasing importance as a funding vehicle and risk management tool, it is not surprising that asset securitization has attracted considerable academic interest. According to Modigliani and Miller (1958), in perfect capital markets, a firm's financing decisions are irrelevant because they do not create firm value. Thus, in line with their propositions, it is irrelevant whether a firm adopts asset securitization or not. However, in modern economic views, there are sufficient theoretical rationalizations for a firm or organization to securitize their assets: in the light of signaling (Myers and Majluf, 1984), (Greenbaum and Thakor, 1987), (Riddiough, 1997), (Minton, Opler and Stanton, 1997), (Plantin, 2004); in the light of avoiding underinvestment (Benveniste and Berger, 1987), (James, 1988), (Stanton, 1995), (Sopranzetti, 1999); in the light of avoiding asset substitution (Lockwood, Rutherford and Herrera, 1996), (Thomas, 1999, 2001), and finally in the light of avoiding the costs of standard bankruptcy (Skarabot, 2001), (Gorton and Souleles, 2005), (Ayotte and Gaon, 2005). Ergo, even though asset securitization is costly and would not be undertaken in frictionless and complete markets, recent financial theory suggests that firms may benefit from asset securitization.

Several other streams of theoretical research address other asset securitization characteristics in addition to demonstrating that firms may benefit from securitization in the light of certain market imperfections. Although the vast majority of articles and working papers are based on theoretical rather than empirical studies, numerous recent theoretical breakthroughs in the analysis of securitization and its use have all yielded important insights into the observed structure and pricing features of asset securitization issues. Key articles include theoretical studies carried out by Duffie and Gârleanu (2001), Jobst (2002, 2003), and Choudhry and Fabozzi (2003) on originating collateralized debt obligations; theoretical studies on special purpose vehicles and the impact on bankruptcy remoteness, carried out by Gorton and Souleless (2005) and Ayotte and Gaon (2005); an empirical study explaining launch spreads on

structured bonds, performed by Firla-Cuchra (2005); descriptive studies of asset-backed securitization and its use, carried out by Schwarcz (1994) and Roever and Fabozzi (2003); a theoretical model proposed by Plantin (2004) in which tranching presents itself as the optimal structure; an empirical study carried out by Ammer and Clinton (2004) investigating the impact of credit rating changes on the pricing of asset-backed securities; theoretical studies on originating mortgage-backed securities performed by Childs, Ott and Riddiough (1996) and Oldfield (2000); an empirical study by Firla-Cuchra and Jenkinson (2006) investigating the determinants of tranching; descriptive studies by Jobst (2005a) on the regulatory treatment of asset securitization; a descriptive study on collateralized fund obligations performed by Stone and Zissu (2004), and finally a theoretical study by Cummins (2004) on the securitization of life insurance assets and liabilities.

To summarize this section, we believe that the above-mentioned studies provide us with a clear understanding of the motivations, structural considerations and pricing features of asset securitization. Generally speaking, the asset securitization market is composed of asset-backed securities (ABS), mortgage-backed securities (MBS) and collateralized debt obligations (CDO). The securitization market has grown to become one of the most prominent fixed income sectors, and the securitization issues are backed by a diverse and ever-expanding array of assets.

However, despite the markets' size and their recent growth, the question precisely how financial market participants price these securities has been somewhat neglected in the academic literature.[2] To address this issue, the question constituting the focus of this working paper investigates *which determinants influence the primary market spreads of asset-backed securitization issues.* The analysis of the determinants concerning primary market spreads of asset-backed securitization issues provides a major and highly useful addition to our understanding of the pricing factors which indeed characterize fixed income markets.

[2] Firla-Cuchra (2005) has investigated the determinants of launch spreads in European securitization transactions using a sample of 5,161 observations. The dataset includes all structured finance transactions, but limited to the European market. The author documents the importance of the impact of credit ratings and other price determinants on the launch spread. However, the study contains a methodological drawback in that neither security classes have been defined nor correlation tests have been conducted, which casts doubt on the significance of the findings.

The purpose of this working paper is twofold. First, we investigate the impact on the primary market spread of an asset-backed security caused by the nature of the assets after controlling for other pricing characteristics.[3] Second, this research analyzes these other pricing characteristics exclusively for the asset-backed security. The choice of asset-backed securities (ABS) as target security class in the empirical analyses is based on two main considerations. First, ABS are issued by both financial institutions and corporations; MBS and CDO are issued mainly by financial institutions. Second, ABS include a much wider variety of assets in comparison with MBS and CDO.

Five arguments illustrate this study's contribution to the field of interest. *First*, there is no standard data source for these securities, and therefore few empirical studies exist of how these securities are priced. A major contribution of our study lies in the assembly and analysis of a substantial dataset describing the characteristics of asset securitization issues. *Second*, the vast majority of published articles and working papers related to asset securitization are theoretical rather than empirical. To the best of our knowledge, our study is the first to have conducted a full-scale empirical analysis of how these securities are priced.

As a *third* contribution, we provide the reader with several explicit estimates of spread components that have not been considered by previous empirical studies. These factors are related to three main aspects: (i) default, investigated by variables such as loan to value, the type of originator and the type of collateral; (ii) marketability, analyzed by the type of primary market; and (iii) systemic risk, investigated by the country of origin, and finally legal risk.

The *fourth* contribution lies in the fact that the determinants of primary market spreads are relevant for different classes of capital market participants. Investment banks in charge of structuring the technical features of certain issues may find the estimates concerning the size of each variable's impact on the issuance spread by security class a useful tool. Second, financial institutions and corporations wishing to raise funds in the asset-backed markets may obtain reasonable estimates of the average spread that they would face. Third, rating agencies are provided with empirical information concerning the way their credit risk evaluations are perceived by investors.

[3] It is important to note that this study is based on *issuance spreads*. Secondary market spreads are not preferred because it is loan spreads at issuance that reflect actual loan prices, rather than estimations derived from pricing matrices or dealers' quotes. Issuance spreads are a more accurate measure not only of the actual cost of debt but also of the risk premium demanded by investors.

Finally, as a *fifth* contribution, this study not only complements the academic literature on the pricing of asset securitization issues, but also adds to the vast empirical and theoretical literature that seeks to explain the bond spread over Treasury yields (see Duffee (1999), Duffie, Pedersen, and Singleton (2000), and Collin-Dufresne, Goldstein and Martin (2001), among others). In addition, we believe that this study's empirical results also contribute to the growing body of theoretical and empirical literature on the role of collateralization other than securitization (see Stiglitz and Weiss (1981), Besanko and Thakor (1987), Boot, Thakor and Udell (1991), John, Lynch and Puri (2003), and finally Gonas, Highfield and Mullineaux (2004), among others).

In the following sections, we shall discuss the results of our analyses. The remainder of this working paper is organized as follows. In Section 2 the background information and hypothesis are discussed. In Section 3 we discuss our data. Section 4 describes our regression model. In Section 5 we turn to our regression analysis and explore each explanatory variable affecting loan spread in our sample. In Section 6 we asses the robustness of the conclusions concerning the determinants of ABS loan spreads. Finally, Section 7 concludes this working paper.

2. Background Information and Hypothesis

Ayotte and Gaon (2005) have developed a theoretical model which incorporates the differential control rights and cash flow rights that various lenders receive at bankruptcy. They argue that asset securitization is unique in that it maximizes ex-post protection of creditors in bankruptcy. Inefficient continuation of the sponsor in a situation of default is hereby reduced. However, the reduction of inefficient continuation depends heavily on the nature of assets being securitized. On the basis of this argument, the authors expect asset securitization to be the most efficient instrument when the backing assets are replaceable only. In a sponsor default, replaceable assets can easily be obtained from outside sources at a competitive price. So, the sponsor may then have no incentive to file a claim against the SPV to obtain the assets securitized, and thus the claim of the SPV is not diluted.

However, when the securitized assets are necessary for operations and the firm cannot easily replace them by resorting to outside markets, securitization may lead to inefficient hold-ups. This result is consistent with the theoretical characterization of asset securitization, in that avoiding dilution of the investor's claim in a standard bankruptcy of the sponsor is valuable in a way that is observable in prices. Thus, we would expect a higher spread for securities backed by assets that cannot easily be replaced. Unfortunately, the sign of the coefficient cannot be determined clearly for all assets that serve as collateral for an asset securitization issue, since the assets exhibit a wide variety of pay-off characteristics.

Nonetheless, in particular, we expect a positive coefficient for whole business loans and future receivables on the one hand, and a negative coefficient for automobile loans and credit card receivables on the other. Two reasons can be given. First, whole business and future receivables are secured by a pledge on a unique set of assets and therefore considered difficult to replace. Second, automobile loans and credit card receivables are relatively homogeneous and relatively easy to replace in a constructed portfolio.

These findings give rise to the following question: do securitized assets that cannot easily be replaced have a significant positive impact on the primary market spread of an asset securitization issue relative to issues with assets that can easily be obtained? Since we wish to control for other pricing characteristics, such as credit rating for example, statistical significance could be poor as the risk inherent to an asset type is already reflected in the rating of a securitization issue. We therefore propose the following hypothesis: the primary market spread for securitization issues with backing assets that *cannot* easily be replaced is not significantly higher relative to issues with assets that *can* easily be obtained.

In order to test this hypothesis we used an *ordinary least squares regression* analysis to model the magnitude of the difference between securitization issues with backing assets that can easily be replaced and with assets that cannot easily be replaced. We restricted our analysis to our sample of ABS issues for the reasons mentioned in Section 1.

3. Data Description

The principal data source used in this study is formed by the data provided in Structured Finance International Magazine, published by Euromoney Institutional Investor Plc. Structured Finance International (hereafter: SFI) is recognized as one of the leading journals and news sources by the foremost market practitioners - issuers, investors, bankers and other service providers. In particular, SFI provides data on the volume and nature of securitization activities, as well as accurate and transparent league tables on the global capital markets spanning Asia, the Middle East, Europe, Africa and the Americas. This database contains detailed historical information on virtually the entire population of securitization of non-U.S. assets from January 1, 1999 through March 31, 2005. *We freeze the sample as of this date for the current analysis. We will update the sample throughout the review process.* Our sample contains information on 2,427 ABS issues (worth €363.19 billion) and we refer to this as our "full sample". Because the unit of observation is a single issue (single loan tranche), multiple issues (multiple loan tranches) from the same transaction appear as separate observations in our database - 765 transactions, containing 2,427 issues. Although comprehensive in many ways, our full sample has *three* limitations for our purposes. *First*, it provides detailed information on securitization transactions limited to non-U.S. assets and dated after 1998. *Second*, we do *not* have information measuring credit risk information of the originator, such as solvency, liquidity or leverage ratios. *Third*, some of the issues may lack key variables such as credit spread.

One of the most important objectives of this study is to analyze the impact on the primary market spread of an asset-backed security caused by *the nature of the assets* after controlling for other pricing characteristics. In addition, we provide empirical evidence concerning these other pricing characteristics that may affect the primary market spread of ABS issues. A comparison of empirical studies shows that each study employs a different set of explanatory variables in accordance with its research objective. Some variables associated with the loan are used in all regressions, whereas variables describing additional characteristics differ significantly (e.g. Kleimeier Megginson (1998), Elton, Gruber, Agrawal and Mann (2001), Kleimeier and Megginson (2001), John, Lynch and Puri (2003), Firla-Cuchra (2005), Gabbi and Sironi (2005)). To address this issue, our full sample is categorized with respect to three main groups of

explanatory variables: *A*.) *default and recovery risk characteristics; B*.) *marketability characteristics; C*.) *systemic risk characteristic.* We divided each group into a set of variables that are meaningful for the pricing of asset securitization issues. For each group, a set of variables was chosen derived from existing theoretical and empirical evidence.

We selected from our full sample those issues associated with ABS for which data on spreads were available or computable. We also screen for complete data on default and recovery risk characteristics, marketability characteristics and systemic risk characteristics. This procedure has yielded a sub-sample of 968 ABS issues (worth €178.51 billion). We refer to this as our "high-information sample", while we call the larger dataset our "full sample". Our sample includes issues with six *A*.) *default and recovery risk characteristics* (credit rating, loan to value, type of originator, maturity, credit enhancement, and nature of assets); ten *B*.) *marketability characteristics* (time of issue, loan size, transaction size, number of tranches, type of market, number of lead managers, number of credit rating agencies, whether the issue is a tap issue or not, whether the issue is retained or not, and finally type of interest rate), and four *C*.) *systemic risk characteristic* (country of origin, creditor rights, enforcement, and currency risk).

Table 1 compares the pricing characteristics in the full sample of issues associated with ABS with the pricing characteristics associated with the newly created sub-sample of ABS.

******Insert Table 1 about here******

We documented an average survival rate of 42.7% from the full sample to the sub-sample of ABS issues. Dissimilarity occurs between the two samples with respect to the type of primary market (84.0% euromarket recorded in the sub-sample versus 51.1% in the full sample). We shall run an additional regression for issues placed in euromarket and other markets. With this check, we aim to investigate whether the relationship between spread and pricing characteristics is different across euromarkets and other markets. Also, the sub-sample is very similar to our full sample in terms of spread, *A*.) *default and recovery risk* (credit rating, loan to value, type of originator, maturity, credit enhancement, nature of assets), *B*.) *marketability* (time, size of the tranche, size of transaction, number of tranches, number of lead managers, number of credit rating agencies, tap issue, retained issue, type of interest rate) and finally *C*.)

systemic characteristics (country of origin, creditor rights, enforcement, currency risk).[4] So, we shall assume that any empirical results derived from the ABS sub-sample may be generalized to the larger population of ABS issues.

4. Regression Model

In this section, we subject the high-information sample detailed in **Table 1**, to ordinary least squares regression analysis.[5] Our purpose in doing this are two-fold. *First* we wish to determine the impact on the primary market spread of an asset-backed security caused by *the nature of the assets* after controlling for other pricing characteristics. *Second*, we wish to provide empirical evidence concerning these other pricing characteristics that may affect the primary market spread of ABS issues. In order to allow for a comparison of the empirical results, the proxies we used to test which factors affect primary market spread are based on theory. We shall provide a brief explanation for each variable below. In line with previous research in this area, we estimate the determinants of the primary market spread with the help of the following model:

$$\begin{aligned} SPREAD_i = {} & \alpha_n + ß_1\,CREDIT\ RATING_i + ß_2\,LOAN\ TO\ VALUE_i + ß_3\,TYPE\ ORIGINATOR_i \\ & + ß_4\,MATURITY_i + ß_5\,ENHANCEMENT_i + ß_6\,NATURE\ OF\ ASSETS + ß_7 \\ & TIME\ OF\ ISSUE + ß_8\ LOAN\ SIZE_i + ß_9\,TRANSACTION\ SIZE_i + ß_{10}\,\# \\ & TRANCHES_i + ß_{11}\,TYPE\ MARKET + ß_{12}\ \#\ LEAD\ MANAGERS_i + ß_{13}\,\# \\ & RATING\ AGENCIES_i + ß_{14}\,TAP_i\ + ß_{15}\,RETAINED_i + ß_{16}\,TYPE\ INTEREST_i + \\ & ß_{17}\,COUNTRY\ ORIGIN_i + ß_{18}\,CREDITOR\ RIGHTS_i + ß_{19}\,ENFORCEMENT_i + \\ & ß_{20}\,CURRENCY\ RISK_i + \varepsilon_i \qquad (1) \end{aligned}$$

[4] For transaction size and number of tranches, we calculated average and standard deviation, taking into account transaction size and number of tranches for each transaction *individually*.

[5] Our model adjusts for heteroscedasticity through White's methodology (1980).

A discussion of these variables (and expected impact on primary market spread) will follow below.

4.1 Primary Market Spread

The SPREAD (primary market spread) represents the price for the risk associated with the security on the basis of information at the time of issue. In our sample, the spread is defined as the margin yielded by the security at issue above a corresponding benchmark. The benchmark is presented in basis points. For floating rate issues, the spread (in basis points) is reported as a quoted margin above the Interbank Offered Rate. For fixed rate issues, the spread is represented in basis points over the closest benchmark of matching maturity.

4.2 Expected Default and Recovery Risk Characteristics

The first set of explanatory variables affecting loan spread consists of default and recovery risk (group *A.*). The following factors used here represent default and recovery risk characteristics: credit rating, loan to value, type of originator, maturity, credit enhancement, nature of assets. A discussion of these variables and expected impact on primary market spread will follow below.

The credit rating of a loan issue is an evaluation of the likelihood of a borrower defaulting on a loan. By including CREDIT RATING in our analysis, we can analyze the impact of default on a securitization issue. A better bond rating should result in lower spreads. This notion is empirically supported by Elton, Gruber, Agrawal and Mann (2001), John, Lynch and Puri (2003), and finally Gabbi and Sironi (2005), who all find credit rating statistically significant. CREDIT RATING should capture the difference in both issuers' creditworthiness and bonds' seniority and security structures. Needing a consistent rating classification, we used the ratings scales as shown in **Table 2**. This classification scheme consists of 21 rating scales for three rating agencies: Fitch, Moody's, and Standard & Poor's.

******Insert Table 2 about here******

As part of the process, we collected the credit rating class at the time of issuance. If a loan tranche had multiple ratings, we calculated the average of the given values, rounded off to the nearest absolute value, as the rating classification. We used a set of seven CREDIT RATING dummy variables that correspond to credit rating: 1-2 (CR=1-2), 3-4 (CR=3-4), 5-6 (CR=5-6), 7-8 (CR=7-8), 9-10 (CR=9-10), 11-12 (CR=11-12), and 13-14 (CR=13-14). Credit rating classifications above B1/B+ (CR>14) are not available. Credit rating 1-2 (CR=1-2) is the omitted rating category: it has been dropped to avoid collinearity. A word of caution is needed here, as it is important to remember that the rating scales are inverse scales, so that spread *in*creases as rating *de*creases.

Given our desire to control for credit protection of all positions subordinate to a loan tranche, we included the LOAN TO VALUE (cumulative level of subordination) in our analysis. In an asset securitization transaction, the senior-subordinated structure splits cash flows into many classes of notes, with each class, or loan tranche, having absolute priority in the cash flow over the more junior classes. This structure is layered, so that each position benefits from the credit protection of all the positions subordinated to it. Typical subordination levels are expressed as a percentage of the transaction's initial principal balance.

We shall illustrate this with the following example. Using a capital structure of two tranches - Class B Junior of €40 million and Class A Senior of €60 million - the originator might sell only the Class A tranche. The investor would bear the risk that losses on the underlying portfolio exceed the cumulative subordination level of 40% (€40 million divided by a total of €100 million). If losses reached 40%, the Class B Junior tranche would be wiped out. Between 40% and 100%, each Euro loss on the underlying portfolio translates into an equal Euro loss for the holder of the Class A Senior tranche.

To compute the subordination levels, we manually calculated the subordination level for each loan tranche in each transaction that contains more than one tranche. If a transaction contains one tranche only, the cumulative subordination level is 100% and no subordination exists.[6] Also, the size of all tranches in a transaction had to be available; otherwise the subordination level could not be calculated. We finally

[6] If the securitization is structured as a "pass-through," there is only one class of bonds, and all investors participate proportionally in the net cash flows from the assets.

calculated the loan-to-value ratio as the value of a loan cumulated according to the priority structure divided by the total issue amount of the transaction. The expected coefficient sign is negative, as loans with a lower loan-to-value ratio (junior tranches) have a lower expected recovery rate in case of default than loans with a higher loan-to-value ratio (senior tranches) and therefore require a higher return.

The originator is the seller of the assets which comprise the collateral for the securities. We included TYPE ORIGINATOR to analyze the impact of the originator on the spread. Gabi and Sironi (2002) mention that financial institutions should control for the presence of implicit government guarantees not already incorporated into the rating of an issue. Regrettably, the authors provide no definition of the term 'financial institution'.[7] The authors find a negative, both significant and insignificant, relationship between financial institution and loan spread. They argue that the lower perceived default risk presented by banks versus the risk presented by non-financial firms is reflected in a lower spread. In a similar context, Gorton and Souleles (2005) argue that the strength of the sponsor matters in pricing the debt of the SPV. This is consistent with investors in the asset securitization markets pricing the risk that sponsors disappear and can no longer support their SPVs.

Information on the originator will help us classify the asset securitization issues by type of originator. The listed originator may be the parent company of one or more subsidiary companies which actually originated the collateral or sold it to the securitization vehicle. Unfortunately, our database does not provide a machine-readable identification code (i.e. Datastream identification number) for the originator, although descriptive information is provided by SFI to match the description of the originator to its corresponding classification. Needing a consistent classification, we started with the seven types of originators involved in a securitization transaction as distinguished by Moody's Investor Service (2002). These types include corporate, bank, finance house, sovereign, public entity, savings bank and insurance company. Unfortunately, SFI does not provide full information to distinguish between bank and savings bank in our sample. For this reason, we integrated both and classified them as one category named 'bank'.

[7] Banks are financial institutions that accept deposits and make loans. *However*, other financial institutions also exist, such as insurance companies, finance companies, pension funds, mutual funds and investment banks (Eakins and Mishkin, 2000, p. 9).

We constructed a set of *six* originator dummy variables that correspond to: CORPORATE, BANK, FINANCE HOUSE, SOVEREIGN, PUBLIC and INSURANCE. After we screened the originator description of all our asset securitization issues in our database, we assigned each tranche to one of *six* types of originators. This screening process left us with 2,289 issues (94.3% of entire sample) that we could identify. This is illustrated in **Table 3**.

******Insert Table 3 about here******

The category CORPORATE includes those credits originated by corporations and represents 20.2% of the identified sample (491 issues). BANK include those issues originated by financial institutions that accept deposits and use their funds principally to purchase financial assets such as loans and securities. This category includes 1,083 issues (44.6% of the identified sample). FINANCE HOUSE include issues of firms that granted loans to both individuals and corporations, and correspond to 541 issues (22.3% of the identified sample). Some of the loans are similar to bank loans, such as consumer and automobile loans, but others are more specialized. Finance houses differ from banks in that they do not accept deposits and typically are finance subsidiaries of automobile manufacturers or of retailer groups. SOVEREIGN include those issues booked by national governments and are represented by 35 issues (1.4% of the identified sample). PUBLIC are those issues originated by any state or local government and count for 120 issues (4.9% of the identified sample).[8] The category INSURANCE includes those issues made by financial institutions that primarily sell insurance. In this category, 19 issues were booked, representing 0.8% of the sample. The 138 issues (5.7% of the total sample) not identified are recorded in the category *not identified*.

We expect to find a negative and significant coefficient for financial institutions (BANK, FINANCE HOUSE, INSURANCE) for two reasons: first, financial institutions should control for the presence of implicit government guarantees that are not already incorporated into the rating of an issue and second, the strength of the sponsor matters in pricing the debt of the SPV. CORPORATE is the omitted category; it has been dropped to avoid collinearity.

[8] In our sample, we have included all asset securitization issues by utilities in the category 'public entity'.

MATURITY is measured in years and affects the bond's default risk premium (Merton [1974]).[9] We calculated the time to maturity as the difference between the legal maturity date of the issue and the launch date.[10] Three maturity dummy variables were constructed based on the maturity of the issue: 'lowmaturity', 'medmaturity' and 'highmaturity'. *Lowmaturity* is 1 if the issue matures in less than 5 years, *medmaturity* is 1 if the issue matures between 5 and 15 years, *highmaturity* is 1 if the loan matures after 15 years. The variables' expected signs cannot be determined clearly from either the theoretical or the empirical literature.[11]

In our sample, issues with ENHANCEMENT refer to issues with a third-party guarantee in the form of an insurance policy issued by one of the monoline insurance companies. Dummy variables take the value of 1 if a loan is guaranteed and zero otherwise. These providers guarantee (or wrap) the principal and interest payments of an issue. For each issue, we collected information whether or not the issue is guaranteed. According to Fabozzi and Roever (2003), for each class of securities in a given structure, the issuer evaluates the trade-off associated with the cost of enhancement versus the reduction in yield required to sell the security. Thus, a negative coefficient is expected. However, its statistical significance could be poor as credit enhancement is already reflected in the rating of the issue.

We included NATURE OF ASSETS to analyze the impact of collateral on the spread. Ayotte and Gaon (2005) argue that the nature of assets is valuable to creditors. The authors provide evidence that asset securitization is the most efficient instrument when the securitized assets are replaceable. In the case of default of the sponsor, replaceable assets can easily be obtained from outside sources at a competitive price. However, when the assets are necessary for operations and the firm cannot easily replace them by resorting to outside markets, securitization may lead to inefficient hold-ups. Thus, we would expect a higher spread

[9] One should not confuse time to maturity of the issue with weighted average life since weighted average life deals in particular with the sensitivity of the value of the loan towards changes in interest rates. Unfortunately, since weighted average life is based on assumptions specified at issuance concerning prepayments defaults and other relevant variables, this variable was unavailable in our sample.

[10] Legal maturity is defined as the date before which a specific tranche of securities must be repaid in order not be in default.

[11] Helwege and Turner (1998) argue that a positive coefficient is expected as longer maturity bonds require, ceteris paribus, a higher spread. On the other hand, Sarig and Warga (1989) find a negative relationship between maturity and loan spread.

for securities backed by assets that cannot be easily replaced relative to ones with assets that can easily be obtained.

Within the ABS classification, there is considerable variation in the nature of the collateral pledged. This is illustrated in **Table 3**. We shall briefly discuss the nature of the assets attached as collateral to a particular type of security. According to Moody's Investors Service (2002, 2005), ten asset types for asset-backed securities are identified: automobile loans, consumer loans, future receivables, equipment leases, credit card receivables, trade receivables, small business loans, aircraft leases, whole business, and other.[12] After identification of the asset types, we screened our full sample and assigned each loan tranche to its corresponding asset classification. We cross checked our data with the corresponding information provided by the credit rating agencies. We were able to identify the nature of the assets for 100% within our entire sample. We constructed a set of *nine* collateral dummy variables that correspond to: AUTO, CONSUMER, FUTURE, CREDIT CARD, SMALL BUSINESS, AIRCRAFT, EQUIPMENT, WHOLE BUSINESS and OTHER.

AUTO (automobile loans) are loans granted to borrowers in order to finance the purchase of new or used automobiles, and are typically secured by liens on the automobiles being financed. CONSUMER (consumer loans) are unsecured loans granted to individuals and used for different purposes (car, home, equipment, furniture, etc.). FUTURE (future receivables) refer to securitization of receivables that do not exist. Created as a function of future sales, they are used to finance the time lag between the start of an obligation and payment or redemption of the related debt. CREDIT CARD (credit card receivables) are loans granted to consumers in order to finance the purchase of goods and services, and are generally unsecured. SMALL BUSINESS (small business loans) are loans made available for small businesses seeking to make capital investments, and may be secured. AIRCRAFT (aircraft leases) and EQUIPMENT (equipment leases) are both agreements between an owner (lessor) and a user (lessee), whereby the lessee makes a periodic payment to the lessor for the use of the product. Equipment leases are considered to be small or medium-sized, while aircraft leasing falls under the big-sized leases. WHOLE BUSINESS (whole

[12] In our sample, the category *trade receivables* is grouped under 'other' since few observations were classified as trade receivables. *Trade receivables* are unsecured obligations generated when one business sells goods or services to another.

business loans) are granted to a business, and the originator intends to repay the loan out of the cash flows generated by its business. OTHER (other loans) are issues secured by assets that do not fall into any of the categories described above.

Unfortunately, the sign of the coefficient cannot be determined clearly for all assets that serve as collateral for an asset securitization issue, since the assets exhibit a wide variety of payoff characteristics. Nonetheless, in particular, we expect a positive coefficient for WHOLE BUSINESS and FUTURE on the one hand, and a negative coefficient for AUTO and CREDIT CARD on the other. Two reasons can be given. First, whole business loans and future receivables are secured by a pledge on a unique set of assets and therefore considered difficult to replace. Second, automobile loans and credit card receivables are relatively homogeneous and relatively easy to replace in a constructed portfolio. Still, its statistical significance could be poor as the risk inherent to an asset type is already reflected in the rating of a securitization issue. AUTO is the omitted category: it has been dropped to avoid collinearity.

4.3 Expected Marketability Characteristics

The second set of explanatory variables affecting loan spread is marketability of the loan (group *B.*). The following factors used here represent marketability: time of issue, loan size, transaction size, number of tranches, type of market, number of lead managers, number of credit rating agencies, whether the issue is a tap issue or not, whether the issue is retained or not, and finally type of interest rate. A discussion of these variables and expected impact on primary market will follow below.

TIME OF ISSUE refers to the year in which an asset securitization issue is launched. We collected information from January 1, 1999 through March 31, 2005. PERIOD I: value is 1 if loan was issued in the 1999-2001 period, zero if not. PERIOD II: value is 1 if loan was issued in the 2002-2005 period, zero if not. The first transaction recorded in our sample is the securitization of Japanese consumer loans of Credia Capital Ltd on January 19, 1999. The last transaction recorded is a portfolio of United Kingdom residential mortgages by HBOs on March 16, 2005. Although these data are updated monthly, we freezed the sample as of March 2005 for the current analysis. The time of the issue should capture the variations in bond market conditions. The sign of the coefficient cannot be predicted with confidence.

The LOAN SIZE is the natural log of the face value of the loan tranche.[13] A higher issue amount is generally believed to improve, ceteris paribus, secondary market liquidity. Larger issues are likely to be associated with less uncertainty, to be more liquid, and to have more public information available about them than smaller offerings. Hence, we would expect larger issues to have lower spreads. Thus, we would also expect to find a negative impact of TRANSACTION SIZE (the natural log of the transaction issue Euro equivalent amount) on the spread.[14]

Each transaction is divided into one or more tranches. For every issue in a given transaction, we documented the *number of tranches* for each transaction. We included # TRANCHES to analyze the impact of tranching on the spread. Tranching could allow the issuer to take advantage of market factors such as greater investor sophistication and heterogeneous screening skills related to asymmetric information. Thus, a negative coefficient of number of tranches is expected.[15]

The # LEAD MANAGERS represents the number of financial institutions participating in the loan issuance management group. These include the lead manager, any co-lead manager, book runners and co-managers. We collected this information in order to analyze any differences in syndicate. A negative coefficient sign is expected, as this would indicate that a larger syndicate is able to achieve, ceteris paribus, a better result or lower loan spread.

The # RATING AGENCIES represents the number of rating agencies involved in rating the issue. Since many larger credit rating agencies offer credit rating advisory services, this could create a potential conflict of interest, as the credit rating agency may feel obligated to provide the issuer with that given rating if the issuer follows its advice on structuring the offering (The Bond Market Association [2002]). Many institutional investors now prefer a debt issuance to have at least three ratings. Thus, a negative coefficient sign is expected, as this would indicate that a larger number of credit rating agencies involved in

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[13] The currency of the issue has to be analyzed carefully since the value of a securitization issue is often stated in foreign currency. In order to include the issues denominated in different currencies in the analysis, we converted them into Euros. The exchange rate used is the average rate of the year the issue was launched. This information was obtained from the Nederlandsche Bank.

[14] Transaction size is the face value sum of all tranches for a given transaction.

[15] Firla-Cuchra and Jenkinson (2006) found a consistent and significant negative relationship between the number of tranches and the launch spread after controlling for credit rating.

rating the issue is able to achieve, ceteris paribus, a more accurate rating, thereby reducing the potential conflict of interest and lowering the loan spread.

TAP is a debt security issued in varying amounts and at different times, usually in response to investor demand. For each loan tranche, we collected information on whether the issue was a tap issuance or not. A dummy variable that equals 1 if the issue is a tap issue, zero otherwise. The term of the bond (issuing conditions, coupon and maturity) remain unchanged in general, but the tap price may vary according to market conditions. For example, Nomura issued the Unique Pub Finance Plc securitization in March 1999 for £810 million, with a tap issuance of £335 million in February 2001. With the tap, 677 pubs were added to the original 2,614 pubs. Some of these are piecemeal acquisitions, but many are houses that could not be securitized earlier. A second tap was made in September 2002, incorporating 888 new pubs into the transaction.[16] Since tap issues are repeat issues and will allow the total loan to grow in size and secondary market activity, we would expect to find a negative relationship between the tap issue and the spread. However, its statistical significance could be poor as the characteristics associated with a repeat issue are already reflected in the rating.

In our sample, the placement of the securities has to be analyzed carefully since issues are either *sold to investors in the market* or *retained by the originator* as a subordinated interest. For each loan tranche, we collected information on whether the originator retains a subordinated interest or sold it to investors, and in what type of market.

The bulk of the demand for our entire sample of issues comes from the euromarket, the remaining part is placed on other markets. Since the euromarket forms the largest market relative to other markets, in our analysis, we have included two dummy variables: one for the EUROMARKET and one for OTHERMARKETS. Although stronger primary markets (well-organized) are considered more transparent and more organized in comparison with weaker primary markets, no relationship between the type of the market and the spread at issue can be predicted with confidence.

[16] To protect the pool against dilution, structured financings typically provide for issuance caps, under which additional securities are either not permitted or are permitted only upon confirmation by the rating agencies that the ratings of existing securities will not be jeopardized by the new issuance.

We included TYPE INTEREST to analyze the impact of fixed and floating interest rates on the spread. We collected information on whether the issue had a rate fixed for the life of the issue, or had an interest rate that fluctuated depending on the base interest rate (floating rate issue). We constructed two dummy variables based on the type of interest rate. FIXED is a dummy variable taking the value of 1 if a loan is fixed–price, and zero otherwise. FLOATING is a dummy variable taking the value of 1 if a loan is floating–price, and zero otherwise. Since the interest rate on a fixed-rate issue does not change during the life of the loan, these notes do not fluctuate and are typically protected to avoid the risk of rising interest rates. We expect borrowers to raise funds at a higher spread through fixed-priced issues rather than through floating-priced issues. For this reason, a positive sign is expected for a fixed rate issue. Floating is the omitted category. However, statistical significance could be poor as the risk inherent to rising interest rates is already reflected in the rating of the loan issue.

4.4 Expected Systematic Risk Characteristics

The third set of explanatory variables affecting loan spread is systematic risk characteristics of the loan (group *C.*). The following factors used here represent systematic characteristics: country of origin, creditor rights, enforcement, and finally currency risk. A discussion of these variables and expected impact on primary market will follow below.

COUNTRY OF ORIGIN represents the country in which the assets are originated. Country should capture cross-country differences in macro-economic conditions that are not already incorporated into an issue rating. Gabbi and Sironi (2005) included issues originated in Canada, Europe, Japan and the United States of America in the full-loan sample, but found no country statistically significant in explaining the loan spread. Thus, we would expect to find an insignificant coefficient. However, Hill (1998) argues that structuring the transaction in emerging markets – in order to minimize investor' exposure to political risk - presents a challenge. Although the transaction structure minimizes investors' exposure to political risk, it is not eliminated. The authors argue that in the event of a crisis, investors price the risk that the originator's government may attempt to interfere and redirect these payments in violation of the security documents.

In our analysis we constructed a dummy variable based on the country of origin. EMERGING: dummy variable taking the value of 1 if the issue is originated in an emerging market, zero otherwise. DEVELOPED: dummy variable taking the value of 1 if the issue is originated in a developed market. We believe that the country of origin plays a role in the risk perceived by investors. Thus, we expect to find a positive coefficient for emerging markets. However, its statistical significance could be poor as the risk inherent to an emerging market country is already reflected in the rating of an issue. DEVELOPED is the omitted category.

Legal risk is important since it incorporates the control and cash flow rights various lenders receive at bankruptcy. Ayotte and Gaon (2005) argue that avoidance of dilution of their claim in a standard bankruptcy of the sponsor is valuable to creditors in a way that is observable in prices. In order to analyze the legal framework, we gathered data on the creditor rights in the countries where the assets are originated. As a testament to the importance of a legal framework, credit rating agencies explicitly analyze the ability to take control over the assets exhibited by the investors. We measured CREDITOR RIGHTS using La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) indices. We used five creditor rights variables in this analysis, and added up the scores to create a creditor rights index (see Esty and Megginson, 2003). The analysis is reported in **Table 4**.[17]

******Insert Table 4 about here******

The creditor rights index runs from 0 (weak protection) to 4 (strong protection). Unfortunately, this index presents *two* problems. *First*, La Porta *et al*. (2000) indices are based on a single point in time and therefore do not reflect any changing legal conditions over our six-year sample period. *Second*, the index yields a number of counter-intuitive results (see Esty and Megginson, 2003). For example, Zimbabwe

[17] Column 1 of Table 4 represents the country of interest. The first variable is *no automatic stay on the assets* (see column 2), preventing secured creditors from getting possession of loan collateral. In contrast, secured creditors can pull collateral from firms being reorganized, a right that is of value to them. The second variable is *secured creditors paid first* (see column 3), in other words the assurance that the secured creditors have absolute priority over the collateral in a reorganization process. Third, there is *restriction for going into reorganization* (see column 4), and here creditor consent is needed to file for reorganization. Hence, managers cannot so easily escape creditor demands. Fourth, we have *management does not stay in reorganizations* (see column 5), as is the case in the United Kingdom, where the creditors have the power to replace management. Column 6 represents the scores to create a creditor rights index.

and Egypt are classified as having the strongest creditor rights while Australia and the U.S. are classified as having weak creditor rights. In order to cope with these counter-intuitive results, we also measured the strength of a country's legal system with the help of Laporta *et al*. (2000) indices since creditor rights are of limited use if they cannot be enforced. In principle, a strong system of legal enforcement could substitute for weak creditor rights, since well-functioning courts can help investors by management in distress. We measured ENFORCEMENT using La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) indices. We used five enforcement variables in the analysis and added up the scores to create an enforcement index. The analysis is reported in **Table 5**.[18]

******Insert Table 5 about here******

The enforcement index runs from 0 (weak enforcement) to 50 (strong enforcement). According to La Porta *et al.* (2000), the first two measures in **Table 5** pertain to law enforcement, with the last three dealing more generally with the government's stance toward business. The results provide a number of strong but intuitively more likely results. For example, the Philippines and Pakistan are classified as having the weakest law enforcement system, while Norway and Switzerland are classified as having the strongest enforcement system.

And so, in our sample, we measured both the CREDITOR RIGHTS and ENFORCEMENT in the countries where the assets are originated. A positive coefficient may be expected for issues originated in countries with weaker legal frameworks (lower legal risk), and a lower spread for issues originated in countries with stronger legal rights. Still, the impact may not be significant since legal risk is already reflected into the credit rating of the issue.

CURRENCY RISK is defined as the risk that is run if the currency in which the loan is repaid differs from the borrower's home country currency. Dummy variable taking the value of 1 if a loan is

[18] Column 1 of Table 5 represents the country of interest. The first variable is *efficiency of the judicial system* (see column 2), an assessment of the efficiency and integrity of the legal environment as it affects business. Second, the *rule of law* (see column 3) represents an assessment of the law and order tradition in the country. Third, *corruption* (see column 4) is the assessment of the corruption in government. Third, *risk of expropriation by the government* (see column 5) gives an assessment of the risk of outright confiscation or forced nationalization. Fourth, *likelihood of contract repudiation by the government* (see column 6) is the assessment of the risk of a modification in a contract taking the form of repudiation, postponement or scaling down. Column 7 represents the scores to create an enforcement index.

exposed to currency risk, and zero otherwise. Kleimeier and Megginson (2001) found the currency risk to be statistically highly significant and positive. However, after controlling for credit rating, the authors found a positive but insignificant coefficient. Thus, issues exposed to currency risk have higher spreads than issues not exposed to currency risk. However, an insignificant coefficient is expected since currency risk is already reflected in the credit rating of the issue.

All independent variables are discrete with the exception of credit rating, loan to value, maturity, loan tranche size, transaction size, number of tranches, number of lead managers, number of credit rating agencies, creditor rights and finally enforcement, all of which are continuous. The results for the spread regressions are included in the next section.

5. Regression Results

This section reports the results of Regression #1 of **Table 6**. These empirical results present *collateral* and *other pricing characteristics* that affect the primary market spread for the sample of 968 ABS. They are analyzed for two reasons. The *first* is to investigate whether securitized assets that cannot easily be replaced have a significant positive impact on the primary market spread relative to assets that can easily be obtained. The *second* reason is to analyze the other pricing characteristics that emerge as important measures for the primary market spread of an ABS issue.

******Insert Table 6 about here******

F tests for whether the coefficients are jointly different from zero as well as adjusted R^2 are reported at the bottom of the table. Variations in the specifications reported in column 1 of **Table 6** were estimated in order to asses the robustness of the conclusions concerning the determinants of the primary market spreads of ABS. The robustness checks will be discussed in detail in Section 6.

5.1 Determinants of Asset-Backed Securities

In this subsection, the results of Regression #1 of **Table 6** are discussed. This analysis starts with *A.)* default and recovery risk characteristics, followed by *B.)* the expected marketability characteristics of the loan and *C.)* systemic risk characteristics. We shall start with the analysis regarding the impact of the *nature of assets* on the spread associated with the default and recovery risk characteristics category.

5.1.A. Default and Recovery Risk Characteristics

Ayotte and Gaon (2005) argued that asset securitization is most efficient when the backing assets are replaceable only. In a sponsor default, replaceable assets can easily be obtained from outside sources at a competitive price. However, when the securitized assets are necessary for operations and the firm cannot easily replace them by resorting to outside markets, securitization may lead to inefficient hold-ups. Thus, we would expect a higher spread for securities backed by assets that cannot easily be replaced. Unfortunately, the sign of the coefficient cannot be determined clearly for all assets that serve as collateral for an asset securitization issue, since the assets exhibit a wide variety of payoff characteristics.

Nonetheless, in particular, we expect a positive coefficient for whole business loans and future receivables on the one hand, and a negative coefficient for automobile loans and credit card receivables on the other. However, since we wish to control for other pricing characteristics, such as credit rating for example, statistical significance could be poor as the risk inherent to an asset type is already reflected in the rating of a securitization issue. The opposite is in fact true. We found many collateral dummy variables with statistically significant positive (CONSUMER, FUTURE, AIRCRAFT LEASE, EQUIPMENT LEASE, OTHER, WHOLE BUSINESS) or negative (CREDIT CARD) coefficients. Lenders demand up to 61.6 basis points as a premium. This result is relatively surprising as ratings should already have captured differences in collateral's ability to repay interest and principal in a worst-case scenario.

Our empirical findings concerning the nature of the assets trigger two considerations. *First*, the primary market spread for securitization issues with backing assets that *cannot* easily be replaced is on average significantly higher relative to issues with assets that *can* easily be obtained. Therefore, we reject the *hypothesis*. At the one end of the spectrum, we have whole business loans (WHOLE BUSINESS) and

future receivables (FUTURE) that show a dramatic and significant increase in the average spread relative to automobile loans (AUTO) and that are therefore considered more risky. This can be explained by the fact that both whole business loans and future receivables are associated with unique assets that cannot easily be replaced by the originator. At the other end of the spectrum, we have credit card receivables (CREDIT CARD) that report a significant decrease in spread relative to automobile loans and that are considered less risky. Credit card receivables are loans granted to consumers in order to finance the purchase of goods and services, and are, in fact, relatively easy to replace in a constructed portfolio.

Second, the average credit ratings may not provide unbiased estimates of expected recovery rates. An intriguing explanation for the relationship between spread and the nature of assets might be that rating agencies fail to fully incorporate managerial incentives when assigning ratings. In particular, if the collateralized debt is secured on an asset value which is difficult to destroy, agency problems reduce expected payoff less than the payoff of collateralized debt secured on an asset value that is less difficult to destroy. In our analysis, a constructed portfolio of future receivables and of whole business may be considered relatively sensitive to managerial incentives, whereas a portfolio of credit card receivables and automobile loans might not be. For example, the originator intends to repay the securities associated with future receivables and whole business out of the cash flows generated from its operating assets, while the repayment associated with automobile loans and credit card receivables depends on the ability of many consumers to repay their loan. As a result, agency problems may reduce expected payoff more in the case of whole business and future receivables than they would reduce payoff related to automobile loans and credit card receivables. Thus, if rating agencies fail to fully incorporate managerial incentives when assigning ratings, lenders are enticed to participate by being offered higher spreads for securities considered to be relatively more sensitive to managerial incentives, and lower spreads for securities considered to be the least sensitive.

We shall now start with the analysis of the impact of *other* default and recovery risk characteristics on spread. Almost all CREDIT RATING dummies are statistically significant at the 1% level, and the pattern presented by the coefficient dummies indicates that spreads rise when ratings worsen.

LOAN TO VALUE has a negative significant coefficient. On average, a 1% increase in the level of subordination decreases spread by 24.8 basis points. This finding is consistent with the fact that issues with a higher loan to value ratio require a lower spread, though this is still surprising as credit ratings should capture differences in expected recovery rates in case of default.

The FINANCE HOUSE and SOVEREIGN dummy variables have statistically significant negative coefficients, and the INSURANCE dummy reports a positive significant coefficient. Neither the BANK nor the PUBLIC dummies are statistically significant. Although these results clearly suggest that the strength of the sponsor matters when pricing the debt of the SPV, financial institutions per se do not report a significantly different average spread in comparison to the spread of corporates. We can offer *two* possible explanations for these results. *First*, it could be the case that finance houses and sovereign borrowers have relatively stronger institutional features (size, riskiness of operations, reputation etc.) that act to decrease loan spread relative to the loan spread charged to corporate borrowers: by 29.9 basis points for sovereign borrowers and 17.4 basis points for finance houses. *Second*, spread charged to insurance borrowers is relatively higher than the spread charged to corporates: by an average 112.9 in our analysis, because - in general - the assets originated by insurance companies chosen as "collateralizable" happen to be relatively riskier than average. Nevertheless, our analysis shows that the nature of the originator is a significant determinant of the spread, besides credit rating and other characteristics.

The LOWMATURITY and HIGHMATURITY dummy variables both have coefficients with the expected signs, but the low maturity dummy is insignificant. As was expected, borrowers are willing to incur, and lenders demand, higher spreads (10.8 basis points) for loans with longer maturity. Thus, long-tenor issues are prohibitively more expensive, even after controlling for the nature of the assets and credit rating. Surprisingly, the ENHANCEMENT dummy variable has a negative significant coefficient. The use of credit enhancement does in fact decrease spread by 22.1 basis points. The most logical interpretation of this particular result is that investors require a lower risk premium than the premium implicit in the upgrading applied by rating agencies. Nevertheless, this result is still surprising.

5.1.B. Marketability Characteristics

The PERIOD II dummy variable has a weak, statistically significant negative coefficient, indicating that an increase in marketability over time would, in fact, imply a narrowing of spreads (by -8.2 basis points) over time. LOAN SIZE has a positive coefficient, although not significant. TRANSACTION SIZE has a negative coefficient, although not statistically significant either. These insignificant results may stem from the wide variety of collateral taken into account in the regression analysis.

TRANCHES is not statistically significant. Thus, we do not find support for a significant positive relationship between the number of tranches and the pricing of securities after controlling for credit rating and other pricing characteristics. The EUROMARKET dummy variable has a positive significant coefficient, indicating that those issues placed in euromarkets have higher spreads (14.1 basis points) than issues placed in other markets. This result may stem from the fact that the euromarket forms the largest market by far, relative to other markets. Differences in liquidity and credit standing of Interbank Offered Rates in the euromarket relative to other markets could explain why issues in the euromarket have higher spreads.

LEAD MANAGERS indicates that booking a loan with an original number of lead managers of one more reduces average spread by 7.8 basis points. # RATING AGENCIES has a negative coefficient and is not significant. Thus, we do not find significant evidence to prove that an increase in the number of credit rating agencies involved in rating the issue is able to achieve, ceteris paribus, a lower spread.

The TAP dummy variable has a positive insignificant coefficient, indicating that growth in secondary market activity may already be incorporated into the credit rating of the issue. The FIXED dummy variable is significant and positive. Lenders demand an average premium of 21.5 basis points for fixed rate credits in comparison with floating rate credits. This result is consistent with the expectation that - on average - borrowers manage to raise funds at a higher spread through fixed-priced issues than through floating-priced issues; the interest on these notes does not fluctuate and are typically protected to avoid the risk of rising interest rates.

The RETAINED dummy variable is positive and insignificant, as expected. This finding indicates that no extra risk premium is associated with the retained interest relative to an ordinary loan tranche sold to other investors.

5.1.C Systemic Risk Characteristics

The EMERGING dummy variable has a positive significant coefficient, indicating that lending to a borrower with collateral originated in emerging countries would increase spreads on average by 75.2 basis points. This is consistent with our prediction that borrowers view collateral originated in emerging countries as more risky.

The CREDITOR RIGHTS index is positive and insignificant. The other legal risk variable, ENFORCEMENT, has a positive and insignificant coefficient as well. These insignificant signs may indicate that legal risk is already reflected in the credit rating of the issue. Finally, the CURRENCY RISK dummy variable has a positive relationship with spread. Although not significant, this finding suggests that a mismatch between the currency of the originating country on the one hand and the currency of the loan repayment on the other hand increases the rate charged on an average issue by 9.5 basis points.

5.2 Regression Results: Conclusions

Table 7 reports the adjusted R^2 and F-test results of Regression #1 associated with the three main groups of explanatory variables that emerge as relevant to determine primary market spreads. These empirical results were analyzed to identify *collateral* and *other pricing characteristics* that affect the primary market.

******Insert Table 7 about here******

Three main results emerge from this analysis.

1. Default and recovery risk characteristics form the most important group in explaining loan spread variability. We found evidence that on average the primary market spread for securitization issues with backing assets that *cannot* easily be replaced is significantly higher relative to issues with assets that

can easily be obtained. Additionally, within the group of default and recovery risk characteristics, credit rating dummies are the most important variables to determine primary market spread: credit rating has an adjusted R^2 of 0.61 (defined as R^2c in Regression #1).

2. Systemic risk does not improve the adjusted R^2 (from 0.70 to 0.69). Nevertheless, we found that issues originated in emerging markets tend to have significantly higher spreads than issues originated in developed countries.
3. Including marketability characteristics significantly improves the resulting adjusted R^2, from 0.70 to 0.77. This result suggests that the marketability characteristics are the second most important group of explanatory variables to determine primary market spreads.

6. Robustness Checks

In this section, we estimated the variations of the specifications reported in column 1 of **Table 6** in order to asses the robustness of the conclusions concerning the impact of *collateral* and *other pricing characteristics* on the primary market spread. Since we concluded that an increase in marketability over time would imply a narrowing of spreads over time, the *first* check of robustness investigated any temporal evolution in the relevant pricing factors that affected primary market spreads. Using a unique common sample could produce misleading results if investors evaluated loan tranches issued in these two periods differently or if they attributed a different relevance to common factors. We ran a separate regression for the sub-sample between 1999 and 2001 (Regression #2) and those issued between 2002 and 2005 (Regression #3 and #4).

The *second* check of robustness was aimed at investigating which collateral and other pricing characteristics had a substantially different impact on the spread in a comparison between originators. Using a unique common sample could produce misleading results if investors evaluated originators differently. This check was performed by running separate regressions for banks (Regression #5), finance houses (Regression #6) and finally corporates (regression #7 and #8). We restricted our analysis to banks,

corporates and finance houses because the majority of issues in our sub-sample have been originated by banks (47.3%), corporates (21.5%) and finance houses (23.6%).

Since a substantial number of issues is placed on euromarkets, the *third* check of robustness was aimed at investigating which collateral and other pricing characteristics had a substantially different impact on the spread in the comparison between the euromarket and other markets. Using a unique common sample could produce misleading results if investors evaluated these two types of markets differently. This check was performed by running separate regressions for the sub-sample placed on the euromarket (Regression #9 and #10) and placed on other markets (Regression #11).

Finally, a *fourth* check was performed by running an additional regression to investigate whether a different rating assigned by the three rating agencies (S&P, Moody's, Fitch) had any statistically significant impact on spreads (Regression #12).

6.1 Time of the Issue

The *first* check of robustness investigated any temporal evolution in the relevant pricing factors affecting primary market spreads in the period 1999-2005. This check was performed by running separate regressions for the sub-sample of loan tranches issued in 1999-2001 and for those issued in the 2002-2005 period. Results of the period 1999-2001 are reported in Regression #2 of **Table 6**. Because of severe correlation between the nature of the assets and the type of originator, two different specifications of the period 2002-2005 were compiled. The results of the period 2002-2005 are reported in Regressions #3 and #4 of **Table 6**. [19]

Only few substantial differences emerge between the sub-samples, and these will be discussed below. The adjusted R^2 of 0.78 for the 1999-2001 sub-sample (Regression #2) compared with 0.76 for the 2002-2005 sub-sample (Regression #4) indicates that the independent variables used in the regressions explain a similar portion of the spreads' variability. Most CR dummies (credit rating) are statistically significant with the expected sign and have very similar coefficients for the three sub-samples (**Figure 1**).

[19] This empirical design was needed to solve severe correlation between *some* explanatory variables. We do not report collinearity tests here in the interests of space, these results are available upon request. It is however important to realize that *Regression #3* does *not* employ type of originator (but with nature of the assets *included*) , and that *Regression #4* does *not* employ nature of the assets (but with type of originator *included*).

However, the explanatory power of the rating dummy variables has decreased, as indicated by the lower R^2c of the 2002-2005 sub-sample in comparison with the 1999-2001 sub-sample (0.51 versus 0.69). This result indicates that credit ratings may not provide unbiased assessments of expected default or recovery rates, and that this bias tends to be stronger in the 2002-2005 period. Furthermore, the BANK dummy variable has a weak positive significant coefficient in the 1999-2001 period, and a negative and significant coefficient in the 2002-2005 period. This is most likely the result of investors changing their assessment from a relatively non-favorable view to a more favorable one concerning the recovery rates for banks.

Regarding the maturity of the issue, we found the dummy variable LOWMATURITY to be highly significant in the 1999-2001 sub-sample, and insignificant in the 2002-2005 sub-sample. We offer two possible explanations. As a first explanation, it could be that lenders perceived issues with a shorter maturity in the period 1999-2001 as less risky. A second explanation may be that investors were relatively less familiar with asset -backed securities in the first period than in the second. This could have led investors to favor issues with a shorter maturity over issues with a relatively longer period, thereby demanding a lower spread on the shorter maturities.

Other minor differences between the two periods - such as the statistical insignificance of a number of asset-type dummies within the 1999-2001 sub-sample and statistical significance within 2002-2005 - are most likely the consequence of the different composition of the sub-samples. Nevertheless, the signs of the coefficients are all similar in the two periods: whole business, for example, remains highly significant in both sub-samples. Furthermore, the EUROMARKET dummy variable reports a strongly positive significant coefficient in the 2002-2005 sub-sample, and insignificant and positive in the 1999-2001 sub-sample. This may be explained by a strong increase over time in liquidity and credit standing of the Interbank Offered Rates for issues in the euromarket relative to other markets.

Finally, while the RETAINED dummy variable is insignificant in the period 1999-2001, it is statistically highly significant in the period 2002-2005. Still, the coefficient and the level of significance decrease when the nature of the assets is included in the regression. Nevertheless, an issue that is retained by the originator reports a significant average increase of 81.0 basis points in the period 2002-2005. This

could be explained by a higher perceived risk on the part of the originator due to increased experience in analyzing the default losses on the underlying collateral pool in time.

6.2 Type of Originator

The *second* check of robustness was aimed at investigating which collateral and other pricing characteristics had a substantially different impact on the spread in a comparison between originators. This check was performed by running separate regressions for the sub-sample of banks (Regression #5), finance houses (Regression #6) and corporates (regression #7 and #8).[20] Few substantial differences emerge between the sub-samples, and these will be discussed below.

The adjusted R^2 of 0.71 for banks (Regression #5) compared with the R^2 of 0.83 for finance houses (Regression #6) and compared with the 0.88 for corporates (Regression #7) indicates that the independent variables used in the regression explain a higher portion of the spread variability in the corporates and finance houses sub-samples than in the banks sub-sample. This can be explained partly by the difference in explanatory power of the CR dummies (credit rating), as reflected in the adjusted R^2c of 0.76 and 0.63 for the corporates and banks sub-samples respectively. We found no substantial difference in adjusted R^2c between banks and finance houses: in both regressions, credit rating dummies explain approximately 0.64 of the spread variability. Although all rating dummies are significant, clearly, the rating dummies in the three sub-samples do not have very similar coefficients (**Figure 2**). These results may indicate that equally rated financial firms (banks and finance houses) and non-financial firms (corporates) are perceived by investors to have different default and recovery risk.

Furthermore, no originator shows a stronger significant relationship between the LOWMATURITY dummy variable and the spread than banks do. Typical issues by banks with a maturity of less than 5 years reduce the spread significantly by 28.3 basis points in comparison with issues with a maturity between 5-15 years. We also found the HIGHMATURITY dummy to be highly significant with a positive coefficient in the corporates sub-sample only. Lenders demand - on average - 49.8 basis points

[20] Here, too, some categories were left out to solve severe correlation between *some* explanatory variables. It is important to realize that whole business and high maturity were severely correlated. For this reason, we estimated two regressions: *Regression #7 without* nature of assets (but with maturity *included*) and *Regression #8 without* maturity (but with nature of assets *included*).

more for corporate issues with a maturity greater than 15 years, and 22.1 basis points less if the issue has a maturity less than 5 years. We can offer two explanations. *First*, assets of banks generally support debt better than corporate assets. *Second*, investors may find it more difficult to evaluate default and recovery rate in the case of corporate assets with a longer maturity, because there are institutional features (lower degree of information disclosure in comparison with banks, financial nature of corporate assets, etc.) that act to increase loan rates with a longer maturity and that decrease rates with a shorter maturity.

With respect to the nature of the assets, we find most assets with similar coefficients and signs among originators, although there are two exceptions. The CREDIT CARD dummy is statistically highly significant with a negative coefficient in the banks sub-sample only, and the WHOLE BUSINESS dummy is statistically significant with a positive coefficient in the corporates sub-sample only. These differences are most likely the consequence of the different composition of the two sub-samples. Indeed, most of the credit card issues were originated by banks, and most of the whole business transactions were completed by corporates (see **Table 3**). Also, we find TRANSACTION SIZE weakly significant with a negative coefficient in the corporates and finance houses sub-samples, and insignificant and negative in the banks sub-sample. This negative and significant impact of transaction size on the spread could indicate that investors - on average - associate larger issues originated by corporates and finance houses with a positive price liquidity effect related to the size of the entire issue. Alternatively, it may simply be the case that larger issues by corporates and finance houses are funded more efficiently than could otherwise be arranged.

Finally, the FIXED RATE dummy variable has a strong, significant coefficient in the corporates sub-sample, and an insignificant one in the banks and finance houses sub-samples. Lenders demand an average premium of up to 42.2 basis points for a fixed-rate security. Obviously, it is more likely for financial institutions to have a competitive advantage in managing the risk of rising interest rates in their portfolio more efficiently than corporates. Nevertheless, this result indicates that corporates have to pay a significantly higher spread through fixed-priced issues than through floating-priced issues in comparison with financial institutions.

6.3 Type of Market

The *third* check of robustness was aimed at investigating which collateral and other pricing characteristics have a substantially different impact on the spread in a comparison between the euromarket and other markets. This check was performed by running separate regressions for the sub-sample placed on the euromarket (Regression #9 and #10) and placed on other markets (Regression #11).[21]

Once again, most CR dummies (credit rating) are statistically significant concerning the expected signs for all sub-samples, and they have very similar coefficients. The adjusted R^2c of 0.61 for the euromarket sub-sample compared with 0.63 for the other markets sub-sample indicates that the credit rating dummies used in the regressions explain a similar portion of the spreads' variability. Furthermore, four substantial differences emerge between the three sub-samples.

First, the BANK and SOVEREIGN dummy variables are highly significant with a negative coefficient in the euromarket sample only, and not significant in the other markets sample. This would seem to indicate that investors perceive loan tranches issued by banks and sovereign in the euromarket as less risky in comparison with those issued in other markets. In such cases, it might be that a higher degree of evaluation is inherent to issues in the euromarket, which is translated into a lower required risk premium by lenders.

Second, most asset dummies are weakly significant in the other markets sub-sample and highly significant in the euromarket. This is most likely the consequence of a different composition in the sub-samples and a lower availability of issues in other markets compared to the euromarket. Indeed, we found a substantially higher variation of assets included in the euromarket sub-sample and a lower availability of issues in other markets as is shown by the regression results in **Table 6**. The question whether these other markets are less advanced than euromarkets remains unanswered. It merits greater in-depth analysis than we can provide here.

Third, TRANSACTION SIZE is not statistically significant in the euromarket sub-sample, but it is significant with a positive coefficient in the other markets sub-sample. This could indicate that investors -

[21] Here, too, some categories were left out. It is important to realize that nature of the assets and type of originator were severely correlated. For this reason, we estimated two regressions: *Regression #9 without* nature of assets (but with type of originator *included*) and *Regression #10 without* type of originator (but with nature of assets *included*).

on average - associate larger transactions placed on markets other than the euromarket with lower ex-post liquidity.

Fourth, while the FIXED dummy is statistically significant with the expected positive coefficient in the euromarket sub-sample, it is negatively significant in the other markets. An explanation could be that lenders in other markets prefer fixed-priced issues to control more efficiently for rising interest rates in comparison with lenders in the euromarket. As a result, lenders are willing to incur lower spreads for loans with fixed interest rates in these other markets than what was implied in their original credit rating.

6.4 Discordance

The final check of robustness concerned consistent use of credit ratings by Moody's, Standard & Poor's and finally Fitch. Nomura (2003) reported that the National Economic Research Associates' study on structured finance ratings could not rule out the possibility of substantial performance differences among the rating agencies. Likewise, the summary of the study's findings reports that rating agencies agree with each other somewhat less often than might be expected.

An additional regression (Regression #12) was run to see whether a different rating assigned by any of the three rating agencies had any statistically significant impact on loan issuance spreads. We included a DISCO dummy variable, which is one if the ratings assigned by different agencies have a different numerical value, and which is zero if the ratings assigned have the same value. A dummy variable of one is irrespective of whether the difference between credit ratings is equal to one or more notches. In both regressions (Regression #1 and #12), all CR dummies (credit rating) are statistically significant concerning the expected signs and have very similar coefficients.

The disco dummy variable has a statistically significant negative coefficient, although it is very weak. This result indicates that rating agencies discordance leads to a lower loan spread (-11.1 basis points) in our sample. This finding suggests that investors interpreted the differences in credit rating by the agencies as an indication of a lower degree of uncertainty concerning default risk and recovery risk than what was implied in their original rating.

6.5 Robustness Checks: Conclusions

This subsection reports on several robustness checks performed upon our conclusions concerning the impact of *collateral* and *other pricing characteristics* on primary market spread. The coefficients and relevance associated with the nature of the assets dummy variables tend to be similar in most regressions. Indeed, the primary market spread for securitization issues with backing assets that *cannot* easily be replaced tends on average to be significantly higher relative to issues with assets that *can* easily be obtained. We found, for example, that whole business loans and future receivables show a dramatic and significant increase in the average spread relative to automobile loans. They are therefore considered more risky. Also, we saw that credit card receivables report a significant decrease in spread relative to automobile loans and that they are considered less risky.

In our robustness checks dealing with the other pricing characteristics, we found few, but nevertheless important, differences among sub-samples that are of interest in pricing asset-backed securities.

We focused our robustness analysis on four main areas.

1. In the *first* area, we investigated any temporal evolution in the relevant pricing factors that affect primary market spreads. We found substantial differences, dealing with the credit rating, impact of maturity, euromarket and retained interest on the spread.
2. In the *second* area, we studied the question whether investors evaluate originators differently. We found substantial differences between originators, mainly in the impact of credit rating, maturity, transaction size and fixed rate on the spread.
3. In the *third* area, we focused on any differences in evaluation between euromarket and other markets, classified by investors. Here, we found substantial differences in the impact of issues originated by banks, transaction size and fixed rate on the spread.
4. Finally, the *fourth* area deals with the consistent use of credit ratings. We found a very weak impact on the spread associated with the difference in credit rating by the agencies.

7. Conclusion

The purpose of this research was to provide empirical evidence showing a relationship between the nature of the assets and the primary market spread. The model also provides predictions on how other pricing characteristics affect spread, since little is known about how and why spreads of asset-backed securities are influenced by loan tranche characteristics. Our sample represents a relatively large part of the asset-backed securitization issues (non-U.S.) booked in the international capital markets in the period 1999-2005 - 968 loans in total, with an aggregate value in excess of €178 billion.

We find that default and recovery risk characteristics represent the most important group in explaining loan spread variability. Within this group, the credit rating dummies are the most important variables to determine loan spread at issue. Nonetheless, credit rating is not a sufficient statistic for the determination of spreads. We find that the nature of the assets has a substantial impact on the spread across all samples, indicating that primary market spread with backing assets that *cannot* easily be replaced is significantly higher relative to issues with assets that *can* easily be obtained. Of the remaining characteristics, only marketability explains a significant portion of the spreads' variability.

While most default and recovery characteristics - as measured by variables such as credit rating, loan to value, type of originator, enhancements, and nature of assets - represent relevant variables in explaining loan spread variability, systemic risk characteristics - as measured by legal and currency risk - appear to be poor explanatory variables. The same poor results emerge for variables measuring marketability characteristics such as loan tranche size, transaction size, number of tranches, number of lead managers, number of credit rating agencies, tap issuance, and finally retained interest.

In addition, variations of the specifications were estimated in order to asses the robustness of the conclusions concerning these determinants of loan spreads. We found few, but nevertheless important, differences among sub-samples that are of interest in pricing asset-backed securities. Three main results emerge from this analysis. *First*, empirical evidence indicates that credit ratings may not provide unbiased assessments of expected default or recovery rates. This bias tends to be stronger in the period 2002-2005. *Second*, the rating dummies in the sub-sample of banks, finance houses and corporates do not have very similar coefficients. These results may indicate that equally rated financial firms (banks and finance

houses) and non-financial firms (corporates) are perceived by investors to have different default and recovery risk levels. *Third*, although we find very similar coefficients for most of the variables associated with the issues placed on euromarkets and other markets, we find in our sample less variation of types of originators and nature of underlying assets in other markets in comparison with euromarkets. The question whether these other markets are less advanced than euromarkets remains unanswered.

To our knowledge, ours is the first full-scale empirical analysis of how asset-backed securities are priced. It has been demonstrated that the determinants of primary market spreads are relevant for different financial market participants. Financial institutions and corporations wishing to raise funds in the asset-backed markets may obtain reasonable estimates of the average spread that they would face. Also, rating agencies may obtain empirical information about the way their credit risk evaluations are perceived by investors. Whether the determinants of primary market spreads change after the issue will be of interest to explore in future research projects.

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Table 1: Key pricing characteristics of ABS full sample compared with ABS sub-sample

(1) Variable of interest	(2) ABS full sample			(3) ABS sub-sample			(4) Surv. Rate
	Number	Mean	Std. Dev.	Number	Mean	Std. Dev.	
dependent variable:							
primary market spread (bp)	1,472	99.2	133.1	968	84.9	103.3	65.8%
independent variables:							
default and recovery risk characteristics:							
credit rating class [1-21 weak]	1,939	3.9	3.5	968	3.9	3.4	49.9%
loan to value (%)	1,556	18.0%	24.1%	968	19.9	25.2%	62.2%
type of originator:							
■ bank	2,289	47.3%	-	968	58.7%	-	42.3%
■ corporate	2,289	21.5%	-	968	16.7%	-	42.3%
■ finance house	2,289	23.6%	-	968	15.2%	-	42.3%
■ insurance company	2,289	0.7%	-	968	0.2%	-	42.3%
■ public entity	2,289	5.2%	-	968	7.0%	-	42.3%
■ sovereign	2,289	1.5%	-	968	2.2%	-	42.3%
maturity (years)	2,118	11.3	9.8	968	14.0	10.1	45.7%
loans with credit enhancement	2,427	7.6%	-	968	8.9%	-	39.9%
nature of assets:							
■ aircraft leases	2,427	1.7%	-	968	0.7%	-	39.9%
■ automobile loans	2,427	17.2%	-	968	15.1%	-	39.9%
■ consumer loans	2,427	7.7%	-	968	9.8%	-	39.9%
■ credit card receivables	2,427	7.5%	-	968	8.2%	-	39.9%
■ equipment leases	2,427	13.3%	-	968	13.4%	-	39.9%
■ future receivables	2,427	3.0%	-	968	0.1%	-	39.9%
■ other loans	2,427	24.5%	-	968	15.5%	-	39.9%
■ small business loans	2,427	14.5%	-	968	20.0%	-	39.9%
■ whole business loans	2,427	10.9%	-	968	15.9%	-	39.9%
marketability characteristics:							
time of the issue:							
■ period I (1999-2002)	2,427	52.9%	-	968	58.2%	-	39.9%
■ period I (2003-2005)	2,427	47.1%	-	968	41.8%	-	39.9%
loan tranche size (Euro millions)	2,417	150.3	305.1	968	177.8	304.4	40.0%
transaction size (Euro millions)	765	475.1	640.1	221	675.3	768.2	28.9%
number of tranches	765	3.2	3.1	221	3.6	2.5	28.9%
type of primary market:							
■ euromarket	2,427	51.1%	-	968	84.0%	-	39.9%
■ other markets	2,427	49.9%	-	968	16.0%	-	39.9%
number of lead managers	2,417	1.4	0.7	968	1.5	0.7	40.0%
number of credit rating agencies	2,207	3.8	0.8	968	4.0	0.7	43.9%
tap issue	2,427	2.1%	-	968	3.1%	-	39.9%
retained issue	2,427	4.9%	-	968	1.7%	-	39.9%
type of interest rate:							
■ loans with fixed rate	2,034	41.4%	-	968	21.6%	-	47.6%
■ loans with floating rate	2,034	58.6%	-	968	78.4%	-	47.6%

Table 1: Key pricing characteristics of ABS full sample compared with ABS sub-sample (*continued*)

(1) Variable of interest	(2) ABS full sample			(3) ABS sub-sample			(4) Surv. Rate
	Number	Mean	Std. Dev.	Number	Mean	Std. Dev.	
systemic risk characteristics:							
country of origin:							
■ emerging countries	2,076	13.6%	-	968	1.0%	-	46.6%
■ developed countries	2,076	86.4%	-	968	99.0%	-	46.6%
LLSV creditor rights [0-4 strong]	2,094	2.4	1.0	968	2.4	1.1	46.2%
LLSV enforcement [0-50 strong]	2,094	43.1	5.1	968	43.9	4.0	46.2%
currency risk	2,234	13.3%	-	968	8.8%	-	43.3%

Column 1 represents the pricing variables. Column 2 presents number, mean, and standard deviation associated with each pricing variable in the full sample. Column 3 presents number, mean, and standard deviation associated with each pricing variable in the sub-sample. Column 4 presents the survival rate for each variable. The survival rate is calculated as the number of issues in the full sample divided by the number of issues in the sub-sample.

Source: Structured Finance International; La Porta, Lopez-de-Silanes, Schleifer, and Vishny (2000).

Table 2: Credit rating scales

	Rating agency		
	Moody's	Standard & Poor's	Fitch
Value			
1	Aaa	AAA	AAA
2	Aa1	AA+	AA+
3	Aa2	AA	AA
4	Aa3	AA-	AA-
5	A1	A+	A+
6	A2	A	A
7	A3	A-	A-
8	Baa1	BBB+	BBB+
9	Baa2	BBB	BBB
10	Baa3	BBB-	BBB-
11	Ba1	BB+	BB+
12	Ba2	BB	BB
13	Ba3	BB-	BB-
14	B1	B+	B+
15	B2	B	B
16	B3	B-	B-
17	Caa1	CCC+	CCC+
18	Caa2	CCC+	CCC+
19	Caa3	CCC-	CCC-
20	-	CC	CC
21	-	D	D

Table 3: Asset-backed securitization issues by class categorized by type of originator

	# Asset securitization issues categorized by type of originator							
	Corporate	Bank	Finance house	Sovereign	Public entity	Insurance company	Not identified	*Total, All items*
ABS								
aircraft leases	13	9	18	0	0	0	0	40
automobile loans	72	143	160	0	0	0	43	418
consumer loans	22	143	16	0	0	0	5	186
credit card receivables	23	136	14	0	0	0	9	182
equipment leases	7	97	187	0	0	0	31	322
future receivables	63	1	0	5	3	0	0	72
other	142	199	137	26	24	19	45	592
small business loans	0	346	0	0	0	0	5	351
whole business loans	149	9	9	4	93	0	0	264
Total	491	1,083	541	35	120	19	138	2,427

Source: Structured Finance International.

Table 4: Creditor rights around the world

This table classifies countries by legal origin (see La Porta *et al.*, 2000). We used five creditor rights variables in this analysis, and added up the scores to create a creditor right index. This index runs from 0 (weak protection) to 4 (strong protection).

Variable of interest (1)	No automatic stay on assets (2)	Secured creditors first paid (3)	Restrictions for going into reorganizations (4)	Management does not stay in reorganization (5)	Creditor rights index (6)
Philippines	0	0	0	0	0
Peru	0	0	0	0	0
Colombia	0	0	0	0	0
Mexico	0	0	0	0	0
France	0	0	0	0	0
Argentina	0	1	0	0	1
Brazil	0	0	1	0	1
Greece	0	0	0	1	1
Portugal	0	1	0	0	1
Ireland	0	1	0	0	1
Australia	0	1	0	0	1
U.S.	0	1	0	0	1
Canada	0	1	0	0	1
Finland	0	1	0	0	1
Switzerland	0	1	0	0	1
Turkey	0	1	1	0	2
Uruguay	0	1	0	1	2
Chile	0	1	1	0	2
Spain	1	1	0	0	2
Italy	0	1	1	0	2
Taiwan	1	1	0	0	2
Japan	0	1	0	1	2
Belgium	1	1	0	0	2
Sweden	0	1	1	0	2
Netherlands	0	1	1	0	2
Norway	0	1	1	0	2
Sri Lanka	1	0	1	1	3
Thailand	1	1	0	1	3
South Africa	0	1	1	1	3
South Korea	1	1	0	1	3
Germany	1	1	1	0	3
Austria	1	1	1	0	3
New Zealand	1	0	1	1	3
Denmark	1	1	1	0	3
Pakistan	1	1	1	1	4
Indonesia	1	1	1	1	4
Nigeria	1	1	1	1	4
Egypt	1	1	1	1	4
Zimbabwe	1	1	1	1	4
Kenya	1	1	1	1	4
Ecuador	1	1	1	1	4
India	1	1	1	1	4
Malaysia	1	1	1	1	4
Israel	1	1	1	1	4
Hong Kong	1	1	1	1	4
Singapore	1	1	1	1	4
U.K.	1	1	1	1	4
Jordan	na	na	na	na	na
Venezuela	na	1	na	na	na

Source: La Porta, Lopez-de-Silanes, Schleifer, and Vishny (2000).

Table 5: Enforcement around the world

This table classifies countries by legal origin (see La Porta *et al.*, 2000). We used five enforcement variables in this analysis, and added up the scores to create an enforcement index. This index runs from 0 (weak enforcement) to 50 (strong enforcement).

Variable of interest (1)	Efficiency of judicial system (2)	Rule of law (3)	Corruption (4)	Risk of expropriation (5)	Risk of contract repudiation (6)	Enforcement index (7)
Philippines	4.75	2.73	2.92	5.22	4.8	20.42
Pakistan	5	3.03	2.98	5.62	4.87	21.5
Indonesia	2.5	3.98	2.15	7.16	6.09	21.88
Nigeria	7.25	2.73	3.03	5.33	4.36	22.7
Peru	6.75	2.5	4.7	5.54	4.68	24.17
Sri Lanka	7	1.9	5	6.05	5.25	25.2
Egypt	6.5	4.17	3.87	6.3	6.05	26.89
Zimbabwe	7.5	3.68	5.42	5.61	5.04	27.25
Turkey	4	5.18	5.18	7	5.95	27.31
Kenya	5.75	5.42	4.82	5.98	5.66	27.63
Argentina	6	5.35	6.02	5.91	4.91	28.19
Colombia	7.25	2.08	5	6.95	7.02	28.3
Jordan	8.66	4.35	5.48	6.07	4.86	29.42
Thailand	3.25	6.25	5.18	7.42	7.57	29.67
Ecuador	6.25	6.67	5.18	6.57	5.18	29.85
Mexico	6	5.35	4.77	7.29	6.55	29.96
Uruguay	6.5	5	5	6.58	7.29	30.37
India	8	4.17	4.58	7.75	6.11	30.61
Venezuela	6,5	6.37	4.7	6.89	6.3	30.76
Brazil	5.75	6.32	6.32	7.62	6.3	32.31
South Africa	6	4.42	8.92	6.88	7.27	33.49
South Korea	6	5.35	5.3	8.31	8.59	33.55
Chile	7.25	7.02	5.3	7.5	6.8	33.87
Greece	7	6.18	7.27	7.12	6.62	34.19
Malaysia	9	6.78	7.38	7.95	7.43	38.54
Israel	10	4.82	8.33	8.25	7.54	38.94
Portugal	5.5	8.68	7.38	8.9	8.57	39.03
Spain	6.25	7.8	7.38	9.52	8.4	39.35
Italy	6.75	8.33	6.13	9.35	9.17	39.73
Taiwan	6.75	8.52	6.18	9.12	9.16	40.4
Ireland	8.75	7.8	8.52	9.67	8.96	43.7
Hong Kong	10	8.22	8.52	8.29	8.82	43.85
France	8	8.98	9.05	9.65	9.19	44.87
Singapore	10	8.57	8.22	9.3	8.86	44.95
Australia	10	10	8.52	9.27	8.71	46.5
Germany	9	9.23	8.93	9.9	9.77	46.83
Japan	10	8.98	8.52	9.67	9.69	46.87
U.K.	10	8.57	9.1	9.71	9.63	47.01
Austria	9.5	10	8.57	9.69	9.6	47.36
Belgium	9.5	10	8.82	9.63	9.48	47.43
U.S.	10	10	8.63	9.98	9	47.61
Canada	9.25	10	10	9.67	8.96	47.88
Finland	10	10	10	9.67	9.15	48.82
New Zealand	10	10	10	9.69	9.29	48.98
Sweden	10	10	10	9.4	9.58	48.98
Denmark	10	10	10	9.67	9.31	48.98
Netherlands	10	10	10	9.98	9.35	49.33
Norway	10	10	10	9.88	9.71	49.59
Switzerland	10	10	10	9.98	9.98	49.96

Source: La Porta, Lopez-de-Silanes, Schleifer, and Vishny (2000).

Table 6: Ordinary least squares regression analyses of asset-backed securities

Variable	**OLS** Reg. #1	**1999-01** Reg. #2	**2002-05** Reg. #3	**2002-05** Reg. #4	**Banks** Reg. #5	**Finance houses** Reg. #6	**Corpo-rates** Reg. #7	**Corpo-rates** Reg. #8	**Euro-market** Reg. #9	**Euro-market** Reg.#10	**Other markets** Reg. #11	**Discor-dance** Reg. #12
CONSTANT	-29.11	-108.03	125.27	192.09 **	-98.78	305.04 *	291.62 *	287.05 **	24.12	14.84	-168.08	-44.04
	(-0.51)	(-1.36)	(-0.02)	(1.77)	(-1.58)	(2.79)	(2.81)	(2.33)	(0.44)	(0.29)	(-1.45)	(-0.75)
CR = 3 and 4	28.44 *	32.07 *	21.23 **	10.79	23.32 *	36.16 *	56.03 *	56.17 *	37.12 *	27.37 *	20.77	29.94 *
	(4.88)	(3.66)	(2.09)	(1.11)	(3.87)	(3.03)	(4.48)	(3.65)	(6.19)	(4.59)	(0.55)	(5.10)
CR = 5 and 6	51.60 *	51.22 *	43.63 *	30.79 *	51.38 *	28.12 *	71.79 *	47.58 *	66.37 *	53.82 *	34.21 *	53.99 *
	(8.43)	(6.72)	(3.48)	(3.33)	(7.71)	(4.30)	(7.65)	(4.33)	(10.89)	(7.40)	(3.07)	(8.42)
CR = 7 and 8	78.75 *	89.67 *	66.60 *	64.78 *	104.03 *	64.37 *	113.02 *	115.62 *	93.32 *	81.83 *	34.48	82.31 *
	(5.65)	(3.79)	(3.79)	(4.69)	(4.68)	(2.01)	(5.48)	(5.31)	(5.63)	(5.15)	(1.39)	(5.64)
CR = 9 and 10	146.25 *	144.09 *	136.65 *	120.20 *	139.18 *	79.03 *	198.98 *	173.81 *	163.94 *	151.57 *	100.75 *	147.94 *
	(17.33)	(13.86)	(8.58)	(9.78)	(15.76)	(4.31)	(11.76)	(9.69)	(19.76)	(15.75)	(6.46)	(17.52)
CR = 11 and 12	367.51 *	368.60 *	370.69 *	322.23 *	347.15 *	355.59 *	520.55 *	505.56 *	389.47 *	378.82 *	303.84 *	369.02 *
	(12.53)	(10.09)	(7.54)	(7.61)	(9.92)	(5.27)	(14.61)	(13.15)	(12.27)	(12.03)	(3.63)	(12.67)
CR = 13 and 14	389.53 *	na	381.61 *	386.95 *	386.87 **	na	514.52 *	498.69 *	428.84 *	396.35 *	na	393.73 *
	(3.58)	na	(3.30)	(3.63)	(2.27)	na	(30.79)	(22.04)	(4.17)	(3.64)	na	(3.61)
LOAN TO VALUE	-24.81 *	-20.93 **	-25.44 *	-49.92 *	-11.99	-15.11 *	-2.70	-18.25	-11.54	-18.91 **	-7.46	-25.09 *
	(-3.77)	(-1.98)	(-2.91)	(-4.60)	(-1.21)	(-4.10)	(-0.24)	(-1.43)	(-1.40)	(-2.23)	(-0.97)	(-3.84)
FINANCE HOUSE	-17.37 **	0.75	-	excl.	-	-	-	-	-41.10 *	-	excl.	-17.57 **
	(-2.41)	(0.07)	-	excl.	-	-	-	-	(-4.62)	-	excl.	(-2.42)
BANK	-2.93	15.72 ***	-	-58.15 *	-	-	-	-	-32.97 *	-	1.33	-1.93
	(-0.40)	(1.89)	-	(-5.61)	-	-	-	-	(-4.29)	-	(0.16)	(-0.26)
INSURANCE	112.88 *	72.61 *	-	195.83 *	-	-	-	-	98.46 *	-	na	120.36 *
	(2.89)	(4.04)	-	(3.53)	-	-	-	-	(2.34)	-	na	(3.11)
PUBLIC	-3.29	-15.33	-	21.61	-	-	-	-	5.38	-	na	-3.58
	(-0.32)	(-1.65)	-	(1.03)	-	-	-	-	(0.57)	-	na	(-0.35)
SOVEREIGN	-29.93 **	-27.68 **	-	-20.94	-	-	-	-	-25.82 ***	-	-100.54	-30.52 **
	(-2.44)	(-2.00)	-	(-1.32)	-	-	-	-	(-1.85)	-	(-1.48)	(-2.47)
LOWMATURITY	-10.29	-25.57 *	8.98	-3.83	-28.33 *	11.20	-22.21 ***	-	-3.66	-20.54	-7.33	-9.36
	(-1.29)	(-3.26)	(0.59)	(-0.20)	(-2.77)	(1.30)	(-1.95)	-	(-0.25)	(-1.50)	(-0.93)	(-1.21)
HIGHMATURITY	10.75 **	11.69 ***	19.63	18.49 **	-1.62	7.67	49.80 *	-	16.88 *	12.85 **	na	10.80 **
	(2.01)	(1.91)	(1.49)	(2.13)	(-0.22)	(1.01)	(4.30)	-	(3.51)	(2.25)	na	(2.03)
ENHANCEMENT	-22.14 *	-27.80 *	-12.81	-20.78 **	-15.38 **	-26.01 ***	6.01	-8.83	-15.22 *	-21.00 *	-89.94 *	-22.01 *
	(-4.31)	(-3.61)	(-1.35)	(-1.97)	(-2.31)	(-1.87)	(0.57)	(-0.73)	(-2.72)	(-3.79)	(-2.74)	(-4.27)

Table 6: Ordinary least squares regression analyses of asset-backed securities (*continued*)

Variable	**OLS** Reg. #1	**1999-01** Reg. #2	**2002-05** Reg. #3	**2002-05** Reg. #4	**Banks** Reg. #5	**Finance houses** Reg. #6	**Corpo-rates** Reg. #7	**Corpo-rates** Reg. #8	**Euro-market** Reg. #9	**Euro-market** Reg.#10	**Other markets** Reg. #11	**Discor-dance** Reg. #12
CONSUMER	9.70 **	-2.72	24.45 *	-	6.91	-	-	12.85	-	11.19 **	8.65	10.21 **
	(2.15)	(-0.49)	(2.65)	-	(1.29)	-	-	(1.11)	-	(2.50)	(0.55)	(2.23)
CREDIT CARD	-16.81 **	-19.60 ***	-10.69	-	-24.55 *	-	-	13.71	-	-12.73 ***	-18.57 ***	-18.47 **
	(-2.29)	(-1.94)	(-1.10)	-	(-2.88)	-	-	(0.73)	-	(-1.95)	(-1.83)	(-2.54)
FUTURE	42.03 *	60.52 *	33.70	-	na	-	-	25.22 ***	-	42.94 *	na	41.37 *
	(4.34)	(5.08)	(1.46)	-	na	-	-	(1.97)	-	(4.03)	na	(4.29)
AIRCRAFT LEASE	37.58 *	75.03 *	31.13	-	na	-	-	21.69	-	38.59 *	na	39.65 *
	(2.71)	(4.68)	(1.42)	-	na	-	-	(1.23)	-	(2.98)	na	(2.82)
EQUIPMENT LEASE	16.71 *	16.30 *	9.55	-	6.56	-	-	13.06	-	11.49 **	-46.00 ***	17.26 *
	(3.80)	(2.71)	(1.36)	-	(1.08)	-	-	(1.50)	-	(2.06)	(-1.83)	(3.88)
OTHER	36.27 *	43.22 *	24.91 **	-	51.46 *	-	-	40.00 *	-	34.53 *	-25.37	36.20 *
	(6.42)	(5.46)	(2.14)	-	(6.36)	-	-	(2.60)	-	(5.85)	(-0.96)	(6.37)
SMALL BUSINESS	8.10	-1.40	7.69	-	7.28	-	-	-13.97	-	8.26	3.60	7.85
	(0.85)	(-0.14)	(0.36)	-	(0.71)	-	-	(-0.54)	-	(0.89)	(0.09)	(0.83)
WHOLE BUSINESS	61.56 *	79.66 *	65.89 *	-	18.47	-	-	69.38 *	-	65.43 *	-17.64	60.03 *
	(5.21)	(6.91)	(3.57)	-	(0.25)	-	-	(5.43)	-	(7.18)	(-0.67)	(5.06)
PERIOD II	-8.23 ***	-	-	-	-7.31	-10.05 **	-5.75	-10.60	-9.42 **	-7.12	-0.75	-7.35 ***
	(-1.94)	-	-	-	(-1.39)	(-2.17)	(-0.53)	(-0.88)	(-2.08)	(-1.50)	(-0.11)	(-1.76)
LOAN SIZE	8.00	3.85	8.02	0.43	5.27	-	-	-	14.97 *	7.50	3.15	7.35
	(1.54)	(0.57)	(0.75)	(0.06)	(0.88)	-	-	-	(2.84)	(1.18)	(0.35)	(1.42)
TRANSACTION SIZE	-7.25	5.33	-22.76	-37.35 **	-1.03	-21.41 **	-34.32 **	-35.67 **	-14.26	-11.87	26.47 **	-5.77
	(-0.77)	(0.47)	(-1.39)	(-2.45)	(-0.10)	(-2.46)	(-2.48)	(-2.11)	(-1.45)	(-1.13)	(2.00)	(-0.62)
# TRANCHES	-0.35	0.09	-0.84	-	0.29	-0.47	-	-	-0.08	-0.96	-	-0.36
	(-0.66)	(0.06)	(-1.23)	-	(0.24)	(-1.44)	-	-	(-0.11)	(-1.28)	-	(-0.67)
EUROMARKET	14.10 *	7.10	6.62 *	56.85 *	14.51	-7.37 **	19.88 **	32.92 **	-	-	-	13.93 *
	(2.77)	(0.70)	(3.62)	(5.02)	(1.57)	(-2.28)	(2.03)	(2.27)	-	-	-	(2.77)
# LEAD MANAGERS	-7.79 **	-8.89 **	-4.44	-5.37	-4.33	-	-	-	-9.38 *	-9.81 *	-	-8.17 **
	(-2.23)	(-2.57)	(-0.63)	(-0.82)	(-1.28)	-	-	-	(-2.86)	(-2.71)	-	(-2.38)
# RATING AGENCIES	-0.72	-0.43	3.32	-1.42	-2.46	-	0.83	-0.50	-1.08	-0.15	-	0.90
	(-0.18)	(-0.09)	(0.50)	(-0.27)	(-0.50)	-	(0.08)	(-0.05)	(-0.25)	(-0.03)	-	(0.23)
TAP	0.86	3.28	11.62	-11.10	5.45	na	2.42	-1.37	3.84	0.50	na	1.14
	(0.10)	(0.39)	(0.62)	(-0.51)	(0.65)	na	(0.20)	(-0.11)	(0.42)	(0.06)	na	(0.13)

Table 6: Ordinary least squares regression analyses of asset-backed securities (*continued*)

Variable	**OLS** Reg. #1	**1999-01** Reg. #2	**2002-05** Reg. #3	**2002-05** Reg. #4	**Banks** Reg. #5	**Finance houses** Reg. #6	**Corpo-rates** Reg. #7	**Corpo-rates** Reg. #8	**Euro-market** Reg. #9	**Euro-market** Reg.#10	**Other markets** Reg. #11	**Discor-dance** Reg. #12
FIXED	21.53 *	31.66 *	18.34 **	5.39	1.07	-5.00	23.96 *	42.18 *	26.50 *	24.25 *	-57.66 **	22.12 *
	(4.48)	(3.97)	(2.17)	(0.62)	(0.12)	(-0.02)	(2.77)	(4.37)	(3.98)	(3.90)	(-2.28)	(4.52)
RETAINED	11.18	-19.12	42.93 **	80.98 *	23.71	107.53 **	na	na	na	na	na	9.63
	(0.78)	(-0.66)	(2.05)	(3.54)	(1.27)	(2.46)	na	na	na	na	na	(0.67)
EMERGING	75.18 **	105.58 ***	88.35 ***	54.97	50.45	113.33	73.95 **	76.04 *	86.62 ***	67.83	55.91	73.06 **
	(2.18)	(1.91)	(1.89)	(1.57)	(0.82)	(1.24)	(2.46)	(2.63)	(1.74)	(1.38)	(1.46)	(2.10)
CREDITOR RIGHTS	1.40	-2.45	-	4.61	-0.71	-1.60	-	-	-	-	-	1.84
	(0.52)	(-0.63)	-	(1.11)	(-0.18)	(-0.53)	-	-	-	-	-	(0.71)
ENFORCEMENT	1.19	1.19	2.81	3.92 **	2.20 ***	-1.78	-	-	1.22	1.46	-	1.19
	(1.19)	(1.08)	(1.17)	(2.00)	(1.83)	(-1.51)	-	-	(1.47)	(1.51)	-	(1.20)
CURRENCY RISK	9.49	25.46 *	-13.86	-40.91	12.24	20.30	7.96	17.19 ***	-5.17	16.52 ***	-67.00	10.72
	(1.00)	(2.75)	(-0.42)	(-1.56)	(0.81)	(1.61)	(1.02)	(1.79)	(-0.56)	(1.80)	(-1.61)	(1.13)
DISCO	-	-	-	-	-	-	-	-	-	-	-	-11.06 ***
												(-1.79)
Number of observations	968	549	413	333	604	183	199	202	813	831	94	968
Adjusted R^2	0.76	0.78	0.75	0.76	0.71	0.83	0.88	0.87	0.75	0.76	0.85	0.76
Adjusted R^2c	0.61	0.69	0.54	0.51	0.63	0.64	0.76	0.76	0.61	0.61	0.63	0.61
F R^2	84.71	56.25	42.11	40.93	49.85	47.05	79.22	54.82	92.19	90.15	24.76	82.87
F R^2c	296.88	288.41	83.27	34.00	215.02	89.70	127.44	127.44	188.92	188.92	49.61	296.88

The dependent variable is defined as the margin yielded by the security at issue above a corresponding benchmark. The dependent variable is measured in basis points. The independent variables are as follows: CR (credit rating), set of rating dummy variables that correspond to credit rating 1-2 (CR=1-2), 3-4 (CR=3-4), 5-6 (CR=5-6), 7-8 (CR=7-8), 9-10 (CR=9-10), 11-12 (CR=11-12), and 13-14 (CR=13-14); LOAN TO VALUE is the subordination level expressed as a percentage of the transaction's initial principal balance; set of originator dummy variables: FINANCE HOUSE are finance house loans; BANK are bank loans; INSURANCE include those loans made by financial institutions that primarily sell insurance; PUBLIC are those loans originated by any state or local government; SOVEREIGN are sovereign loans; LOWMATURITY is 1 if the issue matures in les than 5 years; HIGHMATURITY is 1 if loan matures after 15 years; ENHANCEMENT dummy variable takes the value of 1 if the issue has a third-party guarantee in the form of an insurance policy issued by one of the monoline insurance companies; set of collateral dummy variables: CONSUMER are consumer loans; CREDIT CARD are credit card loans; FUTURE are future receivables; AIRCRAFT LEASE are leases-aircraft; EQUIPMENT LEASE are leases-equipment; SMALL BUSINESS are small-business loans; WHOLE BUSINESS are whole-business loans; OTHER are other loans; PERIOD II dummy variable of 1 that corresponds to the loan issued in the 2002-2005 period, zero if the loan was issued in the period 1999-2001; LOAN SIZE is the natural log of the issue amount in millions of Euros; TRANSACTION SIZE is the natural log of the size of the transaction in Euro millions; # TRANCHES is the number of tranches per transaction; EUROMARKET has a dummy of 1 if the loan issued is placed on the euromarket, zero if the loan is placed on other markets; # LEAD MANAGERS is the number of managers representing the number of financial institutions participating in the loan issuance management group; # RATING AGENCIES is the number of rating agencies involved in rating the loan at the time of issuance; TAP dummy

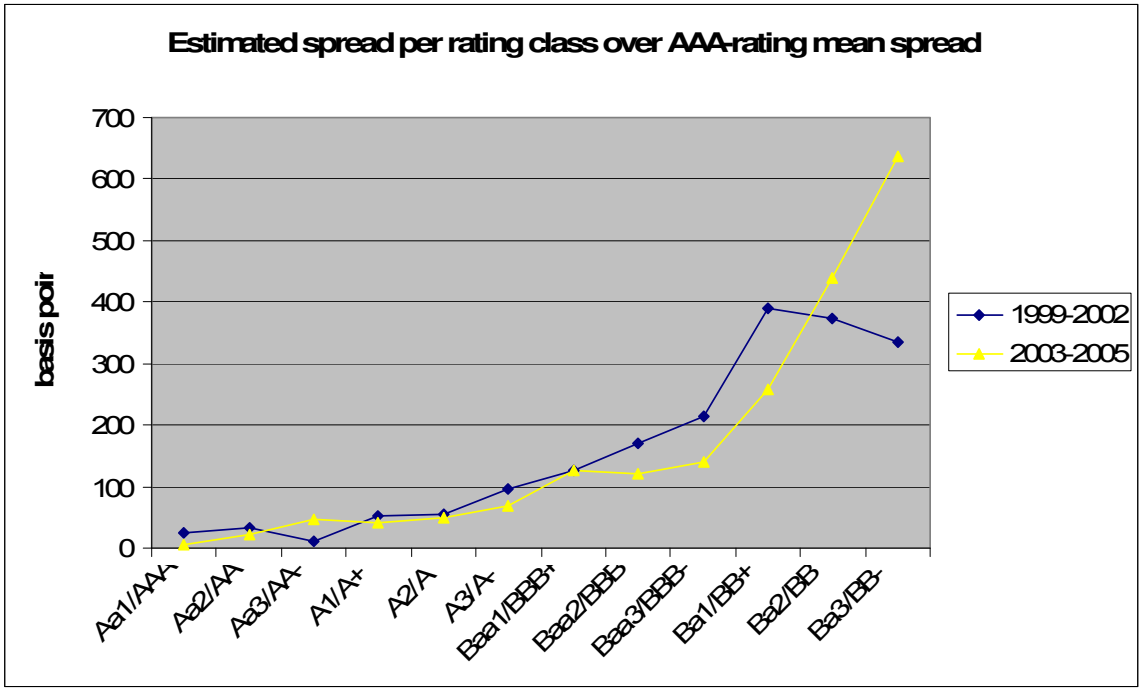
variable of 1 if the issue corresponds to a tap issue; FIXED has a dummy of 1 if the loan issue has a rate which is fixed for the life of the loan, zero if the loan has an interest rate that fluctuates depending on the base interest rate (floating rate issue); RETAINED is the retained subordinated interest as a beneficial interest in a securitization transaction by the originator; EMERGING has a dummy of 1 if the issue is originated in an emerging country, zero otherwise; CREDITOR RIGHTS and ENFORCEMENT measure the legal strength of the issue by country of origin; ENFORCEMENT measures the strength of a country's legal system; CURRENCY RISK dummy variable that takes the value of 1 if currency risk occurs. The table shows the coefficient and t-statistic, corrected for heteroscedasticity, in parentheses. * and ** and *** denote significance at the 1%, 5% and 10% level.

Source: Structured Finance International; La Porta, Lopez-de-Silanes, Schleifer, and Vishny (2000).

Table 7: Adjusted R^2 for different specifications of Regression #1

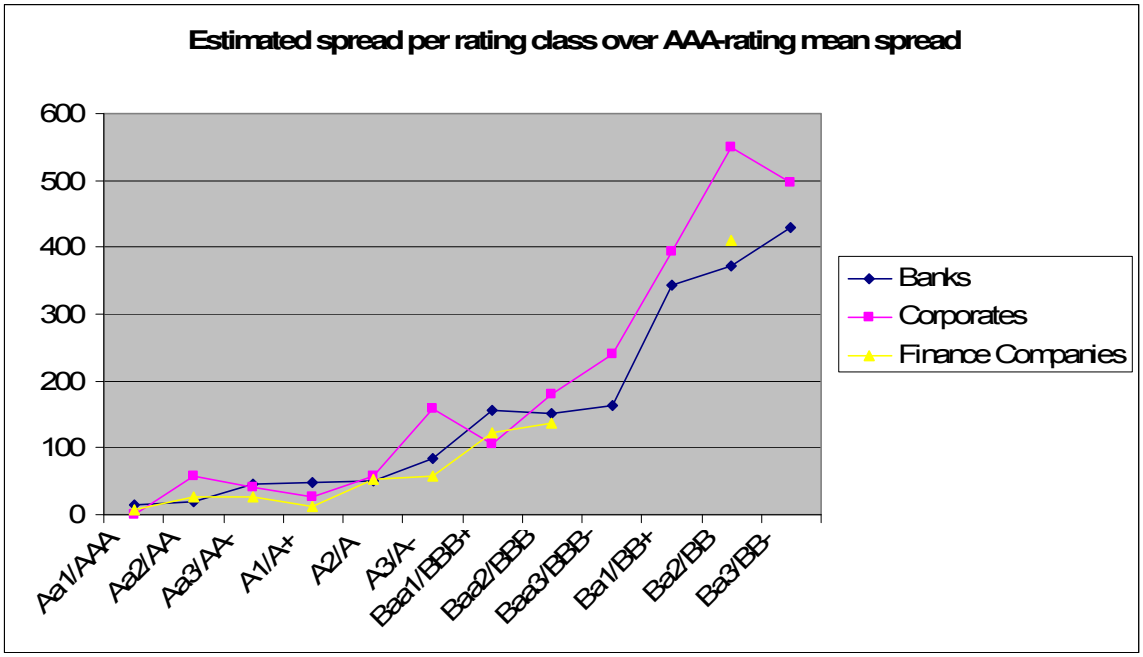
Independent variables	adjusted R^2	F-test
all characteristics	0.76	84.71
default and recovery risk characteristics	0.70	109.67
marketability characteristics	0.13	20.41
systemic characteristics	0.07	22.88
default and recovery risk + marketability characteristics	0.77	106.51
default and recovery risk + systemic characteristics	0.69	82.14
marketability characteristics + systemic characteristics	0.19	20.88

Figure 1



Plot of OLS regression coefficients of spread on rating dummy variables to rating values. Rating values are the numeric values of ratings given by Fitch, Moody's and Standard & Poor's as defined in Table 2. Includes 812 and 564 observations for the sub-sample 1999-2002 and 2003-2005, respectively.

Figure 2



Plot of OLS regression coefficients of spread on rating dummy variables to rating values. Rating values are the numeric values of ratings given by Fitch, Moody's and Standard & Poor's as defined in Table 2. Includes 800, 312, and 264 observations for the sub-sample of banks, corporates and finance companies, respectively.