Securitization Without Risk Transfer[1]

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Abstract

We analyze asset-backed commercial paper conduits which played a central role in the early phase of the financial crisis of 2007-09. We document that commercial banks set up conduits to securitize assets while insuring the newly securitized assets using credit guarantees. The credit guarantees were structured to reduce bank capital requirements, while providing recourse to bank balance sheets for outside investors. Consistent with such recourse, we find that banks with more exposure to conduits had lower stock returns at the start of the financial crisis; that during the first year of the crisis, asset-backed commercial paper spreads increased and issuance fell, especially for conduits with weaker credit guarantees and riskier banks; and that losses from conduits mostly remained with banks rather than outside investors. These results suggest that banks used this form of securitization to concentrate, rather than disperse, financial risks in the banking sector.

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Securitization was traditionally meant to transfer risks from the banking sector to outside investors and thereby disperse financial risks across the economy. However, in the period leading up to the financial crisis of 2007-09, banks increasingly devised securitization methods that allowed them to concentrate risks on their balance sheets which eventually led to the largest banking crisis since the Great Depression.

In this paper, we analyze one form of securitization, namely asset-backed commercial paper conduits (henceforth, conduits), as an example of how banks exposed themselves to such risks. Conduits are structured purpose vehicles set up by large banks. Conduits typically hold long-term assets claims, such as mortgages, which are financed by issuing short-term asset-backed commercial paper. Similar to regular banks, conduits thus exhibit a significant maturity mismatch between assets and liabilities.

As shown in Figure 1, before the financial crisis asset-backed commercial paper was an important funding source for commercial banks growing from US$650 billion in January 2004 to US$1.2 trillion in June 2007. However, the rise in asset-backed commercial paper came to an abrupt end in August 2007. On August 7, 2007, the French Bank BNP Paribas halted withdrawals from three funds invested in mortgage-backed securities and suspended calculation of net asset values.[5] Even though defaults on mortgages had been rising throughout 2007, the suspension of withdrawals had a profound effect on the asset-backed commercial paper market. Apparently investors in

[5] The announcement read: "[T]he complete evaporation of liquidity in certain market segments of the US securitization market has made it impossible to value certain assets fairly regardless of their quality or credit rating… Asset-backed securities, mortgage loans, especially subprime loans don't have any buyers… Traders are reluctant to bid on securities backed by risky mortgages because they are difficult to sell on… The situation is such that it is no longer possible to value fairly the underlying US ABS assets in the three above-mentioned funds." (Source: "BNP Paribas Freezes Funds as Loan Losses Roil Markets", Bloomberg.com, August 9, 2008).

asset-backed commercial paper, primarily money market funds, became concerned about the collateral backing asset-backed commercial paper and stopped refinancing maturing asset-backed commercial paper. As a result, as shown in Figure 2, the interest rate spread of overnight asset-backed commercial paper over the Federal Funds rate increased from 10 basis points to 150 basis points within one day of the announcement. Subsequently, the market experienced the modern-day equivalent of a bank run and asset-backed commercial paper outstanding dropped from $1.2 trillion in August 2007 to $833 billion in December 2007.

Our main result is that the crisis in the asset-backed commercial paper had a profoundly negative effect on commercial banks because banks had insured outside investors in asset-backed commercial paper. The reason is that banks had provided credit guarantees to conduits, which required banks to pay off maturing asset-backed commercial paper independently of underlying asset values. These guarantees were explicit legal commitments to repurchase maturing asset-backed commercial paper in case of market disruptions, not a voluntary form of implicit recourse.[6] For the majority of conduits, the credit guarantees were strong enough to cover all possible losses of outside investors. For a minority of conduits, the credit guarantees were weaker and required banks to cover only a share of the losses.

We establish these finding using a hand-collected panel dataset on the universe of conduits from January 2001 to December 2008. We document and describe the structure of the credit guarantees that effectively created recourse from conduits back to bank balance sheets. We refer to conduits as securitization *without* risk transfer because

[6] However, there was some scope for implicit recourse in the case of weaker credit guarantees.

outside investors would suffer losses only if the credit guarantees provided by the banks and the value of the conduit assets were *both* insufficient to repay the asset-backed commercial paper. Hence, this form of securitization did not transfer the risks of the securitized assets risk from banks to outside investors.

Consistent with this lack of risk transfer, we find three main empirical results. First, we show that commercial banks with larger exposure to conduits had larger declines in stock returns at the start of the financial crisis on August 9, 2007. An increase in conduit exposure (measured as the ratio of asset-backed commercial paper to bank equity) from 0% to 100% (e.g., moving from Wells Fargo to Citigroup) reduced stock returns by 1.5 percentage points in a three-day window around the start of the financial crisis. The effect of conduit exposure on stock returns increases to 2.6 percentage points when we expand the event-window to one month. The result is robust to using alternative measures of conduit exposure, using abnormal stock returns, and controlling for a large set of observable bank characteristics. We also show that there is no relationship between conduit exposure and stock returns in the months before the financial crisis.

Second, we use a novel conduit-level data set to study daily issuances and spreads of asset-backed commercial paper both before and during the financial crisis. We find that conduits with weaker credit guarantees have a larger decline in issuances and a larger increase in spreads after the start of the financial crisis. This finding is robust to controlling for unobservable time-invariant sponsor and conduit characteristics. We further find that the results are stronger for riskier banks (as measured by credit default swap spreads), which suggests that the differential effect across different types of credit

guarantees is determined by the financial strength of the sponsor and that credit guarantees are an important part of conduits' ability to issue asset-backed commercial paper after the start the financial crisis.

Third, we examine the extent of realized risk transfer by analyzing whether investors could rely on the credit guarantees offered by financial institutions during the crisis. We take the perspective of an investor that was holding asset-backed commercial paper at the start of the crisis and examine whether the investor suffered losses by not refinancing maturing asset-backed commercial paper. Using announcement data from Moody's Investor Services, we identify all conduits that defaulted on asset-backed commercial paper in the period from January 2007 to December 2008. We find that all investors in conduits with strong credit guarantees were repaid in full. We find that investors in conduits with weak credit guarantees suffered small losses. In total, only 2.5% of asset-backed commercial paper outstanding as of July 2007 entered default in the period from July 2007 to December 2008. Hence, most of the losses on conduit assets remained with sponsoring banks. Assuming a loss rate of 10%, we estimate that commercial banks suffered losses of $102 billion on conduit assets.

These results raise the question why banks used conduits for the purpose of securitization. We note that asset-backed commercial paper is different from other forms of securitization, such as mortgage-backed securities, in which most of assets' credit risk is transferred to other investors. Instead, conduits are similar to on-balance sheet financing because the conduit assets' credit risk effectively remains with the bank. The main difference between on-balance sheet financing and financing via conduits is that conduit assets are considered off- balance sheet for the purpose of capital regulation and

therefore banks need to hold far less regulatory capital against assets in conduits relative to assets on the balance sheet. Consistent with this motive for regulatory arbitrage, we find that most credit guarantees were structured to avoid regulatory requirements while exposing banks to the same risks as on-balance sheet financing.

Finally, we emphasize that all of our evidence on the performance and effects of conduits is necessarily ex post. It is possible that ex ante the risks of credit guarantees were ignored by bank management due to poor risk management that did not keep pace with that of financial engineering, or ineffective corporate governance, or simply short-termism – phenomena that may have been the result of deeper underlying causes such as increased competition in banking activities, resulting erosion of margins and franchise values, and the moral hazard due to government guarantees such as deposit insurance and the too-big-to-fail doctrine. Investigating these underlying causes is an important question for future work.

The remainder of this paper is organized as follows. Section 2 presents the related literature. Section 3 discusses the institutional background. Section 4 presents the data and our main empirical results. Section 5 analyzes the incentives of banks to set up conduits. Section 6 concludes.

2. Related literature

Gorton and Souleles (2005), Gorton (2008), Brunnermeier (2009), and Kacperczyk and Schnabl (2009) provide examples of maturity transformation outside the regulated banking sector. Our focus, in contrast to theirs, is to provide an in-depth analysis of the structure of asset-backed commercial paper conduits: how risk transfer

was designed to take place through conduits and how it materialized and contributed to the start of the financial crisis of 2007-09. Ashcraft and Schuermann (2008) present a detailed description of the process of securitization of subprime mortgages, of which conduits were one component. Nadauld and Sherland (2008) study the securitization by investment banks of AAA-rated tranches – "economic catastrophe bonds" as explained by Coval et al (2008) – and argue that the change in the SEC ruling regarding the capital requirements for investment banks spurred them to engage in excessive securitization. Nadauld and Sherland (2008) view the banks as warehousing these risks for further distribution whereas Shin (2009) argues that banks were concentrating highly-leveraged risk exposures (given the low capital requirements) by so doing.

Our view in this paper is more along the lines of Shin (2009), Acharya and Richardson (2009), and Acharya and Schnabl (2009), that banks were securitizing without transferring risks to outside investors, and in particular, conduits were a way of taking on tail-natured systemic risk of the underlying pool of credit risks. In an analysis focused on the economic causes of the increasing propensity of the financial sector to take such risks (in one class of conduits – the "credit arbitrage" vehicles), Arteta et al (2008) provide evidence consistent with government-induced distortions and corporate governance problems being the root causes (see also the arguments in Calomiris, 2009).

Our results on the difficulty in rolling over asset-backed commercial paper and the rise in their spreads are somewhat akin to the analysis of the run on the repo market by Gorton and Metrick (2009). They document that a counterparty risk measure for the banking sector as a whole, the "LIB-OIS" spread, explained over time the variation in the credit spreads of a large number of securitized bonds and the rise in repo haircuts, that is,

the difference between market value of an asset and its secured borrowing capacity. However, there are important differences between our "laboratory" and theirs. While conduits resemble repo transactions to some extent, the presence of explicit credit guarantees in conduits establishes a direct linkage between the ability to issue commercial paper and the guarantees provided by the sponsor. We can therefore test directly for the impact of the guarantees on commercial paper issuance and spreads using the time-series within conduit sponsors.

3. Institutional Background

3.1. Conduit Structure

Conduits are structured purpose vehicles set up by large financial institutions. The sole purpose of conduits is to hold financial assets, which are financed by selling asset-backed commercial paper to outside investors such as money market funds or local governments. Conduits typically exhibit a significant maturity mismatch. Most of the conduit assets are medium to long-term assets with maturities of three to five years. Most of the conduit liabilities are asset-backed commercial paper with a maturity of 30 days or less. Conduits thus regularly roll over their liabilities and use proceeds from new issuances of asset-backed commercial paper to pay off maturing asset-backed commercial paper.

Conduits aim to minimize their credit risk by holding a diversified portfolio of high quality assets. Typically, they are restricted to purchasing AAA-rated assets or unrated assets of similar quality. Conduits follow a variety of different investment strategies. Some conduits exclusively purchase unrated assets originated by their

sponsoring financial institutions. Other conduits mostly purchase securitized assets originated by other financial institutions. Many conduits combine the two strategies by purchasing both securitized and unsecuritized assets from several financial institutions.

Outside investor consider asset-backed commercial paper a safe investment for three reasons. First, the pool of conduit assets is used as collateral to secure the asset-backed commercial paper. Second, the conduit's sponsoring financial institution (henceforth, sponsor) provides credit guarantees to the conduit, which ensures that the sponsor repays maturing asset-backed commercial paper in case the conduit is unable to repay itself. Third, asset-backed commercial paper is very short-term, so that investor can easily liquidate their investment by not rolling over maturing asset-backed commercial paper.

Conduits can generate significant risks for the sponsor. The sponsor's credit guarantees typically covers the conduit's roll-over risk, which is the risk that a conduit cannot refinance maturing commercial paper, possibly because of a deterioration of conduit asset values. In that case, the sponsor has to assume the losses from lower asset values, because under the credit guarantee sponsor are required to repurchase assets at face value or repay asset-backed commercial paper at par value. In exchange, the sponsor usually receives the entire conduit's profit.

From an incentive perspective, the use of credit guarantees to align risk and rewards within the sponsor is consistent with the optimal allocation of control rights under asymmetric information. Sponsors often use conduits to purchase assets originated by their customers or by themselves and may be better informed about asset quality than outside investors. The use of credit guarantees thus avoids the incentive problem inherent

in other forms of securitization, in which the asset originator transfers most of the risks associated with the assets to outside investors (e.g. see Calomiris and Mason (2004) and Keys et al. (2009)). The credit guarantees are also important because they ensure that asset-backed commercial paper typically qualifies for the highest available rating from accredited national rating agencies. In turn, the rating ensures that money market funds are legally permitted to invest in asset-backed commercial paper (Kacperczyk and Schnabl (2009)).

Conduit sponsors use four different types of credit guarantees which provide different level of insurance to outside investors. The four types of guarantees ranked from strongest to weakest are full credit guarantees ("full credit"), full liquidity guarantees ("full liquidity"), extendible notes guarantees ("extendible notes"), and guarantees arranged via structured investment vehicles ("SIV"). We briefly describe te structure of each credit guarantee.

Full credit guarantees are guarantees that require the sponsor to pay off maturing asset-backed commercial paper independent of the conduit assets' value. Full liquidity guarantees are similar to full credit guarantees with the main difference being that the sponsor only needs to pay off maturing asset-backed commercial paper if conduits assets are not in default. In theory, full liquidity credit guarantees can expire before the asset-backed commercial matures, namely if the conduit assets are in default. In practice, however, full liquidity guarantees provide the same strength as full credit guarantees because the definition of asset default is chosen such that the asset-backed commercial paper matures before the assets are declared in default. For example, default of unrated assets is usually a function of a slow-moving variable such as a delinquency rate. Hence,

if outside investors expect that conduits assets may default in the future, they stop refinancing maturing paper. As we show below, throughout the first year of the financial crisis, full liquidity guarantees never expired prior to asset-backed commercial paper.

Extendible notes guarantees are similar to full liquidity guarantees with the main difference being that the conduit issuer has the discretion to extend maturing commercial paper for a limited period of time (usually 60 days or less). By extending the maturity of the commercial paper, it is more likely that the conduits assets are in default before the commercial paper matures, which makes extendible notes guarantees riskier than full liquidity guarantees.

SIV guarantees are also similar to full liquidity guarantees with the main difference being that credit guarantees only cover a share of the conduit liabilities (usually around 25%). In exchange, conduits with SIV guarantees issue subordinated debt such as medium-term notes and capital notes with longer maturities. Since SIV guarantees only cover some of a conduit's liabilities, we consider SIV guarantees as providing partial insurance to outside investors.

3.2. Capital Requirements

Bank regulators have developed extensive regulation to deal with risks from off-balance sheet exposure such as conduits. Since almost all conduits were sponsored by banks based in the United States and European countries, we focus on bank regulation in these countries.

In the United States, bank regulators historically made a distinction between full credit and full liquidity guarantees. Full credit guarantees were considered to be

equivalent to on-balance sheet financing. Hence, assets covered by full credit guarantees required the same regulatory capital charges as assets on the balance sheet. In contrast, full liquidity guarantees were considered to be of lower risk and required no capital charges.

In 2001, bank regulators in the United States started a formal review of its regulatory treatment of full credit and full liquidity guarantees. The review was triggered by the bankruptcy of the large energy company Enron, which had sponsored off-balance sheet vehicles similar to conduits. In response, some observers suggested that conduits should have capital charges similar to on-balance sheet financing, independent of whether they were covered by full credit or full liquidity credit guarantees. Regulators discussed this issue for two years and, as shown in Figure 1, total asset-backed commercial paper remained stable during that period.

In late 2003, the Financial Accounting Standard Board issued a directive which effectively required commercial banks to consolidate special purpose vehicles, such as conduits, with its main beneficiary. This new directive implied that sponsors had to consolidate conduits to which they provided credit guarantees. In late 2004, a consortium of bank regulators, namely the Office of the Comptroller of the Currency, the Federal Reserve Board, the Federal Deposit Insurance, and the Office of Thrift Supervision, declared asset-backed commercial paper conduits as being exempted from this directive. Under the exemption, assets in conduits were not considered assets for the purpose of calculating capital requirements. Instead, bank regulators required that banks had to hold capital at a conversion factor of 10% against the amount covered by full liquidity guarantees. This implied that regulatory charges for conduit assets were 90% lower than

regulatory charges for on-balance sheet financing (Lee Gilham, 2005). As shown in Figure 1, asset-backed commercial paper grew rapidly after the exemption was issued.

Before 2004, most European countries had the same regulatory requirements as in the United States. Full credit guarantees had full regulatory charges, but full liquidity guarantees had no capital charges.[7] The main difference between the United States and Europe was that European banks started to adopt International Financial Reporting Standards (IFRS) in the early 2000s. IFRS, contrary to U.S. General Accepted Accounting Principles (GAAP), do not recognize asset transfers to conduits as a true sale. As a result, European banks were required to consolidate conduits on their balance sheets. However, most European regulators did not update capital regulation following IFRS. Hence, for the purpose of computing regulatory requirements and risk weighted assets, conduits were considered off-balance sheet and European banks did not have to hold any capital against conduit assets.

Instead European bank regulators focused on updating capital requirements under the Basel II framework. Under the Basel II standardized approach, the difference between regulatory requirements for conduit assets increase from 0% to 20% relative to on-balance sheet financing. Moreover, Basel II assumes lower risk weights for AAA-rated securities, which reduces the level of regulatory charges for both off-balance sheet and on-balance sheet financing. At the time of financial crisis, several European banks had adopted Basel II rules, while others were still operating under Basel I. In either case, the difference in regulatory charges between conduit assets and on-balance sheet assets existed under both regimes, although it was smaller under the new regime.

[7] The only exceptions were Spain and Portugal which required full capital charges for both full credit and full liquidity guarantees (Acharya and Schnabl, 2009).

3.3. Market Statistics

Panel A of Table 1 shows the ten largest conduits ranked by asset-backed commercial paper as of January 1, 2007. Nine out of ten conduits are structured with full liquidity guarantees, which is consistent with the regulatory arbitrage motive. Most conduits hold AAA-rated assets originated in the United States or the United Kingdom. Most conduits are diversified across several asset classes, with the main ones being residential mortgages and asset-backed securities.

Panel B of Table 1 shows the ten largest banks sponsoring conduits ranked by asset-backed commercial paper as of January 1, 2007. In the United States, the largest sponsor is Citigroup with conduit assets of $92.7 billion. For comparison, Citigroup's regulator capital (Tier 1 Capital) is $90 billion. In Europe, the largest sponsor is ABN Amro with $68 billion of conduits assets, which is twice the size of its regulatory capital. All sponsors are large multinational banks based in the United States and European countries.

Table 2 provides summary statistics for all conduits authorized to issues asset-backed commercial paper as of January 1, 2007. Panel A shows that there are 296 conduits with total paper outstanding of $1.235 trillion. The average conduit size is $4.2 billion with a standard deviation of $5.2 billion. Regarding credit guarantees, 61% of asset-backed commercial paper is covered by full liquidity guarantees, 13% is covered by full credit guarantees, 18% is covered by extendible notes guarantees, and 7% is covered by SIV guarantees.

The largest conduit type is multiseller conduits with $548 billion in ABCP. Multiseller conduits purchase assets from more than one seller. The assets are typically

not securitized and the sellers are often clients of the conduit sponsor. The main asset types held by multiseller conduits are trade receivables (15%), securities (12%), auto loans (11%), credit card receivables (10%), and commercial loans (9%). The second-largest type is credit arbitrage conduits with $213 billion in ABCP. Credit arbitrage conduits usually purchase securitized assets from many sellers. The main asset types held by arbitrage conduits are residential mortgage loans (26%), collateralized loan obligations and collateralized bond obligations (21%), commercial mortgage loans (12%), and commercial loans (11%). The third-largest type is single-seller conduits with $173 billion in ABCP. Single-seller conduits are often used by mortgage originators to warehouse assets before they are securitized. Almost all ABCP is issued in US dollars ($922 billion) or Euro ($219 billion). The remainder is issued in Yen, Australian dollars, and New Zealand dollars.

Panel B of Table 2 presents summary statistics for all sponsors as of January 1, 2007. We define a sponsor as a single consolidated company and aggregate asset-backed commercial paper at the holding level (e.g., we add paper sponsored by Citigroup and paper sponsored by Citibank). In total, there are 126 sponsors and average asset-backed commercial paper sponsored is $9.8 billion. The largest sponsor type is commercial banks, which sponsor $903 billion of asset-backed commercial paper. The second largest group is structured finance groups with $181 billion in ABCP. Contrary to commercial banks, structured finance groups usually do not have the financial resources to provide credit guarantees to conduits. Instead they purchase credit guarantees from other financial institutions. Unfortunately our data do not contain information to identify the provider of credit guarantees to conduits of structured investment groups. Other sponsors

are mortgage lenders ($71 billion), insurance companies, monoline insurers ($14 billion) and investment banks ($11 billion).

In terms of location, the majority of conduits are sponsored by financial institutions based in the United States with $488 billion of asset-backed commercial paper. A large number of sponsors are based in Germany and the United Kingdom with with asset-backed commercial paper of $204 billion and $195 billion, respectively. The remaining $347 billion are sponsored by financial institutions based in other countries, including financial institutions based in the Australia, Belgium, Canada, France, Netherlands, and Japan.

4. Empirical Analysis

4.1. Data

We use several different data sources for the analysis in this paper. For the first part of the empirical analysis, we use ratings reports from Moody's Investor Service for the period from January 2001 to March 2009. During this period, Moody's Investor Service rated 938 conduits. The rating reports are typically three to five pages and contain information on conduit sponsor, conduit type, conduit assets, credit guarantees, and a verbal description of the conduit. Moody's Investor Service publishes the first report when a conduit is first rated and subsequently updates the reports annually. For some larger conduits, Moody's Investor Service also publishes monthly monitoring reports. Monthly reports are typically one page and comprise information on conduit size, credit guarantees, and conduit assets. In addition, Moody's Investor Service

publishes a quarterly spreadsheet that summarizes basic information on all active conduits.

To construct our data set, we start with the universe of conduits collected from Moody's Investor Service's quarterly spreadsheets. We merge conduits that have more than one funding operation (79 out of 9536 observations). We drop some South African conduits because they are rated on a different scale (72 out of 9536 observations). We drop asset-backed commercial paper issued by collateralized debt obligations because their credit guarantees are not comparable to the rest of the sample (292 out of 9536 observations).

For each conduit, we aggregate asset-backed commercial paper at level of the consolidated financial company (e.g., we aggregate paper sponsored by Citibank Dakota and Citibank New York). We use data from Bankscope and Osiris to identify sponsors. Once we identify a potential match, we verify the information using the company website. If we cannot identify a sponsor via Bankscope or Osiris, we conduct an internet search.

We construct a panel of the 300 largest banks as of January 2007 using the Bankscope database. If a consolidated company and its subsidiaries have more than one entry in Bankscope, we only keep the consolidated company. We use the ISIN identifier to match Bankscope data to share price data and stock return data from Datastream. If a bank does not have an ISIN identifier, we verify with the company website that the bank is not listed on a stock exchange. We then match the Bankscope data to the Moody's Investor Service's data.

For the second part of the empirical analysis, we use a proprietary data set on all asset-backed commercial paper transactions conducted in the United States in 2007. The data set contains 693,762 primary market transactions by 349 conduits over 251 trading days. The data are provided by the Depository Trust and Clearing Corporation (DTTC), the agent that electronically clears and settles directly- and dealer-placed commercial paper. For each transaction, DTCC provides the identity and industry of the issuer, the face and settlement values of the transaction, and the maturity of the security.

Using the DTCC data, we compute prices and quantities for asset-backed commercial paper. We compute overnight spreads as the yield on asset-backed commercial paper minus the federal funds target rate. We calculate the conduit-level weekly growth as the percentage change in asset-backed commercial paper. We merge the DTCC data set with the Moody's Investor Service data set.

For the third part of the empirical analysis, we use Moody's Investor Service Weekly Announcement Reports of rating downgrades from January 2007 to December 2008. We identify all conduits that were downgraded or withdrawn during the analysis period. For all such conduits, we search for an affirmative statement by Moody's Investor Service that all outside investors were repaid prior to the downgrade or withdrawal. If there is no such affirmative statement we use announcements by the sponsor or other rating agencies to determine whether investors were repaid. If we do not find an affirmative statement that all investors were repaid, we assume that the conduit entered default. We note that this coding procedure may overestimate the extent of investor liquidation because investors may have been repaid without an affirmative announcement by either the sponsor or the rating agencies.

4.2. Effect of Conduit Exposure on Sponsor Stock Returns

This section analyzes whether banks with higher conduit exposure had lower stock returns at the start of the financial crisis. The difficulty in testing this hypothesis is that the financial crisis also affected banks in other ways, some of which may be correlated with conduit exposure. Hence, if we observe that banks with higher conduit exposure have lower returns, then this result may be driven by other bank activities that negatively affect stock prices and are correlated with conduit exposure.

To address this identification issue, we use the market freeze on August 9, 2007, to test for the impact of conduit exposure on banks. We believe the market freeze provides a good setting to answer this question for two reasons. First, the financial crisis arguably started with the announcement of difficulties in the subprime mortgage market and the subsequent freeze in the asset-backed commercial paper market. As shown in Figures 1 and 2, on August 9, 2007, investors drastically reduced refinancing of maturing asset-backed commercial paper and, as a result, overnight spreads jumped from 10 basis points to 150 basis points. Second, our analysis focuses on the narrow three-day window around August 9, 2007. This short event window reduces the likelihood that the results may be confounded by other events that happen at the same time.

We start by first examining observable characteristics of banks with and without conduit exposure. We restrict our sample to the 300 largest banks because only these banks had the financial strength to support conduits. We further restrict our analysis to commercial banks based in Europe and the United States and to banks for which share price data is available.

Table 3 shows the distribution of banks according to conduit exposure. We measure conduit exposure as asset-backed commercial paper outstanding relative to equity capital as of January 1, 2007. We sort banks into three groups: banks without conduits, banks with low conduit exposure, and banks with high conduit exposure. Consistent with our main hypothesis, we find that stock returns were lower for banks with higher conduit exposure. In fact, the data suggest that stock returns are monotonically decreasing in conduit exposure.

In terms of characteristics, banks with low conduit exposure and banks with high conduit exposure are fairly similar. Both low and high exposure banks are similar in asset size and equity capital. Banks with low conduit exposure have slightly higher equity ratios and slightly more short-term financing than banks with high conduit exposure. Also, banks with low conduit exposure are more likely to be located in the United States than banks with high conduit exposure.

To control for difference in observable characteristics, we estimate the baseline specification:

$$R_i = \alpha + \beta ConduitExp_i + \gamma X_i + \varepsilon_i$$

where R_i is the cumulative stock return of bank *i* computed over the three-day period from August 8, 2007, to August 10, 2007, $ConduitExp_i$ is bank *i*'s conduit exposure, X_i are banks *i*'s observable characteristics and ε_i is an error term. We estimate the specification using robust standard errors to allow for correlation across error terms.

Table 4 presents the results. Column (1) shows that an increase in conduit exposure from 0% to 100% (e.g., Wells Fargo to Citibank) reduces the cumulative stock return by 2.6 percentage points. Column (2) controls for banks size with the natural

logarithm of assets and the natural logarithm of equity. The coefficient of interest decreases to 1.4 percentage points but remains statistically significant. Column (3) adds controls for the equity ratio and the coefficient remains unchanged. Columns (4) and (5) add control variables for funding sources such as deposit funding and short-term debt funding and the results are unaffected. To control for geographic heterogeneity, Columns (6) adds indicator variables for the country of the sponsoring institution's headquarters. Again, the coefficient of interest is unaffected and remains statistically significant. We interpret these results as evidence that banks with higher conduit exposure were more negatively affected by freeze in the asset-backed commercial paper market. The coefficient is probably a lower bound of the realized impact because investors may have underestimated the severity of the downturn or may not have been fully aware of the (relatively opaque) credit guarantees provided to conduits. Also, investors may have anticipated some of the losses because of prior announcements about losses on subprime assets.

To test the impact of credit guarantees, we compute conduit exposure by type of credit guarantee and estimate the same set of regression as above. Table 5 presents the results. We find that all type of credit guarantees have a negative impact on stock returns. In most specifications, the impact of full liquidity and full credit guarantees is more negative than the impact of extendible notes and SIV guarantees although the difference is usually not statistically significant. These results are consistent with a more negative effect of strong credit guarantees relative to weak guarantees because the former provide a stronger form of recourse than the latter. However, it may also be the case that at the start of the financial crisis outside investors had difficulties in differentiating the

impact of different types of credit guarantees and only learned about credit guarantees over time (e.g. see Covitz, Liang, and Suarez, 2009).

To ensure that the results are not driven by outliers, we construct an alternative measure of exposure. We compute the mean exposure of all banks with positive exposure to conduits and divide the banks in two groups: banks with low exposure (below mean) and banks with high exposure (above mean). We estimate the baseline specification using indicator variables for banks with low exposure and high exposure and in unreported results find qualitatively and quantitatively similar effects.

As discussed above, our results rely on the identifying assumption that there is no omitted variable that is correlated with conduit exposure and that directly affects stock returns. We think this assumption is plausible because we use to a tight estimation window to isolate the impact of the asset-backed commercial paper market freeze. To check the robustness of this assumption, we also estimate the base-line specification for the pre-period. We use the results from this estimation to assess whether conduit exposure is correlated with the outcome variables in the absence of a disruption in the asset-backed commercial paper market.

Table 6 presents the results using a window of 15 trading days before and 15 trading days after the market event. We compute the cumulative stock return in the three-day window around each day and estimate the baseline specification using the full set of controls. Column (2) reports the coefficients on conduit exposure and Column (3) reports the standard errors of the coefficients. In the pre-period, all coefficients are close to zero and statistically insignificant. Hence, there is no evidence that conduit exposure is correlated with stock returns in absence of a disruption in the asset-backed commercial

paper market. In the post-period, we find five dates with a significant effect of conduit exposure on stock returns. This finding suggests that stock returns of high exposure banks were more correlated *after* the asset-backed commercial paper freeze. We note that this result is consistent with an interpretation that investors continued to revise their expectations about the impact of conduit exposure after the start of the financial crisis.

Table 7 presents results for months preceding the financial crisis. For each month, we estimate the same set of regressions as in Table 4. We find no statistically significant relationship between conduit exposure and stock returns from January 2007 to July 2007. However, in the month of the market freeze, August 2007, we find a negative and statistically significant effect of conduit exposure on stock returns after controlling for the full set of observables. The coefficient is twice as large as the coefficient in Table 4. This finding suggests that investors revised their expectation of the negative effect of conduit exposure on stock returns upwards for several days after the initial shock of August 9, 2007. However, we caution our interpretation because the estimation is over a longer event window which may be confounded by other factors.

4.3. Impact of Credit Guarantees on Spreads and Issuance

As shown in Figure 1, asset-backed commercial paper declined dramatically after the start of the financial crisis. By the end of year, the market was roughly 30 percent smaller than it was at its peak in July. Importantly for our analysis, the extent of the decrease varied significantly by type of credit guarantee. Figure 4 shows that asset-backed commercial paper covered by extendible guarantees or SIV guarantees dropped more than asset-backed commercial paper covered by full credit and full liquidity

guarantees. Similarly, Figure 5 shows that the spread on asset-backed commercial paper covered by extendible guarantees and SIV guarantees increased more than paper covered by full credit and full liquidity guarantees.[8]

To test the impact of credit guarantees more formally, we compute issuances and spreads of asset-backed commercial paper both before and after the start of the financial crisis. We restrict our sample to conduits sponsored by large financial institutions. We further restrict our sample to banks for which there is data on CDS spreads. For each conduit, we compute the weekly growth rate of asset-backed commercial paper outstanding and the daily overnight asset-backed commercial spreads.

Table 8 presents the results. We find that asset-backed commercial paper decreased for all categories after the start of the financial crisis, but the decrease is stronger for conduits with weaker guarantees, like SIVs and extendible conduits. For example, conduits with extendible notes guarantees went from a weekly growth rate of 0.2% before August 2007 to a negative growth rate of 12.5% after August 2007; in contrast, conduits with full liquidity guarantees went from a weekly growth rate of 0.01% before August 2007 to a negative growth rate of 3.4% after August 2007.

Similarly, overnight spreads increased after the start of the financial crisis for all types of guarantee, but it increased more for conduits with weaker guarantees. For example, conduits with SIV guarantees went from paying an average of 2 basis points over the Federal Funds rate for issuing overnight paper before the August 2007 to paying 72 basis points over the Federal Funds rate after August 2007; by contrast, conduits with

[8] We focus on overnight spreads because most newly issued ABCP has maturities of 1 to 4 days. According to data from the Federal Reserve Board, roughly 60 percent of newly issued ABCP in the U.S. market had maturities of 1 to 4 days prior to the crisis. Our results are similar when considering 1-month spreads.

full liquidity guarantees went from paying roughly 1 basis point over the Federal Funds rate before August 2007 to paying 43 basis points over the Federal Funds rate after August 2007.

Next, we test whether the patterns on issuance and spreads by type of guarantee are statistically significant and robust to controlling for unobservable time-invariant sponsor and conduit characteristics. Our baseline specification is:

$$\Delta Outstand_{it} = \alpha + Guarantee_j + After_t * Guarantee_j + Sponsor_k + Time_t + \varepsilon_{it}$$

where $\Delta Outstand_{it}$ represents the log change in the face value of commercial paper outstanding of conduit *i* in week *t*. $Guarantee_j$ is a fixed effect by type of guarantee. $After_t$ is an indicator variable that equals one after the start of the crisis (September to December, 2007) and zero before the crisis (January to July, 2007). $Sponsor_k$ and $Time_t$ represent fixed effects by sponsor and by week, respectively. We estimate this regression using weekly observations from January to December, 2007, excluding August—the month of the market freeze—and cluster standard errors at the sponsor level. All results are robust to including the month of the market freeze.

If the financial crisis makes investors more concerned about risks in conduits, we expect the interactions between dummies for weaker guarantees and the $After_t$ indicator to be more negative than those for stronger guarantees. Furthermore, if full credit and full liquidity support provide the same level of protection for investors during the crisis, we expect the interaction between the dummy for full credit support with the $After_t$ dummy to be statistically insignificant. Together these hypotheses are aimed at uncovering whether credit guarantees were important for outside investors to refinance maturing asset-backed commercial paper.

Column (1) in Table 9 reports the results of estimating our baseline specification. The significant coefficient on the interaction between the $After_t$ indicator and the dummies for programs with extendible notes and SIVs suggest that asset-backed commercial paper decreased more for conduits with weaker guarantees compared to conduits with stronger guarantees. We note that we include sponsor fixed effects and therefore we compare conduits for the *same* sponsor. As shown in column (2), the results are similar when we replace sponsor-fixed effects with conduit-fixed effects. The insignificant dummy on the interaction of the after dummy and full credit guarantees suggests that full liquidity and full credit support were statistically undistinguishable after the start of the financial crisis.

An alternative measure of the strength of the guarantee is the riskiness of the sponsor as measured, for example, by the sponsor CDS spread. We expect that the decrease in asset-backed commercial paper of conduits with weaker credit guarantees is more pronounced if the sponsor is risky. We test this hypothesis by adding sponsor CDS spreads and their two-way interactions with the dummies for type of guarantee and the $After_t$ indicator to the baseline specification. Columns (3) and (4) of Table 9 report the results. We find that negative and statistically significant effect on the interaction of sponsor CDS spreads with weaker guarantees. This finding suggests that issuance is indeed determined by the strength of the effective guarantee.

We also test the impact of credit guarantees on overnight spreads of asset-backed commercial paper. Our baseline specification is:

$$Spread_{it} = \alpha + Guarantee_j + After_t * Guarantee_j + Sponsor_k + Time_t + \varepsilon_{it}$$

where $Spread_{it}$ is the overnight spread (1 to 4 days of maturity) over the Federal Funds rate on new issues by conduit *i* on day *t*. All right-hand side variables have the same interpretation as in the issuance regression, but time-dependent variables are now measured daily.

Columns (1) and (2) of Table 10 show that, after controlling for sponsor fixed-effects or conduit-fixed effects, conduits with SIV guarantees paid significantly more after the crisis for issuing overnight paper than other issuers. Columns (3) and (4) add sponsor CDS spreads and their two-way interactions with the fixed effect by guarantee and the indicator for observations after the crisis. Notably, the increased spreads for extendible guarantees and SIV guarantees after the start of the financial crisis was more pronounced for conduits with riskier sponsors, as measured by the sponsor CDS spread. The insignificant dummy for full credit support suggests that investors priced full credit and full liquidity similarly during the crisis.

In summary, we find that, after the crisis conduits with weaker guarantees decreased issuance more and paid higher spreads than conduits with weaker guarantees, after controlling for sponsor- and conduit-fixed effects. These patterns are stronger for weaker sponsors, suggesting that quantities and prices in the asset-backed commercial paper market are indeed highly correlated with the strength of the sponsoring banks. Also, the patterns suggest that the full credit guarantees were an important part of rendering asset-backed commercial paper essentially risk-free.

4.4. Realized losses of Outside Investors

This section examines the extent of realized risk transfer by analyzing whether investors were repaid after the start of the financial crisis. We take the perspective of an investor that was holding asset-backed commercial paper at the start of the crisis and examine whether the investor suffered losses by not refinancing maturing asset-backed commercial paper. We test the performance of credit guarantees using Moody's Investor Service announcement data from January 2007 to December 2008. Since all conduits are rated, Moody's Investor Service always issues an announcement if a conduit fails to pay off maturing paper.

Table 11 presents the results on the realized performance of credit guarantees. Column (1) shows asset-backed commercial paper outstanding per credit guarantee in July 2007. Columns (2) to (4) show the value-weighted percentage in three categories: conduits that were closed down and repaid all maturing asset-backed commercial paper before December 2008, conduits that remained active and repaid all maturing commercial paper up to December 2008, and conduits that have failed to repay maturing asset-backed commercial paper and entered bankruptcy by December 2008.

The table shows that all asset-backed commercial paper covered by full credit or full liquidity guarantees had not defaulted in the period up to December 2008. In contrast, 7.4% of asset outstanding covered by extendible notes guarantees had defaulted by December 2008 and 16.7% of asset-backed commercial paper covered by SIV guarantees had defaulted by December 2008. Regarding the sponsor type, we find that conduits sponsored by structured finance firms and mortgage companies are more likely to enter default than conduits sponsored by commercial banks.

We also estimate bank losses on conduits. Losses depend on the loss rate on conduit assets and unfortunately there is no publicly available information with respect to loss rates on these assets. Using publicly available data on estimated losses on other highly rated assets, we assume loss rates of 5% and 15%. Under this assumption, we estimate total bank losses on conduit assets of $68 billion and $204 billion, respectively.

5. Benefits of securitization without risk transfer

Finally, how large was the benefit to banks from lowering their capital requirements by setting up conduits? We can assess this by quantifying how much profit conduits yielded to banks from an ex-ante perspective. We conduct a simple back-of-the-envelope calculation. Assuming a risk weight of 100% for underlying assets, banks could avoid capital requirements of roughly 8% by setting up conduits relative to on-balance sheet financing. We assume that banks could finance debt at close to the riskless rate, which is consistent with the rates paid on ABCP debt in good times. Thus, assuming an equity beta of one and a market risk premium of 5%, banks could reduce the cost of capital by 8%*5%=0.004 or 40 basis points by setting up conduits.

It is difficult to estimate the profits generated by conduits because only a few banks report revenues from conduits. For example, Deutsche Bank reports in its annual report in December 2007 that conduits generated fees of Euro 6 million relative to a total commitment of Euro 6.3 billion. Similarly, Bank of New York Mellon reports in December 2006 revenues of $3 million relative to a commitment of $3.2 billion (Carey et al., 2008). Assuming that conduits have no costs and revenues are equal to profits, banks earned 10 basis points on each dollar invested in conduits.

Comparing this cost and benefit of conduits, it seems clear that conduits would not have been profitable if banks had been required to hold equity against their assets in conduits. In fact, banks would have made a loss of 30 basis points on each dollar invested. However, given that banks were not required to hold equity, they could make a profit of 10 basis points. The conduit activity was thus a relatively low-return activity but offered an attractive way for banks to attract money-market savings and increase the scale of assets they originated.

In un-tabulated results for the 30 largest conduits sponsors, we find that missing capital - the additional capital if conduit asset had been on bank balance sheet - was on average 6% of total capital banks held or about $64 billion in total across banks. This is again not a large amount of capital, but it masks considerable heterogeneity across banks as the proportion of missing capital ranges from 1.7% to 103% of capital levels. The bank with the largest exposure, Sachsen Landesbank, was the first large bank to be bailed out on 17 August 2007. Other banks with large exposure such as Westdeutsche Landesbank, and ABN Amro (later bought by Royal Bank of Scotland) also suffered large losses due to recourse from conduits and had to be bailed out. Hence, the conduit activities were in fact large enough to wipe out the entire bank capital. Banks with less exposure were able to withstand the initial losses, but were weakened as the financial crisis continued. It needs to be pointed out that an ex-ante capital requirement of 8% against conduit assets would not have been sufficient to cover all possible losses from conduits when the assets went bad; the key observation is that a full capital charge would have been sufficient to discourage banks from setting up conduits in the first place.

6. Conclusion

In this paper we provide an anatomy of asset-backed commercial paper (ABCP) conduits, and explained how the structure of risk-sharing in these conduits implied recourse back to bank balance-sheets. We show that end investors who purchased ABCP debt in these conduits have had little loss even when collateral backing the conduits deteriorated in quality, supporting our main finding that conduits were a form of securitization without risk transfer. We also found that the stock price deterioration of banks around the money-market freeze of August 9, 2007 was linked to the extent of their conduit exposure relative to equity capital. Once the crisis broke out, ABCP spreads rose and issuance fell, and more so where guarantees were weaker and sponsoring banks were weaker.

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Figure 1: Asset-backed Commercial Paper Outstanding

This figure shows total asset-backed commercial paper outstanding in the U.S. market from January 2004 to April 2009. The figure is based on weekly data published by the Federal Reserve Board.

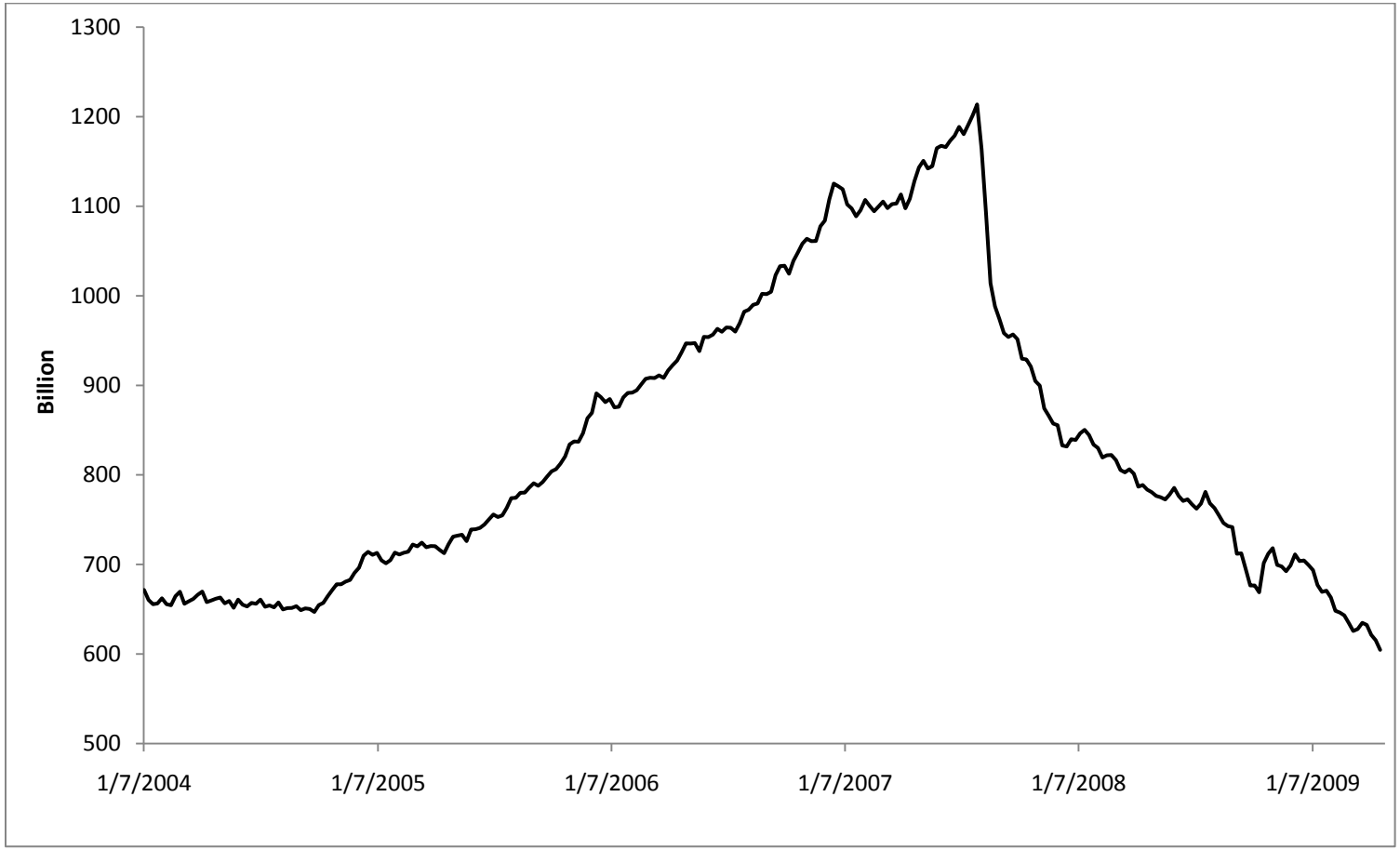

Figure 2: Asset-Backed Commercial Paper Spread

This figure shows the spread of overnight asset-backed commercial paper over the federal funds rate from January 2007 to December 2008. The figure is based on market data published by the Federal Reserve Board

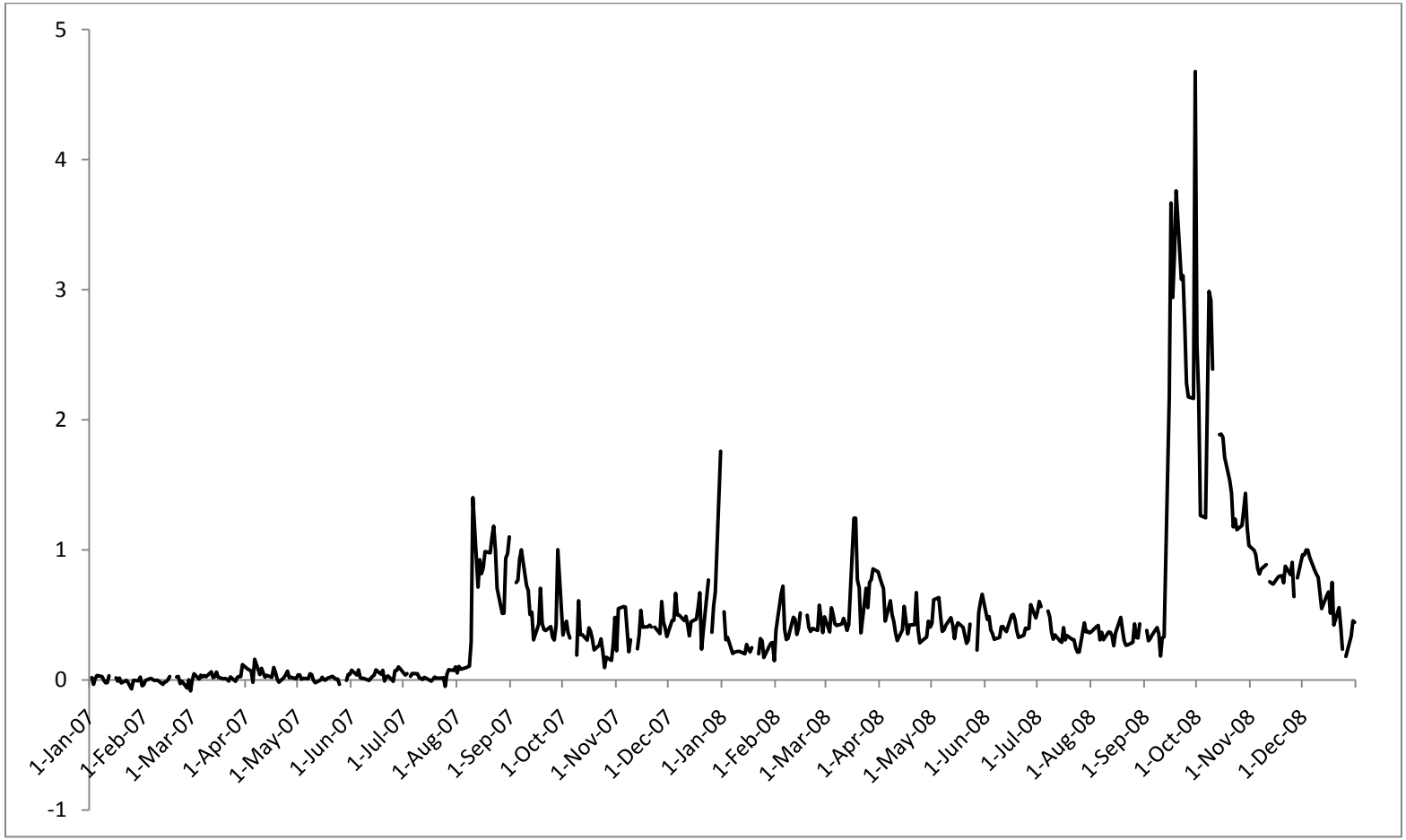

Figure 3: Conduit Structure

This figure illustrates an example of a conduit in relations to its related parties.

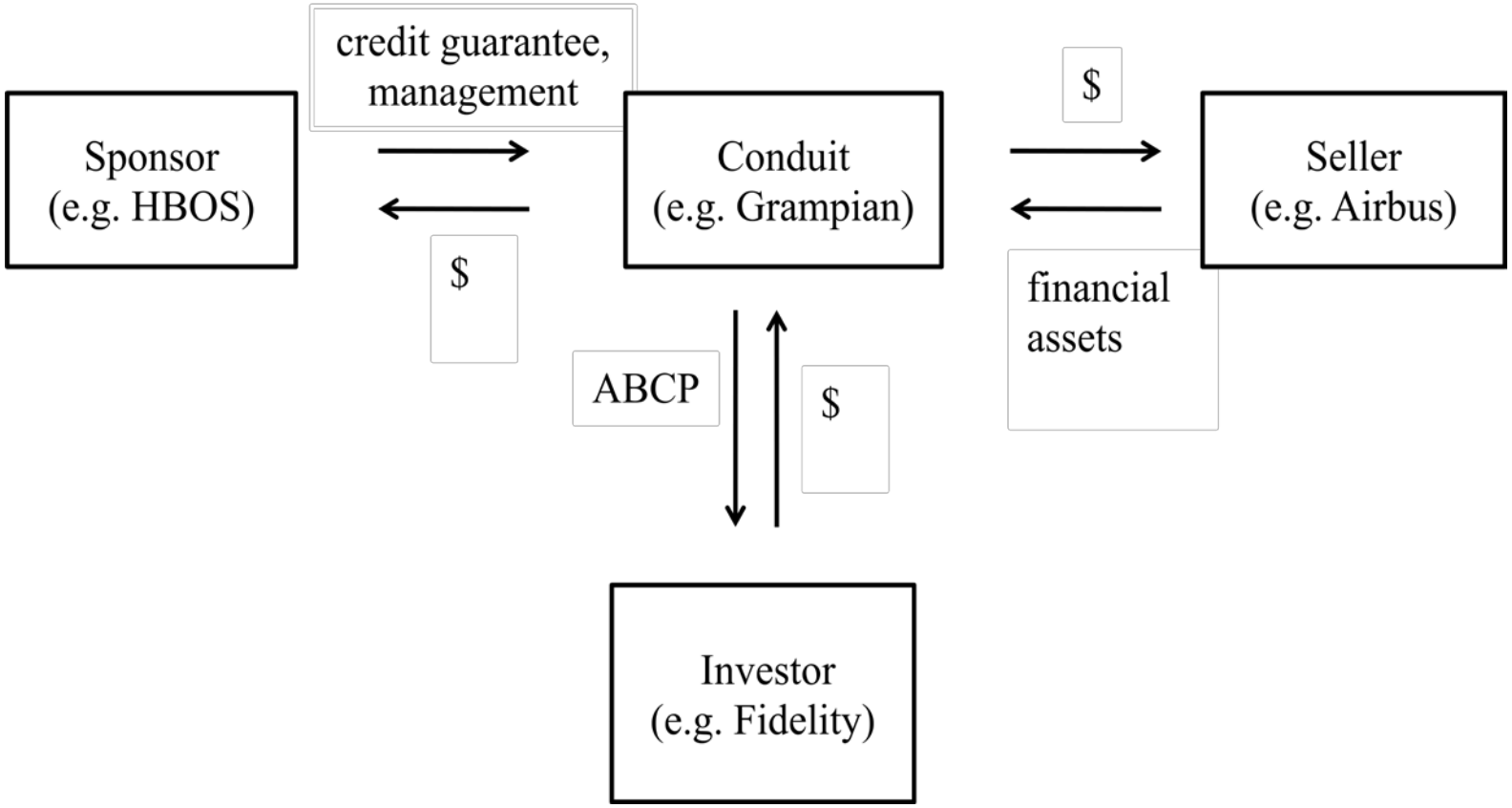

Figure 4: Asset-backed Commercial Paper Outstanding by Credit Guarantee

This figure shows total asset-backed commercial paper outstanding in the period from January 2004 to June 2009 by the credit guarantee provided to the issuer of the asset-backed commercial paper. The figure is based on quarterly data reports from Moody's Investor Service.

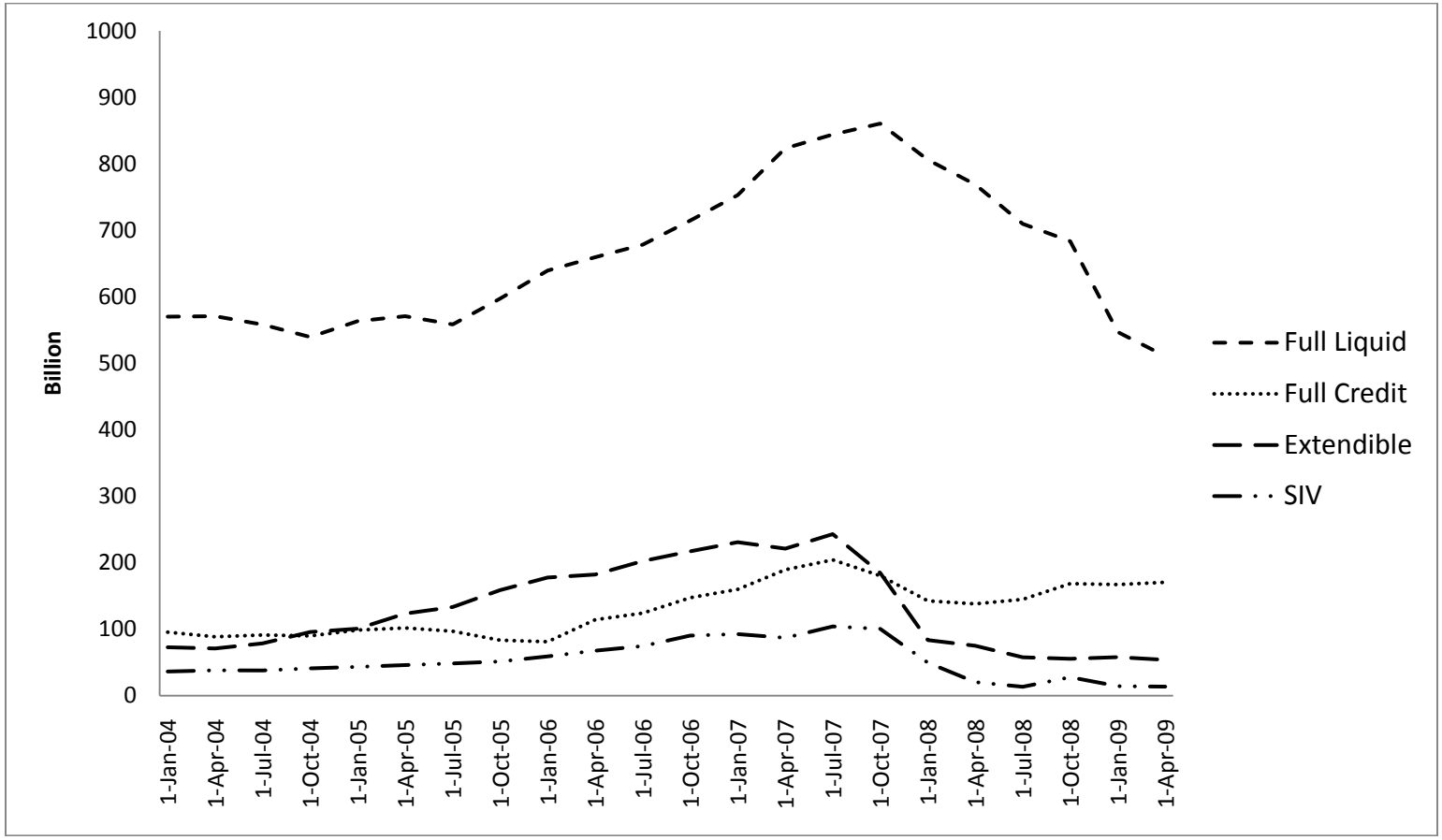

Figure 5: Asset-backed Commercial Paper Outstanding by Credit Guarantee

This figure shows total asset-backed commercial paper outstanding from April 2007 to December 2007 by the credit guarantee provided to the issuer of the asset-backed commercial paper (indexed to July 25=100). The figure is based on weekly data from DTCC and reports from Moody's Investors Service.

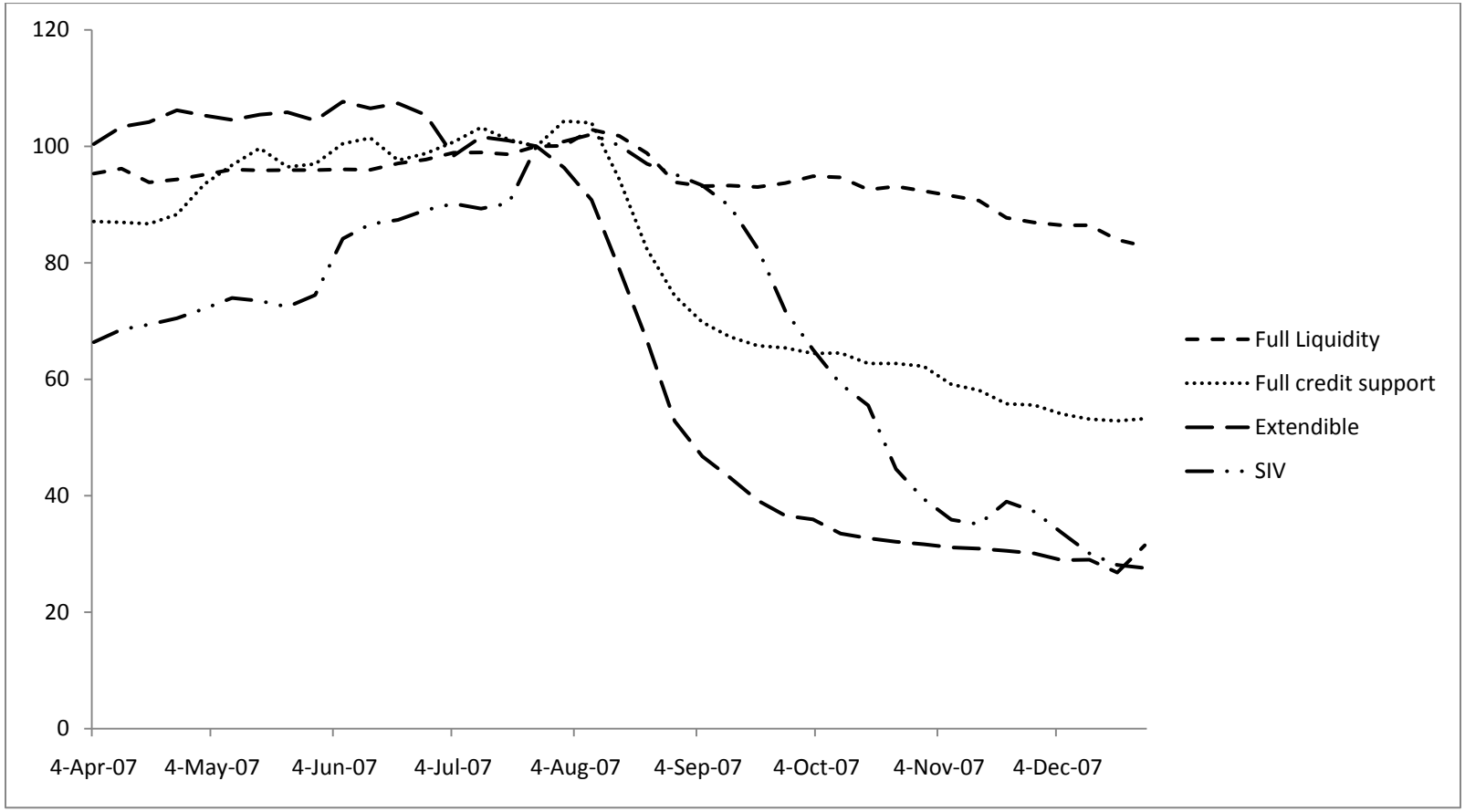

Figure 6: ABCP Spreads by Credit Guarantee

This figure shows the spread of overnight asset-backed commercial paper over the federal funds rate from July to September 2007 by credit guarantee provided to the issuer. The figure is based on weekly data from DTCC and reports from Moody's Investors Service.

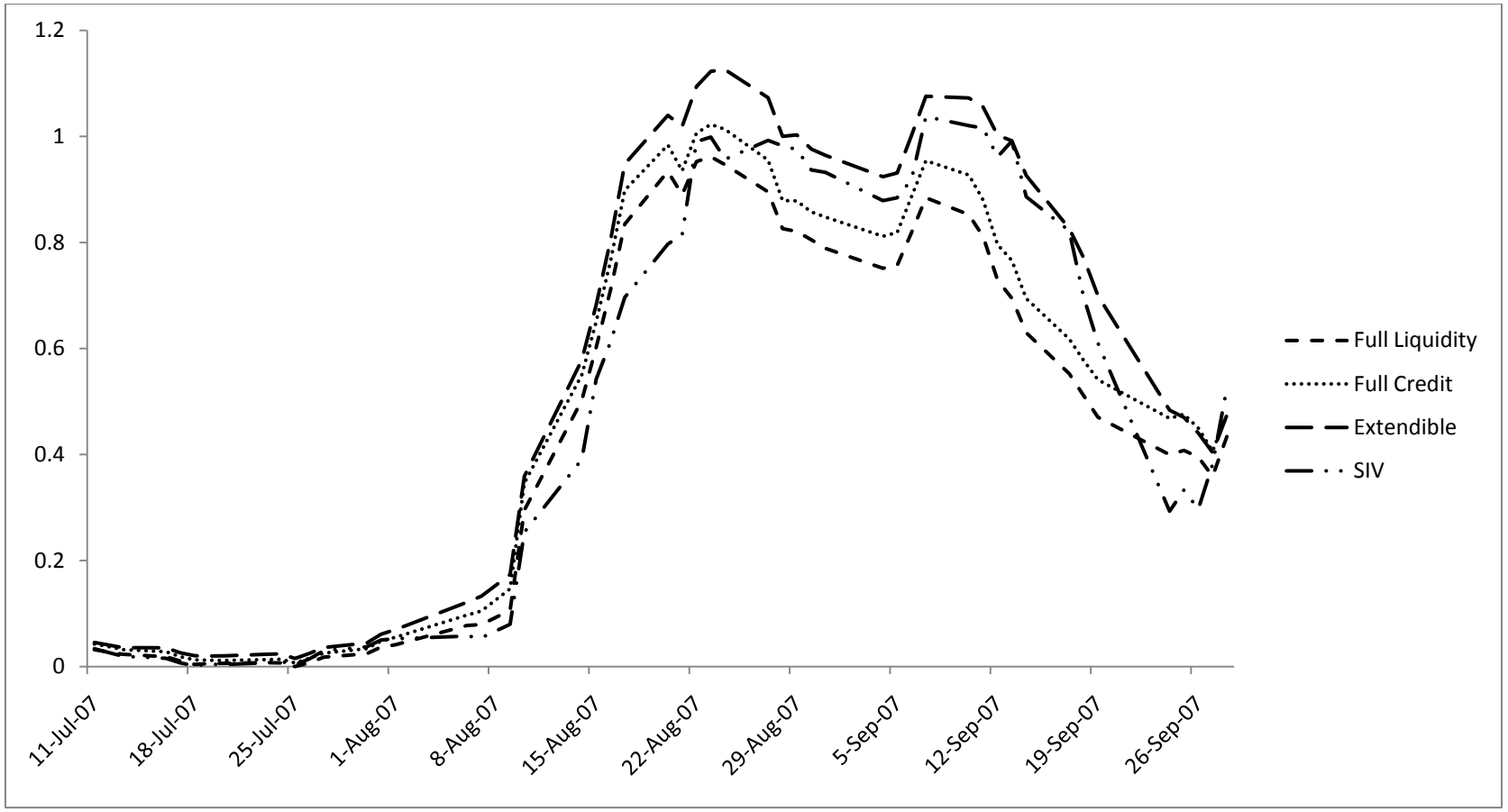

Table 1: Conduits and Sponsors

This table shows the ten largest conduits and sponsors as of 1/1/2007. The sample is restricted to bank-sponsored conduits. The information is collected from Moody's Rating Reports and Bankscope. "ABCP (bn)" denotes asset-backed commercial paper outstanding per conduit and sponsor, respectively. "Asset Origin," "Asset Rating," and "Asset Type" denote characteristics of the main asset class owned by a conduit.

Panel A: Ten Largest Conduits

Program Name	Sponsor	ABCP (bn)	Guarantee	Asset Origin	Asset Rating	Asset Type (Share %)
Grampian Funding	HBOS	37.9	Full Liquidity	United States	AAA	Residential Mortgages (36%)
Amstel Funding	ABN Amro	30.7	Full Liquidity	Netherlands	AAA	CDO/CLO (84%)
Scaldis Capital	Fortis Bank	22.6	Full Liquidity	United States	AAA	Asset backed securities (77%)
Sheffield Receivables	Barclays	21.4	Full Liquidity	n.a.	NR	Mortgages (43%)
Morrigan TRR	Hypo Public	18.9	Full Credit	n.a.	n.a.	Bonds (51%)
Cancara Asset	Lloyds	18.8	Full Liquidity	Great Britain	AAA	Residential Mortgages (43%)
Solitaire Funding	HSBC	18.5	Full Liquidity	United States	AAA	Residential Mortgages (45%)
Rhineland Funding	IKB	16.7	Full Liquidity	United States	AAA	CDO/CLO (95%)
Mane Funding	ING	13.7	Full Liquidity	n.a.	AAA	Asset backed securities (91%)
Atlantis One	Rabobank	13.5	Full Liquidity	United States	NR	Commercial Loans (100%)

Panel B: Ten Largest Sponsors

Sponsor	Country	ABCP (bn)	Assets (bn)	Tier 1 Capital (bn)	ABCP/Tier1 (%)	Tier1 Ratio (%)
Citigroup	United States	92.7	1,884.3	90.9	102.0%	8.6%
ABN Amro	Netherlands	68.6	1,300.0	31.2	219.5%	8.5%
Bank of America	United States	45.7	1,459.7	91.1	50.2%	8.6%
HBOS Plc	Great Britain	43.9	1,161.7	44.0	99.7%	8.1%
JP Morgan	United States	42.7	1,351.5	81.1	52.7%	8.7%
HSBC	Great Britain	39.4	1,860.8	87.8	44.9%	9.4%
Deutsche Bank AG	Germany	38.7	2,070.0	31.0	125.0%	8.5%
Société Générale	France	38.6	1,260.2	98.3	39.3%	7.8%
Barclays Plc	Great Britain	33.1	1,956.7	45.2	73.2%	7.7%
Rabobank	Netherlands	30.7	732.9	34.8	88.3%	10.7%

Table 2: Market Summary Statistics

This table includes all conduits that were rated by Moody's Investors Service as of 1/1/2007. Panel A shows summary statistics by conduit. "# Conduits" denotes the number of conduits and sponsors, respectively. "Risk Transfer" refers to the credit guarantees provided by the sponsor. "Conduit Type" is conduit type as provided by Moody's Investors Service. "Currency" is the issuing currency of the conduit. Panel B aggregates conduits by sponsor. "Sponsor Type" denotes the type of sponsoring institution. "Country of Origin" denotes the headquarters of the sponsor institution.

Panel A: Conduits				
	Total		Per Conduit	
	# Conduits	Size	Mean	Std.
All Conduits	296	1,235.3	4.2	5.1
Risk Transfer				
Full Liquidity	159	755.9	4.8	5.7
Full Credit	55	159.9	2.9	4.6
Extendible Notes	54	226.9	4.2	4.5
SIV	28	92.6	3.3	3.4
Conduit type				
Multi-Seller	135	548.0	4.1	4.4
Single-Seller	63	173.5	2.8	4.0
Securities Arbitrage	35	213.8	6.1	8.4
Other	63	299.9	4.8	5.6
Currency				
USD	234	973.0	4.2	4.6
EURO	33	220.0	6.7	8.4
Other	29	42.3	3.2	3.3
Panel B: Sponsors				
	Total		Per Conduit	
	# Sponsors	Size	Mean	Std.
All Programs	126	1,235.3	9.8	14.8
Sponsor type				
Commercial Banks	64	903.3	14.1	17.9
Structured Finance	27	181.7	6.7	11.7
Mortgage Lender	16	71.1	4.4	6.1
Other	19	79.1	4.2	3.9
Country of Origin				
United States	68	488.5	7.2	14.6
Germany	15	204.1	13.6	11.6
United Kingdom	10	195.7	19.6	17.0
Other	33	347.0	10.5	8.9

Table 3: Event Study Summary Statistics

This table shows summary statistics by conduit exposure. We measure conduit exposure as the ratio of ABCP to assets. We sort banks in three groups: bank with no conduit exposure, banks with low conduit exposure, and banks with high conduit exposure. The latter two groups are below and above the mean of conduit exposure among banks with positive exposure, respectively. We restrict the sample to commercial banks that (i) are among the 300 largest financial institutions (ii) are located in the Europe or the United States, and (iii) have share price data available. We measure 'Stock Return' is the total stock return in the three-day window from 7/8/2007 to 7/10/2997, 'Exposure' is the Asset-Backed Commercial Paper outstanding relative to Equity, 'Log Assets' is the natural logarithm of Assets, 'Log Equity' is the natural logarithm of Equity, 'Equity Ratio' is equity as share of assets, 'Share Deposits' is deposits as share of assets, and 'Share Short-Term Debt' is short term debt as share of assets. All variables are measure as of 1/1/2007. 'United States' is an indicator variable whether a bank is headquartered in the United States.

Sample:		Conduit Exposure		
	All	No	Low	High
Stock return Aug 8th - Aug 10th	-0.004	0.007	-0.028	-0.046
	(0.052)	(0.055)	(0.024)	(0.026)
Conduit Exposure	0.169	0.000	0.248	1.199
	(0.532)	0.000	(0.131)	(1.155)
Log(Assets)	3.961	3.154	6.379	6.325
	(2.284)	(1.987)	(1.077)	(1.280)
Log(Equity)	1.355	0.670	3.671	3.025
	(2.043)	(1.832)	(0.877)	(1.161)
Equity Ratio	0.091	0.101	0.076	0.043
	(0.099)	(0.111)	(0.038)	(0.026)
Share Deposits	0.602	0.63	0.530	0.504
	(0.208)	(0.223)	(0.112)	(0.145)
Share Short-Term Debt	0.073	0.050	0.122	0.167
	(0.084)	(0.050)	(0.117)	(0.129)
US Indicator Variable	0.542	0.613	0.400	0.250
	(0.501)	(0.490)	(0.507)	(0.452)
N	107	80	15	12

Table 4: Effect of Conduit Exposure on Stock Returns (August 8, 2007 – August 10, 2007)

This table shows the effect of conduit exposure on stock return. We restrict the sample to commercial banks that (i) are among the 300 largest financial institutions (ii) are located in the Europe or the United States, and (iii) have share price data available. The dependent variable is the total stock return over the three-day period from August 8th to August 10th 2007. We measure 'Conduit Exposure' as bank-sponsored ABCP outstanding relative to equity. Columns (2) to (6) include control variables for the ratio of short-term assets to debt, the ratio of equity to assets, log(Assets) and log(Equity). All control variables are measures on 1/1/2007. Column (6) includes fixed effects for Germany, Great Britain, and the United States. Robust standard errors are in parentheses below coefficients. * significant at 5%; ** significant at 1%

	Dependent Variable: Stock Return					
	(1)	(2)	(3)	(4)	(5)	(6)
Conduit Exposure	-0.026	-0.014	-0.011	-0.013	-0.014	-0.015
	(0.007)**	(0.004)**	(0.003)**	(0.003)**	(0.003)**	(0.004)**
Log(Assets)		-0.007	-0.022	-0.024	-0.027	0.005
		(0.005)	(0.008)**	(0.008)**	(0.009)**	-0.015
Log(Equity)		-0.004	0.012	0.013	0.015	-0.016
		(0.007)	(0.009)	(0.009)	(0.009)	(0.015)
Equity-Assets Ratio			-0.099	-0.103	-0.137	-0.006
			(0.029)**	(0.031)**	(0.037)**	(0.065)
Share Short Term Debt				0.066	0.063	0.039
				(0.041)	(0.041)	(0.042)
Share Deposits					-0.027	-0.017
					(0.017)	(0.026)
Constant	0.000	0.033	0.079	0.082	0.111	0.036
	(0.005)	(0.015)*	(0.025)**	(0.026)**	(0.032)**	(0.042)
Country FE	N	N	N	N	N	Y
Observations	107	107	107	107	107	107
R-squared	0.068	0.277	0.289	0.297	0.303	0.359

Table 5: Effect of Conduit Exposure on Stock Returns by Credit Guarantee (August 8, 2007 – August 10, 2007)

This table shows the effect of conduit exposure by credit guarantee on stock return. The sample restriction is the same as in Table 5. The dependent variable is the total stock return over the three-day period from August 8th to August 10th 2007. We measure exposure as bank-sponsored ABCP outstanding by credit guarantee relative to equity. The control variables are the same as in Table 5. The coefficient on "Share Deposits" is not shown. Robust standard errors are in parentheses below coefficients. * significant at 5%; ** significant at 1%

	Dependent Variable: Stock Return					
	(1)	(2)	(3)	(4)	(5)	(6)
Full Liquidity Exposure	-0.028	-0.011	-0.010	-0.014	-0.013	-0.017
	(0.015)	(0.006)	(0.005)*	(0.006)*	(0.005)*	(0.007)*
Full Credit Exposure	-0.174	-0.026	-0.008	-0.036	-0.035	-0.029
	(0.042)**	(0.049)	(0.046)	(0.057)	(0.056)	(0.073)
Extendible Exposure	-0.019	-0.015	-0.012	-0.012	-0.014	-0.014
	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.003)**	(0.003)**
SIV Exposure	-0.151	-0.015	-0.028	-0.061	-0.052	-0.010
	(0.047)**	(0.063)	(0.058)	(0.043)	(0.041)	(0.058)
Log(Assets)		-0.007	-0.022	-0.025	-0.027	0.005
		(0.006)	(0.009)*	(0.009)**	(0.009)**	(0.016)
Log(Equity)		-0.004	0.012	0.013	0.015	-0.016
		(0.007)	(0.009)	(0.009)	(0.010)	(0.016)
Equity-Assets Ratio			-0.099	-0.105	-0.137	-0.003
			(0.031)**	(0.032)**	(0.038)**	(0.068)
Share Short Term Debt				0.074	0.067	0.043
				(0.044)	(0.045)	(0.047)
Country FE	N	N	N	N	N	Y
Observations	107	107	107	107	107	107
R-squared	0.112	0.267	0.277	0.287	0.292	0.353

Table 6: Conduit Exposure and Stock Return Around Market Freeze (+/- 15 Trading Days)

This table shows the effect of conduit exposure on stock returns for the period around the event data of August 9, 2007. For each day, we construct the window one day before and one day after and compute the stock return over the three-day period. We estimate the same regression as in Table 4 using the full set of controls. We report the estimated coefficient and standard error for the conduit exposure variable.

Trading Days +/- Event Date	Conduit Exposure Coefficient	Standard Error
-15	0.007	(0.004)
-14	-0.005	(0.006)
-13	-0.009	(0.006)
-12	-0.006	(0.005)
-11	0.001	(0.003)
-10	0.009	(0.006)
-9	0.001	(0.004)
-8	-0.002	(0.004)
-7	-0.006	(0.007)
-6	-0.001	(0.007)
-5	-0.001	(0.007)
-4	0.001	(0.007)
-3	0.002	(0.005)
-2	-0.001	(0.005)
-1	-0.009	(0.006)
0	-0.015	(0.004)**
1	-0.005	(0.004)
2	0.000	(0.002)
3	-0.010	(0.005)*
4	-0.022	(0.010)*
5	-0.020	(0.012)
6	-0.009	(0.012)
7	0.001	(0.010)
8	0.000	(0.003)
9	0.003	(0.003)
10	0.005	(0.007)
11	0.008	(0.003)**
12	0.000	(0.002)
13	-0.003	(0.004)
14	-0.010	(0.004)*
15	-0.006	(0.002)**

Table 7: Conduit Exposure and Stock Return in Months Before Market Freeze (1st January – 30th August)

This table shows the effect of conduit exposure on stock return in the months before the market freeze. We restrict the sample to commercial banks that (i) are among the 300 largest financial institutions (ii) are located in the Europe or the United States, and (iii) have share price data available. The dependent variable is the total stock return for the month indicated at the top of each column. We measure 'Conduit Exposure' as bank-sponsored ABCP outstanding relative to equity. All columns include control variables for the ratio of short-term assets to debt, the ratio of equity to assets, log(Assets) and log(Equity), and geographic controls. All control variables are measures on 1/1/2007. Robust standard errors are in parentheses below coefficients. * significant at 5%; ** significant at 1%

	Dependent Variable: Stock Return							
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exposure	0.008	-0.006	0.003	-0.005	0.004	0.006	0.014	-0.029
	(0.012)	(0.005)	(0.005)	(0.009)	(0.010)	(0.008)	(0.011)	(0.009)**
Log(Assets)	-0.026	-0.03	-0.033	-0.005	-0.042	-0.012	-0.037	-0.006
	(0.024)	(0.018)	(0.023)	(0.024)	(0.021)	(0.021)	(0.032)	(0.025)
Log(Equity)	0.033	0.031	0.029	0.02	0.043	0.01	0.043	-0.002
	(0.024)	(0.018)	(0.024)	(0.023)	(0.021)*	(0.022)	(0.031)	(0.026)
Equity-Assets Ratio	-0.058	-0.117	-0.134	0.016	-0.2	0.105	-0.098	-0.058
	(0.120)	(0.082)	(0.099)	(0.112)	(0.110)	(0.078)	(0.172)	(0.115)
Share Short Term Debt	-0.036	-0.081	0.096	0.078	-0.064	0.064	0.012	0.029
	(0.044)	(0.041)	(0.050)	(0.072)	(0.090)	(0.048)	(0.071)	(0.106)
Share Deposits	-0.053	-0.013	-0.005	-0.021	-0.055	0.071	0.057	0.008
	(0.036)	(0.028)	(0.035)	(0.046)	(0.052)	(0.056)	(0.086)	(0.052)
Constant	0.08	0.092	0.168	0.04	0.149	-0.077	0.082	0.009
	(0.067)	(0.051)	(0.059)**	(0.066)	(0.059)*	(0.050)	(0.092)	(0.068)
Country FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	107	107	107	107	107	107	107	107
R-squared	0.648	0.337	0.376	0.522	0.301	0.196	0.295	0.258

Table 8: ABCP Summary Statistics

This table shows summary statistics for asset-backed commercial paper conduits before and after the ABCP crisis of August 2007. The sample is restricted to the period from January to July 2007 (Before) and the period from September to December 2007 (After). "ABCP Growth" is the weekly log change in commercial paper outstanding by conduit. "ABCP Spread" is the spread of overnight commercial paper over the Federal Funds rate in percentage points. For both variables, we show the means and standard deviations (in parentheses) for the full sample and by type of credit guarantee. "Sponsor CDS spread" is the spread on the five-year CDS contract in percentage points.

	All	Before	After
ABCP Growth (weekly)	-0.017	0.001	-0.048
	(0.168)	(0.095)	(0.247)
By risk transfer			
Full Liquidity	-0.013	0.000	-0.034
	(0.138)	(0.083)	(0.198)
Full Credit	-0.001	0.002	-0.006
	(0.152)	(0.128)	(0.185)
Extendible	-0.030	0.002	-0.125
	(0.276)	(0.119)	(0.496)
SIV	-0.059	0.010	-0.151
	(0.232)	(0.099)	(0.314)
Observations	6,626	4,242	2,384
Conduits	121	121	119
ABCP Spread (daily)	0.162	0.010	0.428
	(0.311)	(0.100)	(0.370)
By risk transfer			
Full Liquidity	0.164	0.007	0.428
	(0.313)	(0.091)	(0.371)
Full Credit	0.145	0.023	0.386
	(0.295)	(0.157)	(0.352)
Extendible	0.218	0.007	0.519
	(0.353)	(0.073)	(0.374)
SIV	0.147	0.022	0.716
	(0.301)	(0.040)	(0.319)
Observations	15,120	9,612	5,508
Conduits	94	94	82
Sponsor CDS spread	0.526	0.262	0.988
	(1.180)	(0.513)	(1.740)
Observations	15,120	9,612	5,508
Sponsors	29	28	25

Table 9: Effect of Credit Guarantee on ABCP Issuance

This table shows the effect of credit guarantees on ABCP issuance. The sample is restricted to observation in the year 2007 (excluding the month of the ABCP crisis). The dependent variable is the weekly log change in ABCP outstanding. "Full Credit," "Extendible Notes," and" SIV" are indicator variables for the type of credit guarantee. The indicator variable "After" denotes the months after the crisis. "Sponsor CDS" is the CDS Spread of the sponsor. All Columns include week fixed effects. Column (1) and (3) include sponsor fixed effects. Column (2) and (4) include conduit fixed effects. Columns (3) and (4) include "Sponsor CDS" and all two-way interactions of "Sponsor CDS". Standard errors reported in brackets are clustered at the sponsor level. * significant at 10%; ** significant at 5%; *** significant at 1%

	(1)	(2)	(3)	(4)
Full credit x After	0.024	0.032	0.037	0.043
	(0.018)	(0.020)	(0.032)	(0.044)
Extendible notes x After	-0.078*	-0.105*	-0.003	-0.039
	(0.046)	(0.055)	(0.044)	(0.072)
SIV x After	-0.125*	-0.128**	-0.034	-0.066
	(0.069)	(0.064)	(0.041)	(0.046)
Full credit	0.007		0.004	
	(0.008)		(0.023)	
Extendible notes	0.008		-0.002	
	(0.013)		(0.012)	
SIV	0.007		-0.042***	
	(0.010)		(0.010)	
Sponsor CDS x Full credit x After			0.027	0.069
			(0.198)	(0.316)
Sponsor CDS x Extendible notes x After			-0.224***	-0.188*
			(0.070)	(0.096)
Sponsor CDS x SIV x After			-0.569***	-0.451***
			(0.108)	(0.124)
Constant	-0.020***	1.119***	-0.077**	-0.011
	(0.003)	(0.057)	(0.029)	(0.034)
Sponsor CDS Interactions	No	No	Yes	Yes
Week-fixed effects	Yes	Yes	Yes	Yes
Sponsor-fixed effects	Yes	No	Yes	No
Conduit-fixed effects?	No	Yes	No	Yes
Observations	7,723	7,723	6,626	6,626
Conduits	153	153	128	128
R-squared	0.061	0.105	0.074	0.122

Table 10: Effect of Credit Guarantee on ABCP Spreads

This table shows the effect of credit guarantees on ABCP Spreads. The sample is restricted to observation in the year 2007 (excluding the month of the ABCP crisis). The dependent variable is the ABCP spread on overnight commercial paper in the primary market. "Full Credit," "Extendible Notes," and" SIV" are indicator variables for the type of credit guarantee. The indicator variable "After" denotes the months after the crisis. "Sponsor CDS" is the CDS Spread of the sponsor. All Columns include week fixed effects. Column (1) and (3) include sponsor fixed effects. Column (2) and (4) include conduit fixed effects. Columns (3) and (4) include "Sponsor CDS" and all two-way interactions of "Sponsor CDS". Standard errors shown in brackets are clustered at the sponsor level. * significant at 10%; ** significant at 5%; *** significant at 1%

	(1)	(2)	(3)	(4)
Full credit x After	-0.007	-0.013	0.021	0.024
	(0.086)	(0.088)	(0.115)	(0.093)
Extendible notes x After	-0.026	-0.002	-0.302***	-0.201
	(0.102)	(0.129)	(0.086)	(0.233)
SIV x After	0.353***	0.273**	0.181	0.073
	(0.104)	(0.115)	(0.165)	(0.123)
Full credit	0.001		-0.062	
	(0.040)		(0.040)	
Extendible notes	0.007		0.107	
	(0.057)		(0.070)	
SIV	0.01		-0.007	
	(0.037)		(0.047)	
Sponsor CDS x Full credit x After			-0.354**	0.009
			(0.147)	(0.354)
Sponsor CDS x Extendible notes x After			1.193**	0.887**
			(0.506)	(0.396)
Sponsor CDS x SIV x After			0.678	0.801***
			(0.433)	(0.263)
Constant	0.295***	0.155***	0.135***	0.160***
	(0.006)	(0.018)	(0.028)	(0.018)
Sponsor CDS and Interactions	No	No	Yes	Yes
Week-fixed effects	Yes	Yes	Yes	Yes
Sponsor-fixed effects	Yes	No	Yes	No
Conduit-fixed effects?	No	Yes	No	Yes
Observations	18197	18197	15120	15120
Conduits	126	126	103	128
R-squared	0.721	0.784	0.757	0.825

Table 11: Estimated Losses for Sponsors and ABCP Investors

This table shows the ex-post risk transfer by credit guarantee. "Pre-crisis" denotes total ABCP outstanding as of 7/1/2007. Post-crisis denotes the value-weighted share that is "Active" (conduit continues to issue), "Repaid" (conduit closed and repaid investors), and "In Default" (Conduit closed and investor not repaid). "Estimated losses" estimates the losses of sponsor and ABCP investors assuming a recovery rate on ABCP assets of 95% and 85%, respectively.

	Pre-Crisis	Post-Crisis			Estimated Loss (bn)			
					Recovery Rate: 95%		Recovery Rate 85%	
	ABCP (bn)	Active	Repaid	In Default	Sponsor	Investor	Sponsor	Investor
All	1,395.5	76.6%	20.8%	2.5%	68.0	1.8	204.0	30.0
Risk Transfer								
Full Liquidity	844.0	87.9%	12.1%	0.0%	42.2	0.0	126.6	0.0
Full Credit	204.2	70.9%	29.1%	0.0%	10.2	0.0	30.6	0.0
Extendibles	243.1	47.0%	45.5%	7.4%	11.2	0.9	33.7	15.4
SIV	104.1	65.7%	17.7%	16.6%	4.3	0.9	13.0	14.7
Sponsor Type								
Commercial Bank	1,035.6	83.0%	16.4%	0.6%	51.5	0.3	154.4	5.3
Structured Finance	199.2	58.1%	36.4%	5.5%	9.4	0.6	28.2	9.4
Mortgage Lender	60.2	44.5%	40.2%	15.3%	2.5	0.5	7.6	7.8
Other	100.4	63.3%	24.4%	8.9%	4.6	0.4	13.7	7.6