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 (ABCP) conduits, as an example of how banks exposed themselves to such risks. ABCP is short-term debt issued by off-balance sheet entities ("conduits") sponsored by large banks. On the asset side, conduits hold financial claims such as trade receivables, credit card receivables, and mortgages. On the liabilities side, conduits issue ABCP with an average maturity of 30 days or less. Prior to the financial crisis, ABCP had become an increasingly important funding source for commercial banks growing from US$650 billion in January 2004 to US$1.4 trillion in June 2007.

As shown in Figure 1, the rise in ABCP 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 announcement had a profound effect on the asset-backed commercial paper market. Apparently ABCP investors, primarily money market funds, became concerned about the collateral backing

[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).

ABCP and reduced their purchases of newly issued ABCP. As shown in Figure 2, the interest rate spread on overnight ABCP increased from 10 basis points to 150 basis points within one day of the announcement.

Our main result is that the ABCP crisis had a profoundly negative effect on commercial banks because banks had effectively insured ABCP investors. The reason is that banks had provided credit guarantees to ABCP investors, which required the banks to pay off maturing ABCP independently of underlying asset values. The provision of credit guarantees distinguishes conduits from the traditional originate-to-distribute model of securitization, in which credit risks are mostly transferred from banks to other investors. For the majority of conduits, the credit guarantees were strong enough to cover all possible losses of ABCP investors. We refer to such credit guarantees as full credit or full liquidity guarantees. For a minority of conduits, the credit guarantees were weaker and required banks to cover only a part of the losses. We refer to such credit guarantees as extendible notes or SIV guarantees. We note that guarantees were explicit legal commitments to reimburse ABCP investors, not a voluntary form of implicit recourse.[6]

We establish this finding using several different data sources and data sets. First, we use a novel hand-collected 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 ABCP investors would suffer losses only if the value of the conduit assets and the credit guarantees provided by the banks were *both* insufficient to satisfy the investor claims.

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

Consistent with this risk transfer structure, we find three main results using data from the start of financial crisis in August 2007 until December 2008. First, we show that commercial banks with larger exposure to conduits had larger declines in stock returns after the ABCP market froze on August 9, 2007. An increase of conduit exposure measured as the ratio of ABCP outstanding to equity from 0% (e.g., Wells Faro) to 100% (e.g., Citigroup), reduced stock returns by 1.5 percentage points in a three-day window around the market freeze. These results are robust to using alternative measures of conduit exposure and controlling for a large set of observable bank characteristics. We show that a greater exposure to conduits with stronger guarantees leads to a greater stock price decline although this result is not statistically significant. We find a larger effect of conduit exposure on returns when we expand the event-window to one month. To test for omitted variables, we examine the effect in the months before the ABCP market freeze and find no relationship between conduit exposure and returns.

Second, we study ABCP issuances and spreads in the months after the ABCP freeze. For this, we deploy a novel conduit-level data set and test whether conduits with weaker credit guarantees were more affected by the ABCP freeze. As shown in Figures 3 and 4, we find that all conduits decreased ABCP issuance after August 9, 2007, and that conduits with weaker credit guarantees decreased ABCP issuance more. And, as shown in Figure 5, we find that ABCP spread on all conduits increased after August 9, 2007, and that ABCP spreads of conduits with weaker credit guarantees increased more. We confirm that these results are 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 CDS 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 banks' ability to issue ABCP.

Third, we test the extent of realized risk transfer by examining 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 ABCP at the start of the crisis and examine whether the investor suffered losses by not rolling over ABCP. Using announcement data from Moody's Investor Services, we identify all conduits that defaulted on ABCP in the period from January 2007 to December 2008. We find that investors in conduits with strong credit guarantees were able to exit conduits without any losses. We find that investors in conduits with weaker credit guarantees suffered some losses. In total, 2.5% of ABCP outstanding as of July 2007 entered default during in the period July 2007 to December 2008. In total, we estimate commercial bank losses of $51 billion to $154 billion assuming a loss rate of 5% or 15% on conduit assets, respectively.

We note that ABCP is different from other forms of securitization, such as pass through securities, mortgage-backed securities, or collateralized debt obligations, in which most of the credit risk is transferred from banks to other investors. ABCP is also different from repurchase agreements because investors have recourse to a pool of assets instead of an individual asset and banks offer credit guarantees to cover losses on conduits. From an economic perspective, the financing of assets via conduits is similar to financing of assets on balance sheets because it exposes the bank to the same risks (via the credit guarantees). The main difference between on-balance sheet financing and conduit financing is that assets in conduits are considered off- balance sheet for the

purpose of capital regulation. As a result, banks are required to hold less far less capital against assets in conduits than against assets on the balance sheet.

We emphasize that all of our evidence on the effect of conduit exposures on bank performance 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 discussed the institutional background of ABCP conduits. Section 4 presents the data and our main empirical results. Section 5 analyzes the incentives of banks in setting up ABCP conduits. Section 6 concludes.

2. Related literature

Gorton and Souleles (2005), Gorton (2008) and Brunnermeier (2009) provide descriptions of the shadow banking sector consisting of off-balance sheet vehicles. Our focus, in contrast to theirs, is to provide an in-depth analysis of the structures of ABCP 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 Shuermann (2008) present detailed description of the process of securitization of sub-

prime 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), and Acharya and Richardson (2009) and Acharya and Schnabl (2009), that banks were securitizing without transferring risks to end 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 ABCP 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 ABCP conduits

resemble repo transactions to some extent, the presence of explicit credit guarantees in conduits establishes a direct linkage between the ability to issue ABCP and the credit quality of the guarantee provider. We can therefore test directly for the impact of the conduit sponsor on ABCP issuance and spreads using the time-series *within* each sponsor.

3. Institutional Background

3.1. Conduit Structure

Figure 6 provides an illustration of a conduit and its related parties. A conduit is a structured purpose vehicle, i.e. a legal entity separate from its related parties. The sole purpose of a conduit is to purchase financial assets and finance these assets by issuing ABCP. The ABCP is sold primarily to large institutional investors such as money market funds or local governments. The ABCP has a short maturity and is regularly rolled over. To ensure that investors in ABCP are repaid, large financial institutions provide credit guarantees that insure investors against non-repayment. Financial institutions that provide such credit guarantees are called sponsors and are mostly large commercial banks. Sponsors usually also administer the business affairs of the conduit and decide which financial assets to purchase. In exchange, the sponsor receives administrative fees and fees for providing the credit guarantees.

Similar to financial intermediaries, there is a fundamental maturity mismatch between the assets and liabilities of a conduit. Conduits typically hold medium-term or long-term financial assets such as trade receivables and mortgages and hold them to maturity. The liabilities of conduit are more short-term with an average maturity of a

month or less. As a result, conduits regularly roll over their liabilities and use the proceeds from new ABCP issuances to pay off maturing ABCP.

Conduits aim to minimize their credit risk by holding a diversified portfolio across asset classes. They also restrict themselves to highly rated assets or unrated assets of similar quality. For example, Panel A of Table 1 lists the ten largest conduits by ABCP outstanding as of January 1, 2007. The largest conduit is "Grampian Funding", which owns financial assets worth $37.9 billion. The largest asset class is AAA-rated securities backed by residential mortgages in the United States. As shown in the table, other large conduits also invest in collateralized debt obligations, bonds, and commercial loans. Most conduits hold a mix of several asset classes. Most assets are AAA-rated or, if unrated, of similar quality.

The main beneficiary of a conduit is the conduit sponsor. There are no official statistics on conduit profits but a few banks voluntarily disclose information in their annual reports. For example, Deutsche Bank reports in its annual report in December 2007 that conduits generated fees of about 10 basis points on conduit assets. The size of these fees is broadly consistent with the maturity spread between long-term and short-term financial assets after hedging out exchange and interest rate risk. For comparison, ABCP investors receive no premium for holding ABCP relative to other safe money market instruments. In the period from January to July 2007, for example, the average yield on overnight ABCP was one basis point above the Federal Funds rate.

Sponsors cover the main risks associated with conduits. The main risk is that a conduit cannot issue new ABCP and therefore cannot repay its maturing ABCP, possibly because of a deterioration of conduit asset values. To insure ABCP investors against this

event, sponsors provide credit guarantees to the conduit which are triggered when a conduit fails to repay maturing ABCP. The credit guarantee stipulates that the sponsor has to provide liquidity to the conduit either by repurchasing assets at face value, buying newly issued ABCP, or injecting cash.

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)). From a practical perspective, the credit guarantees are a central element of conduits because they ensure that ABCP can receive the highest possible short-term ratings from accredited national rating agencies. In turn, the high ratings ensure that money market funds are legally permitted to invest in ABCP issued by conduits (e.g., see 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 vehicle (“SIV”). By far the most prevalent form of credit guarantees are full liquidity guarantees. For example, as shown

in Panel A of Table 1, nine out of the ten largest conduits had full liquidity guarantees. We briefly describe each type of credit guarantee.

Full credit guarantees are unconditional guarantees to cover all maturing ABCP independent of the value of conduit assets. This is the strongest available form of a credit guarantee.

Full liquidity guarantees are similar to full credit guarantees with the main difference being that the sponsor only needs to pay off maturing ABCP if conduits assets are not in default. Full liquidity is thus a conditional credit guarantee, which allows for the possibility that the credit guarantee expires before the ABCP matures. In practice, however, full liquidity guarantees provides the same strength as full credit guarantees. The reason is that the definition of asset default is such that ABCP investors know well ahead about asset defaults. For example, default of unrated assets is usually a function of slow-moving variables such as delinquency rates. Hence, if ABCP investors expect that conduits assets may default in the future, they stop purchasing newly issued ABCP. Given that the maturity of ABCP is very short, the ABCP almost always expires prior to the credit guarantee. As we show below, throughout the entire ABCP crisis, full liquidity guarantees never expired prior to ABCP. We therefore consider credit guarantees structured as full credit and full liquidity as essentially providing full insurance to ABCP investors in ABCP.

The two other types of guarantees are extendible notes and SIV guarantees. 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 (often 60 days or more). By extending the length of the

commercial paper, it is more likely that the conduits assets are declared in default before the ABCP 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 extendible notes and SIV guarantees are weaker than full credit and full liquidity guarantees, we consider extendible notes and SIV guarantees as providing partial insurance to ABCP investors.

3.2. Capital Requirements

Bank regulators in the United States and Europe have developed extensive regulation to deal with risks from off-balance sheet exposure such as ABCP conduits. Since the bank regulation in different across the two regions, we describe each set of regulation separately.

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 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, U.S. bank regulators started to review this regulation on full credit and full liquidity guarantees. This 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 regulators 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 about three years and, as shown in Figure 1, total ABCP outstanding remained roughly 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 with its main beneficiary. This new directive implied that sponsors had to consolidate ABCP 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, exempted ABCP conduits from the directive. As a result, assets in conduits were not considered assets for the purpose of calculating capital requirements. Instead, the 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 conduits covered with full liquidity guarantees continued to have much lower capital charges relative to on-balance sheet financing (Lee Gilham, 2005). As shown in Figure 1, ABCP outstanding started growing rapidly after the exemption was issued.

In Europe, most national bank regulators had similar regulations as in the United States. Full credit guarantees usually required capital charges similar to on-balance sheet financing, but full liquidity guarantees required no capital charges. The only exception was Spain which required full capital charges for both full credit and full liquidity guarantees.

The main difference between the United States and Europe was that European banks started to adopt international accounting rules (IFRS) in the early 2000s. International accounting rules, contrary to the general accepted accounting principles in the United States (U.S. GAAP), do not recognize asset transfers to conduits as a sale. As a result, European banks were required to consolidate ABCP on their balance sheets. However, none of European regulators updated capital regulation following international accounting rules. Hence, for the purpose of computing capital requirements, conduits were still considered off-balance sheet and European banks did not have to hold any capital against conduits covered with full liquidity guarantees.

Instead European bank regulators focused on updating capital requirements under the Basel 2 framework. Under the new framework, the difference between capital charges for full credit and full liquidity guarantees would have decreased. However, there remained an exemption for eligible full liquidity guarantees which would have maintained low capital charges for conduits. In any case, most European banks were still using the old regulatory framework for the last set of annual reports before the ABCP market freeze. Since the crisis, several bank regulators have proposed revisions to the Basel 2 framework. Most likely, the next set of regulation will require banks to hold the same capital charges for full liquidity guarantees as on-balance sheet financing.

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 about twice the size of its regulatory

capital. As shown in the table, all of the ten largest sponsors are large multinational banks based in the United States and Europe.

3.3. Market Statistics

Table 2 provides summary statistics for all conduits authorized to issues ABCP as of January 1, 2007. Panel A shows that there are 296 conduits with total ABCP outstanding of $1.235 trillion. The average conduit size is $4.2 billion with a standard deviation of $5.2 billion. We find that 61% of ABCP is covered by full liquidity guarantees, 13% of ABCP debt is covered by full credit guarantees, 18% is covered by extendible notes guarantees, and 7% of ABCP debt 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 often not securitized and the sellers are usually 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 arbitrage conduits with $213 billion in ABCP. 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 either 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 per sponsor. We define a sponsor as a single consolidated company and we aggregate ABCP at the holding level (e.g., we aggregate ABCP of Citigroup and Citibank). In total, there are 126 sponsors and average ABCP is $9.8 billion. The largest sponsor type is commercial banks. Commercial banks sponsor $903 billion, or 73%, of ABCP. Commercial banks almost always provide liquidity and credit enhancement directly to conduits. The second largest group is structured finance groups with $181 billion in ABCP. 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 provide sufficient information to identify the provider of credit guarantees to 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 in ABCP. A large number of sponsors are based in Germany and the United Kingdom with total ABCP 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 Netherlands, Belgium, France, Canada, Australia, 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 it issues its first rating for a conduit and subsequently updates the reports annually for large conduits and less frequently for smaller conduits. For some 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 ABCP conduits collected from Moody's Investor Service quarterly spreadsheet. We merge conduits that have more than one funding operation (79 out of 9536 observations). We drop some small South African conduits because they are rated on a different scale (72 out of 9536 observations). We drop ABCP issued by collateralized debt obligations because their credit guarantees are not comparable to the rest of the sample (292 out of 9536 observations, 4.3% of ABCP).

For each conduit, we identify the sponsor and match the sponsor to the consolidated financial company (e.g., we match Citibank to Citigroup). We use several

data sources such as 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. This way we can identify all sponsors. We match sponsors to sponsor characteristics using the Bankscope database. We first use the Bankscope database to construct a panel of the 300 largest banks as of January 2007. 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 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.

For the second part of the empirical analysis, we use a proprietary dataset on ABCP transactions issued in the United States market in 2007: 693,762 primary market transactions by 349 conduits over 251 trading days. These data are from the Depository Trust and Clearing Corporation, the agent that electronically clears and settles directly- and dealer-placed commercial paper. The issues in the sample are discount instruments paying face value at maturity. 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 this data, we calculate implicit yields on new overnight paper (maturity of 1-4 days) paid by issuers. We also calculate overnight risk spreads as the ABCP rate less the federal funds target rate. DTCC also provides weekly data on outstanding ABCP per conduit. We compute the weekly growth rate as the change in the natural logarithm of ABCP. We merge the DTCC 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 Changes from January 2007 to December 2008. We identify all conduits that were downgraded or withdrawn during the analysis period. For all conduits that were downgraded or withdrawn, 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 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

Our analysis suggests that banks with large conduit exposure were more adversely affected by the crisis in the ABCP Market. The difficulty in testing this hypothesis is that the financial crisis has many different aspects and ABCP is only one of these aspects. Hence, if we observe that banks with conduit exposure have lower returns during the financial crisis, 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 ABCP market freeze on August 9, 2007, in order 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 sub-prime mortgage

market and the freeze in the ABCP market. As shown in Figures 1 and 2, on August 9, 2007, ABCP investors reduced purchases of newly issued ABCP and 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 are happening around 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 financial institutions because only those institutions had the financial strength to support conduits. We restrict our analysis to commercial banks based in Europe and the United States because these were the main sponsors of conduits. We restrict the sample to banks with share price data (107 observations).

Table 3 shows the distribution of banks according to conduits exposure. We measure conduit exposure as ABCP 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.

Comparing banks according to conduit exposure, we find that banks with conduits are larger than banks without conduits. Moreover, banks with conduits have a lower equity ratio, less deposit funding, and more short-term debt funding than banks without conduits.

Comparing banks with low conduit exposure and banks with high conduit exposure, we find that the two groups of banks 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 finance less of their business with short-term debt relative to banks with high conduit exposure. 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 now turn the regression analysis. Our baseline specification is

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

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 a one-unit increase in conduit exposure reduces the cumulative stock return by 2.6 percentage points. To fix ideas, a one-unit increase is approximately two standard deviations in the exposure variable or about the difference between the exposure of Citibank (high exposure) and Wells Fargo (no exposure). 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% 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 bank 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 the ABCP market freeze. The coefficient may in fact constitute 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.

To test the impact of credit guarantees, we compute conduit exposure by type of credit guarantees 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, full liquidity and full credit guarantees appear to have a more negative effect than extendible notes and SIV guarantees although the differences are not statistically significant. These results are consistent with a more negative effect of strong credit guarantees relative to weak guarantees. However, it may also be the case that at the start of the financial crisis ABCP 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 ABCP 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 gauge whether conduit exposure is correlated with the outcome variables in the absence of a market event.

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 market event. 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 ABCP market 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 initial ABCP market freeze.

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 ABCP 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 about twice as large as the coefficient in Table 4. This result 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 ABCP Spreads and Issuance

As shown in Figure 1, ABCP outstanding declined a staggering 20 percent in August 2007. By the end of year, the market was roughly 30 percent smaller than it was at its peak in July. Largely because of this sharp contraction, many observers compare the ABCP freeze with traditional bank runs. Importantly for our analysis, the extent of the decrease varied significantly by type of credit guarantee. In particular, Figure 4 illustrates that paper outstanding at ABCP issuers with extendible or SIV guarantees had dropped by almost 70 percent by the end of 2007, while ABCP outstanding at issuers with full credit and full liquidity guarantees had fallen less sharply.

Table 8 reports the average growth rate of paper outstanding by type of guarantee for the conduits that we match in the DTCC database on ABCP transactions to the data on sponsors described in section 4.1. We measure growth as the weekly log change in paper outstanding by conduit and report average growth for the periods before the crisis (January-July) and after the crisis (September-December). While paper outstanding decreased for all categories during and after the crisis, the decrease was more pronounced for conduits with weaker guarantees, like SIVs and extendible conduits. The decline for

conduits with weaker guarantees is even more pronounced when comparing the post-crisis growth with the pre-crisis growth, as conduits with weaker guarantees experienced slightly faster growth in the months leading to the August crisis.

The reluctance of investors to roll over ABCP was also apparent in the dramatic increase in risk premiums demanded to buy new issues of commercial paper by conduits. As illustrated in Figure 2, average market spreads on overnight ABCP over the Federal Funds rate climbed from about 5 basis points in the first half of 2007 to almost 150 basis points in mid August. Similar to the pattern for quantities, Figure 5 illustrates that spreads for newly issued overnight paper by ABCP issuers with extendible or SIV guarantees increased by more after the crisis than the corresponding spreads for ABCP issuers with full credit or full liquidity guarantees.[7]

As reported in Table 8, average spreads increased from the period preceding the crisis (January-July) to the period after the crisis (September-December) for all types of guarantee, but it increased more for issuers with weaker guarantees. For example, issuers with SIV guarantees went from paying an average of 2 basis points over the Federal Funds rate for issuing overnight paper before the crisis to paying 72 basis points over the Federal Funds rate after the crisis; by contrast, issuers with full liquidity guarantees went from paying roughly 1 basis point over the Federal Funds rate for issuing overnight paper before the crisis to paying 43 basis points over the Federal Funds rate after the crisis.

[7] 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.

Next, we test whether the patterns on net 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 dollar face value of commercial paper outstanding at conduit *i* on week *t*. $Guarantee_j$ is a fixed effect by type of guarantee. We consider four mutually exclusive types of guarantees: full liquidity (omitted), full credit support, extendible notes, and SIVs. $After_t$ is an indicator variable that equals one after the crisis (September to December, 2007) and zero before the crisis (January to July, 2007). Finally, $Sponsor_k$ and $Time_t$ represent fixed effects by sponsor and by week, respectively. We estimate this equation using weekly observations from January to December, 2007, excluding August—the month of the ABCP crisis—and cluster standard errors at the sponsor level.

If the ABCP crisis makes investors more concerned about risks in conduits covered by weaker credit guarantees, 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 in the wake of 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 the accordance of credit guarantees were important for ABCP investors to deem conduit financing as essentially risk-free; and, conversely, whether the lack of guarantees was a significant obstacle to the ability of conduits to roll over ABCP.

Column (1) in Table 9 reports the results of estimating our baseline specification. The significant coefficient on the interaction between the dummy for observations after the crisis and the dummies for programs with extendible notes and SIVs suggest that ABCP outstanding amounts fell significantly faster after the crisis for conduits with weaker guarantees compared to conduits with stronger guarantees sponsored by the same institution. As shown in column (2), the results are similar when we replace sponsor-fixed effects with conduit-fixed effects. The insignificant coefficients on the dummy variables for full credit guarantee suggest that the behavior of commercial paper outstanding at conduits with full liquidity or full credit support was statistically undistinguishable through the crisis.

Controlling for the quality of the sponsor, the protection provided to ABCP investors is a function of the strength of the contractual guarantee provided by the sponsor. On the other hand, for a given contractual guarantee, the protection conferred to ABCP investors is a function of the strength or riskiness of the sponsor itself, as measured, for example, by the sponsor CDS spread.

Columns (3) and (4) of Table 9 add to our baseline specification sponsor CDS spreads and their two-way interactions with the dummies for type of guarantee and the $After_t$ indicator. If the protection conferred to ABCP investors by the guarantee backing the paper explains patterns of issuance, we should expect a larger drop in issuance for issuers with weaker contractual guarantees, and particularly for those conduits sponsored by riskier institutions. The significantly negative coefficients on the three-way interaction of sponsor CDS spreads, the indicator variable for observations after the crisis, and the dummies for extendible notes and SIVs suggest that among programs with

weak contractual guarantees, issuance fell more for those with weaker sponsors. This finding suggests that issuance is indeed determined by the strength of the effective guarantee.

Table 10 reports the result of estimating the baseline specification using daily ABCP spreads over the Federal Funds rate instead of weekly net issuance as dependent variables.

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

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 equation for the log change in ABCP outstanding, but time-dependent variables are now measured daily.

Columns (1) and (2) of Table 10 show that, after controlling for sponsor- or conduit-fixed effects, ABCP issuers 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 cost of issuance after the crisis for weaker contractual guarantees, both extendible notes and SIVs, was more pronounced for issuers with weaker sponsors, as measured by higher CDS spreads. The coefficients related to the dummy for full credit support suggest 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 ABCP 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 ABCP 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 ABCP essentially risk-free

4.4. Realized losses of ABCP Investors

Finally, we test the extent of realized risk transfer by examining 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 ABCP debt at the start of the crisis and examine whether the investor suffered losses by not rolling over ABCP debt. 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 ABCP.

Table 11 presents the results on the realized performance of credit guarantees. Column (1) presents ABCP per credit guarantee in the month before the ABCP market freeze. Columns (2) to (4) show the value-weighted percentage in three mutually exclusive categories as of December 2008: conduits that always repaid maturing ABCP throughout this period and have a positive amount of ABCP outstanding as of December 2008 ("active"); conduits that always repaid maturing ABCP throughout the entire period and have no ABCP outstanding as of December 2008 ("withdrawn"); and conduits that have failed to repay maturing ABCP during this period and entered bankruptcy.

The table shows that all conduits with full credit or full liquidity guarantees have repaid their investors and a significant share of conduits continues to operate as of

December 2008. In contrast, conduits with an extendible notes and SIV guarantee have mostly repaid their investors and withdrawn from the market. However, there is a small number of conduits with extendible notes and SIV guarantees that have declared default and have entered bankruptcy. About 7.4% of ABCP outstanding covered by extendible notes guarantees entered default by December 2008 and 16.7% of ABCP outstanding covered by SIV guarantees entered default by December 2008. Regarding the type of sponsor, we find that conduits sponsored by structured finance firms and mortgage companies are more likely to enter default than conduits sponsored by commercial banks. This result suggests that some banks may have provided voluntary support to conduits covered by weaker guarantees.

We also estimate the losses on ABCP investments. Losses depend on the loss rate on ABCP assets and unfortunately there is no publicly available information with respect to losses. Using publicly available data on estimated losses on other highly rated assets, we assume a loss rate of 5% and 15%. As a result, we estimate total losses of $68 billion and $204 billion, respectively. The majority of losses are borne by commercial banks sector and only a small part is borne by ABCP investors.

Overall, these results suggest that the strong credit guarantees were sufficient to repay maturing ABCP. As a result, losses from conduit assets primarily remained with the sponsor. In the case of the weaker guarantees, some sponsored may have provided voluntary support. However, some sponsors did not repay ABCP under those guarantees and as a result ABCP investors may have suffered some losses.

5. Incentives for securitization without risk transfer

Why the surge in setting up of conduits in the period preceding July 2007? To understand the origins, it is useful to start with the traditional banking model. In traditional banking, banks held on to the loans they originated while performing the role of delegated monitoring and screening on behalf of depositors (Diamond, 1984). In modern banking, there was a fundamental change in that banks originated loans and then distributed them to outside investors. In particular, banks began transferring financial assets, such as mortgages, trade receivables, consumer loans, corporate loans, and consumer loans off their balance sheets into separate legal entities called structured purpose vehicles (SPVs), of which ABCP conduits are one example. SPVs own the financial assets and issue asset-backed securities structured using several layers of tranches with higher tranches having priority over lower tranches in case of default of the underlying assets. This process of securitization was deemed to improve the safety of the financial system by allocating the financial risks to investors best able to hold those risks (Duffie, 2007).

Financial system regulators have long recognized the benefits of securitization and provided incentives for financial institutions to shed risk and securitize assets. In practice, these incentives take the form of lower capital requirements if assets are securitized. This is beneficial from the bank's perspective, because issuing equity is generally costly relative to issuing debt. The downside of securitization is that it reduces bank incentives to properly monitor and screen borrowers relative to the traditional banking model (see, for instance, Stiglitz, 1992). Indeed, Berndt and Gupta (2008), Dell'Ariccia et al (2008), Keys et al (2008) and Mian and Sufi (2008) provide evidence

that securitization and credit risk transfer weakened bank monitoring incentives in the run-up to the financial crisis of 2007-09.[8]

However, this explanation cannot fully explain the large losses on securitized assets realized *within* the banking sector in the ongoing financial crisis. Krishnamurthy (2008) shows that 39% of securitized mortgages were held on bank balance sheets as of June 2008. In fact, many banks securitized assets but effectively were exposed to significant risk of assets after securitization (as with ABCP conduits in our paper) or explicitly continued to hold the risks after securitization (as with holdings of AAA tranches of sub-prime mortgages).[9] This suggests that reduced monitoring incentives only provide a partial explanation for why banks decided to originate *and* hold securitized assets.

We conjecture that while securitization freed up costly equity capital that banks could deploy elsewhere, at the same time, banks no longer collected revenues from holding and managing risk, thus operating at weaker margins in their traditional business. As a result, banks started to explore how to reduce capital requirements while still earning compensation for holding risk. For example, in the case of ABCP conduits, banks sold credit and liquidity guarantees so that short-term debt investors in the conduits' assets had effectively close to full, contingent recourse to bank balance-sheets but banks benefited from lower capital requirements in the short run. In particular, if asset quality deteriorated in future, then end investors in securitization vehicles would not

[8] For example, Keys et al (2008) show that loans eligible for securitization had higher default rates relative to comparable loans not eligible for securitization. If outside investors are unable to assess loan quality properly and instead rely on information provided by banks or rating agencies, banks have an incentive to originate low quality loans and sell them at inflated prices.

[9] E.g., a report commissioned by the Swiss Banking Regulator documents that UBS, one of the world largest banks by assets in 2006, actively sought to keep and purchase assets they had previously securitized.

roll over debt, a form of a "run" in the shadow banking sector, and the asset risks would be brought back by banks on their balance-sheets (Covitz, Liang, and Suarez, 2009).

This most modern banking model - securitization without risk transfer - evidently violates the defining characteristic of securitization, namely, the transfer of credit risk to outside investors. It is however consistent with banks wanting to risk shift (Jensen and Meckling, 1976) or pay out private profits at the expense of transferring hidden debt risks on to others (for example, on to taxpayers, as argued by Akerlof and Romer, 1993). Such incentives in turn might have arisen because of heightened competition and thinning of margins in traditional banking business (Keeley, 1990, Gorton, 2009), short-termism on part of bank management and risk-takers (Gorton and Rosen, 1995), and the presence of government guarantees such as deposit insurance and the too-big-to-fail doctrine.

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.

References

Acharya, Viral V., Douglas Gale and Tanju Yorulmazer, 2008. “Rollover Risk and Market Freezes”, Working Paper, New York University Stern School of Business.

Acharya, Viral V. and Matthew Richardson, 2009. “Causes of the Financial Crisis”, *Critical Review,* 21(2–3), 195–210.

Acharya, Viral V. and Philipp Schnabl, 2009. “How Banks Played the Leverage ‘Game’”, Chapter 2 in Acharya, Viral V. and Matthew Richardson (editors), 2009. *“Restoring Financial Stability: How to Repair a Failed System”,* New York University Stern School of Business, John Wiley & Sons.

Akerlof, George A. and Paul M. Romer, 1993. "Looting: The Economic Underworld of Bankruptcy for Profit," *Brookings Papers on Economic Activity,* Economic Studies Program, The Brookings Institution, vol. 24(2), pages 1-74.

Arteta, Carlos, Mark Carey, Ricardo Corrrea, and Jason Kotter, 2008, “Revenge of the Steamroller: ABCP as a Window on Risk Choices”, Working Paper, Board of Governors of the Federal Reserve.

Ashcraft, Adam and Til Schuermann, 2008, “Understanding the Securitization of the Subprime Mortgage Credit”, Federal Reserve Bank of New York staff reports.

Berndt, Antje and Anurag Gupta, 2008. “Moral Hazard and Adverse Selection in the Originate-to-Distribute Model of Bank Credit”, Working paper, Carnegie Mellon University.

Brunnermeier, Markus, 2009. “Deciphering the Liquidity and Credit Crunch of 2007-08”, *Journal of Economic Perspectives,* 23(1), 77-100.

Calomiris, Charles, 2009, “Financial Innovation, Regulation and Reform”, forthcoming, the *Cato Journal.*

Calomiris, Charles and Joseph Mason, 2004, “Credit Card Securitization and Regulatory Arbitrage”, Journal of Financial Services Research 26(1), 5-27

Coval, Joshua, Jakub Jurek and Erik Stafford, 2009, “Economic Catastrophe Bonds,” forthcoming *American Economic Review*.

Covitz, Daniel, Nellie Liang and Gustavo Suarez, 2009, “The Anatomy of a Financial Crisis: The Evolution of Panic-Driven Runs in the Asset-Backed Commercial Paper Market,” Working Paper, Board of Governors of the Federal Reserve.

Dell'Ariccia, Giovanni, Deniz Igan and Luc Laeven, 2008. "Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market", Working paper, International Monetary Fund.

Diamond, Douglas, 1984. "Financial Intermediation and Delegated Monitoring", *Review of Economic Studies*, 51, 393-414.

Gorton, Gary, 2008, "The Panic of 2007", Yale University working paper.

Gorton, Gary, 2009, "Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007", Working Paper, Yale University working paper.

Gorton, Gary and Richard Rosen, 1995, "Corporate Control, Portfolio Choice, and the Decline of Banking," Journal of Finance, 50(5), pp. 1377-420.

Gorton, Gary and Andrew Metrick, 2009, Securitized Banking and the Run on Repo, Working Paper, Yale University.

Gorton, Gary and Nicholas S. Souleles, 2005, Special purpose vehicles and securitization, NBER Working Paper No. 11190.

Jensen, Michael C., William H. Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics*, 3(4), 305-360.

Kacperczyk, Marcin and Philipp Schnabl, 2009, "When Safe Proved Risky: Commercial Paper during the Financial Crisis of 2007-2009", Working Paper, New York University.

Keeley, Michael, 1990, "Deposit Insurance, Risk, and Market Power in Banking", *American Economic Review*, 80(5), 1183-1200.

Keys, Benjamin, Tanmoy Mukherjee, Amit Seru and Vikrant Vig, 2008. "Did Securitization Lead to Lax Screening? Evidence form Subprime Loans?" Working paper, London Business School.

Krishnamurthy, Arvind, 2008, "The Financial Meltdown: Data and Diagnoses", Northwestern University working paper.

Lee, Gilham, 2005, "Accounting Consolidation versus Capital Calculation: The Conflict Over Asset-Backed Commercial Paper Programs", North Carolina Banking Institute Journal, Volume 9

Mian, Atif, and Amir Sufi, 2008. "The consequences of mortgage credit expansion: Evidence from the 2007 Mortgage Default Crisis", *Quarterly Journal of Economics*, forthcoming.

Nadauld, Taylor D. and Shane M. Sherlund, 2008. "The Role of the Securitization Process in the Expansion of Subprime Credit", Working Paper, Ohio State University.

Shin, Hyun Song, 2009, "Securitization and Financial Stability" paper presented as the Economic Journal Lecture at the Royal Economic Society meeting, Warwick, March 2008.

Stiglitz**,** Joseph, 1992, "Banks versus Markets as Mechanisms for Allocating and Coordinating Investment," in J. Roumasset and S. Barr (ed.) T*he Economics of Cooperation*. Boulder: Westview Press, Inc.

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.

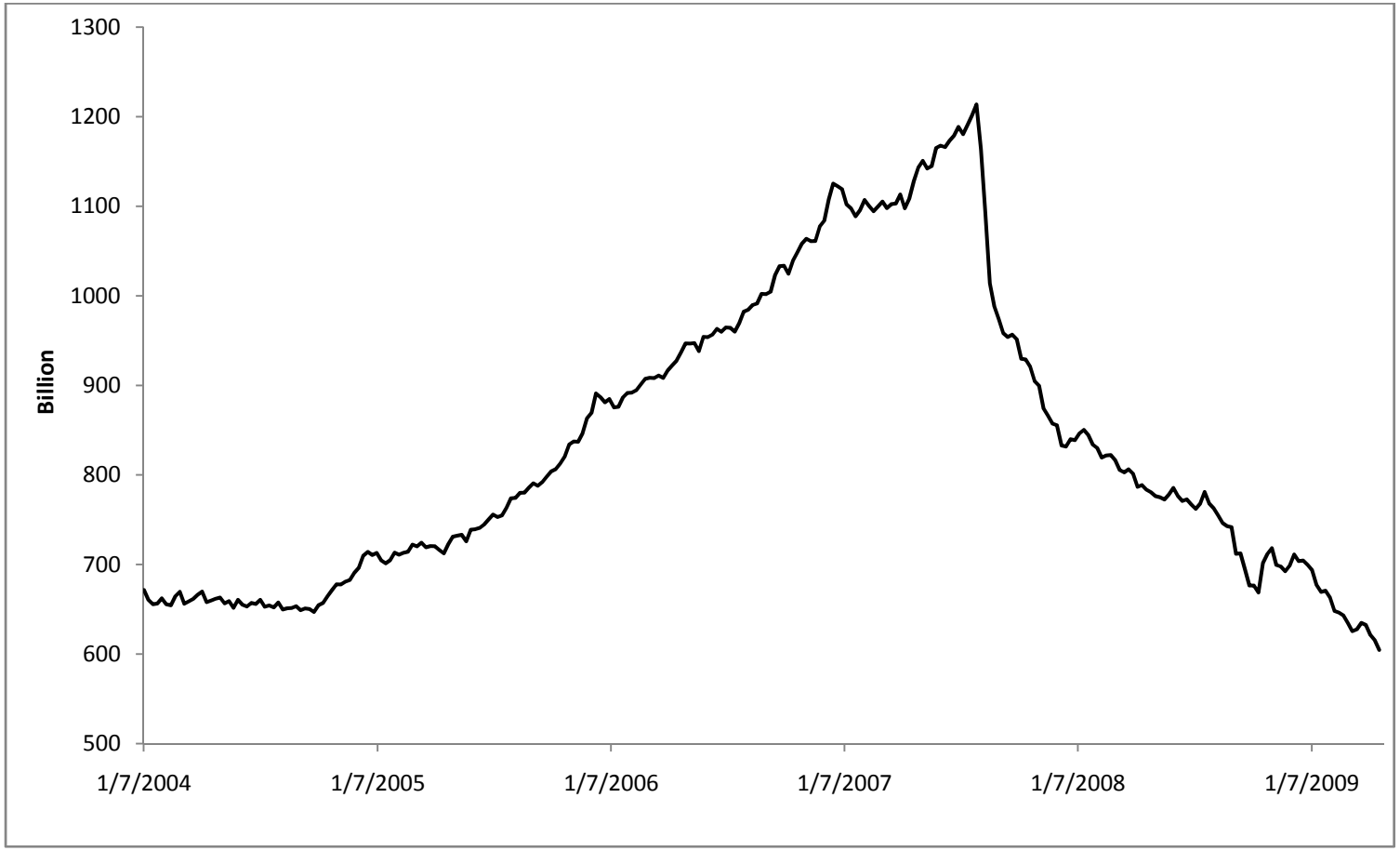

Figure 2: Asset-Backed Commercial Paper Spread

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

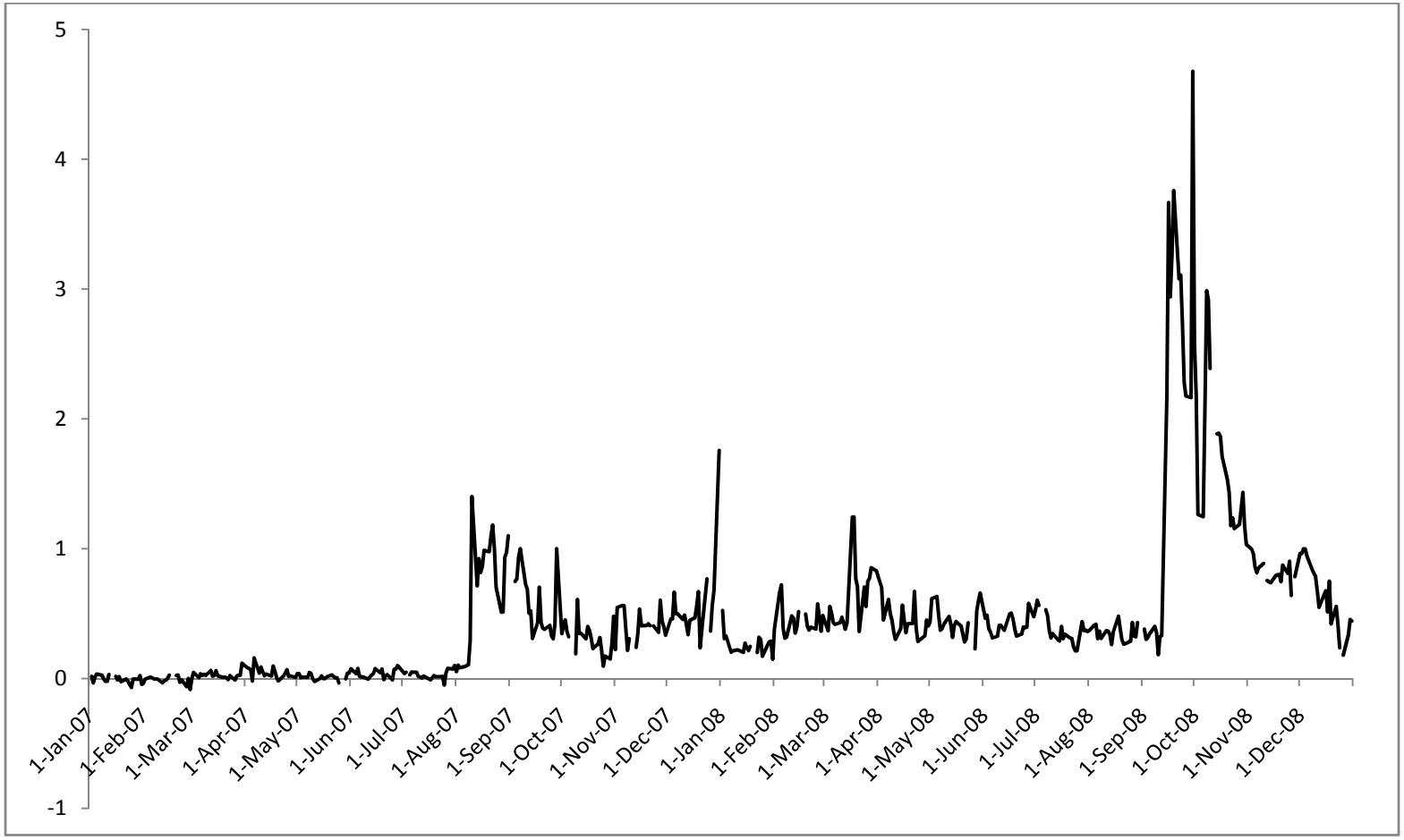

Figure 3: Asset-backed Commercial Paper Outstanding by Credit Guarantee

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.

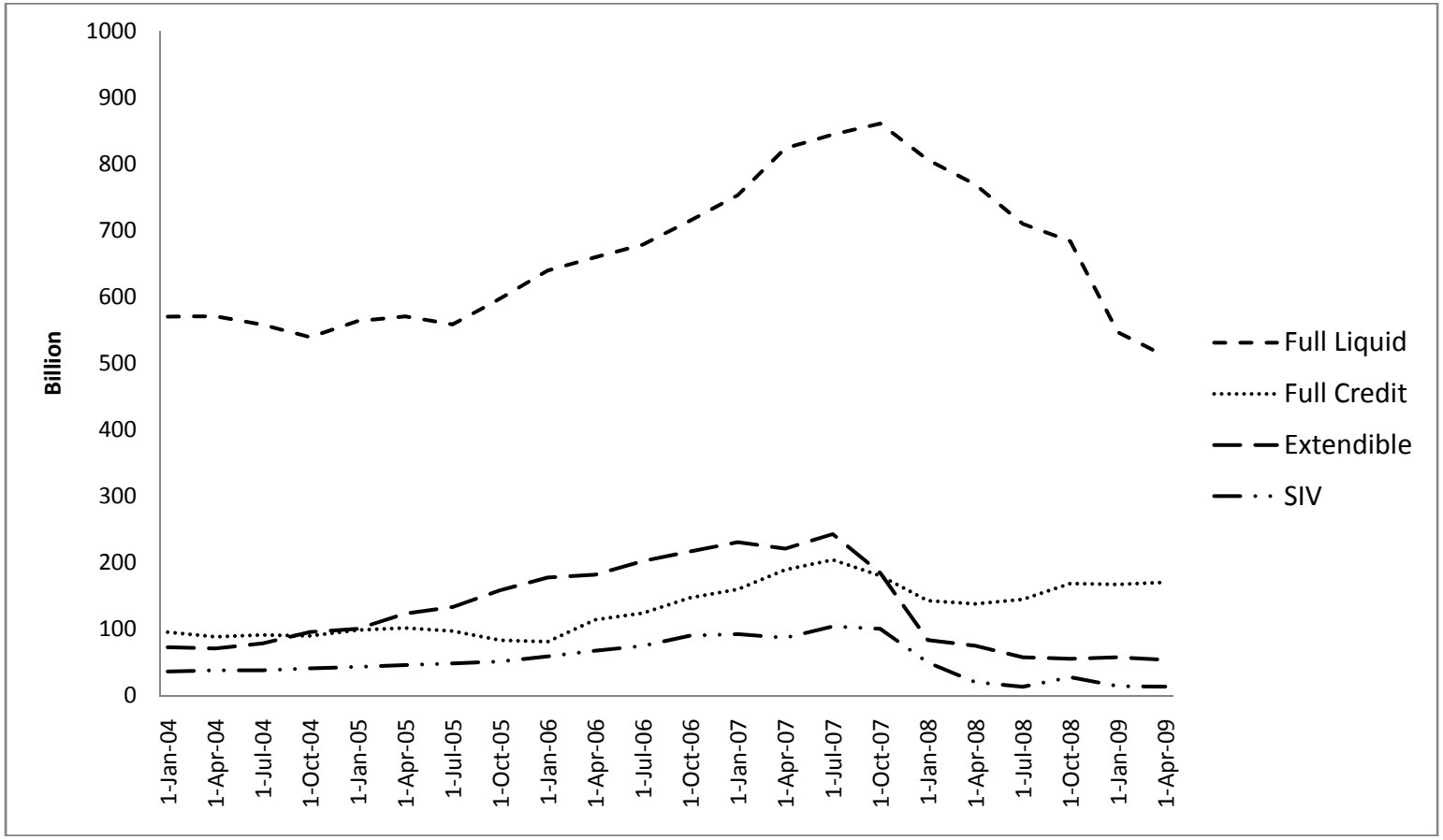

Figure 4: Asset-backed Commercial Paper Outstanding by Credit Guarantee

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 5: 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.

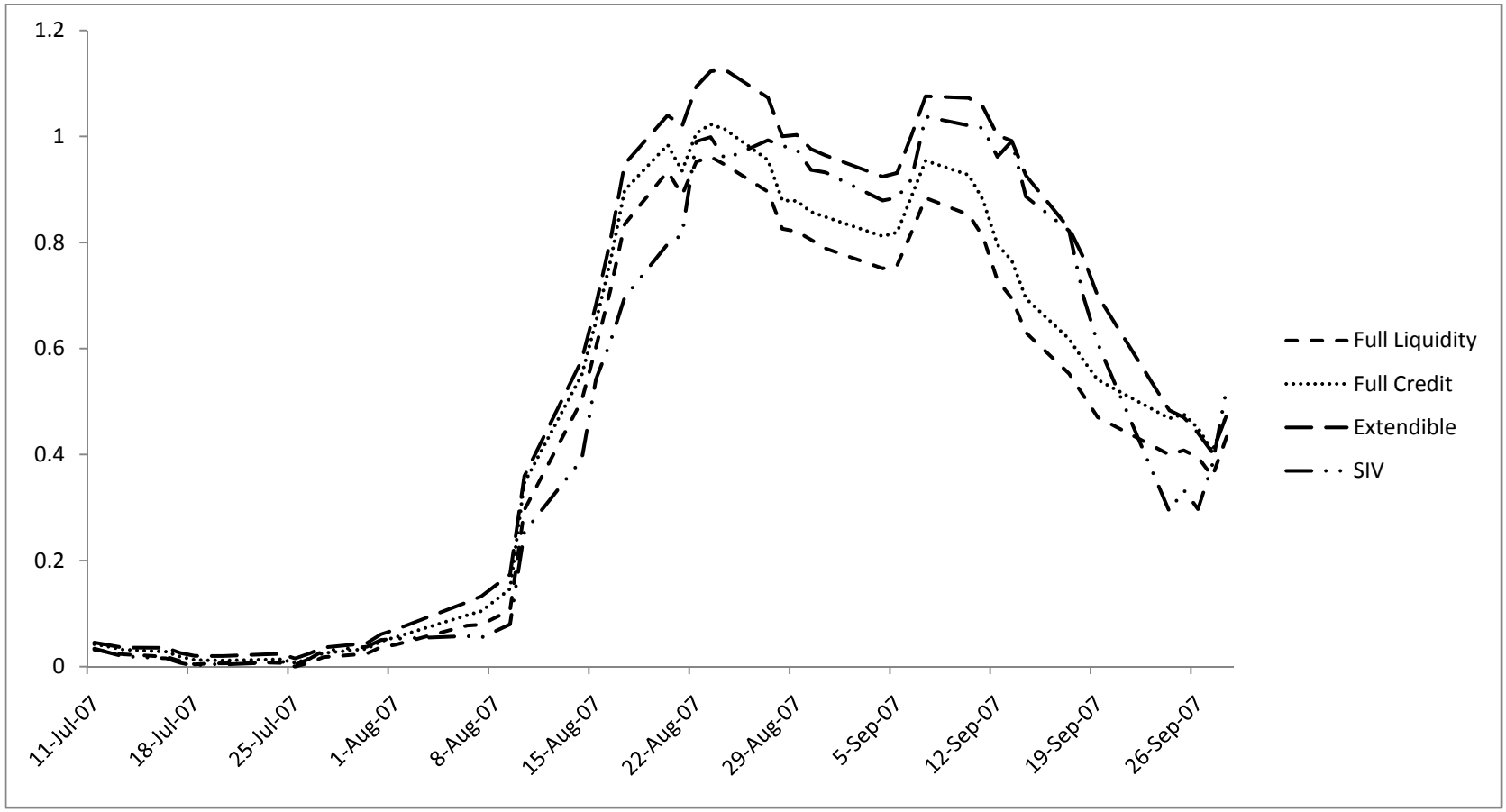

Figure 6: Conduit Structure

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

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