The explosive growth of the US ABCP market between 2004 and 2007: an integrated empirical analysis[1]

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Abstract

In common with other sectors of the shadow banking system, the US asset backed commercial paper market experienced unusually rapid growth between 2004 and 2007. Several studies of this development have focussed attention on investor pressures on the banks to expand the rate of ABCP issuance over this period. By contrast, other studies have focussed attention on the incentives that motivated the banks to expand ABCP supply. This paper provides an integrated empirical analysis of the demand-pull and supply-push factors that drove the pre-crisis growth of the ABCP market. In addition to showing the joint importance of these two factors, our results also show the extent to which the European shadow bank conduits dominated US ABCP issuance over the 2004 to 2007 period and the extent to which these conduits increasingly resorted to long term securities as collateral for ABCP programs.

1. Introduction

In common with other sectors of the shadow banking[2] system, the US asset backed commercial paper (ABCP) market experienced unusually rapid growth between 2004 and 2007. As the collapse of this market that summer was one of the principal causes of the great financial crisis, it is important to understand what drove its expansion in the immediate pre-crisis period. Of the numerous studies devoted to this question, some have focussed attention on the external investor pressures on the commercial banks to expand the rate of ABCP issuance through their off-balance sheet conduits. By contrast, other studies have focussed attention on the opportunities and incentives that motivated the banks to expand the rate of

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[2] For concise definitions of 'shadow banking' see e.g. Pozsar et.al. (2010); Financial Stability Board (2012); Lysandrou and Nesvetailova (2015)

ABCP supply. This paper provides an integrated empirical analysis of the pre-crisis US ABCP growth rate in that it pays particular attention both to the rise in the demand for ABCP from the institutional money market mutual funds (MMMFs) and to the concurrent rise in the European banking sector's contribution to the production of these short term securities. The paper is structured as follows. Section two provides a brief description of the events that helped to shape developments in the US ABCP market between 2001 and 2007. Section three provides a theoretical framework for the main propositions to be tested. Section four provides our empirical analysis and key findings. Section five provides a summary and conclusion.

2. The US ABCP market 2001-7: Descriptive background

In mid-2007, the volume of outstanding US asset backed commercial paper (ABCP) was approximately $1. 2 trillion, a sum larger than the combined sums for financial and non-financial corporate commercial paper then totalling about $750 billion and $150 billion respectively (Kacperczyk & Schnabl, 2010). An equally striking fact was the speed with which the US ABCP market established its commanding position in the US commercial paper sector: from its beginnings in the early 1980s, the US ABCP market grew at a steady rate over the next two decades to reach a size of around $600 billion by 2004, after which point it then doubled in size during the following two and a half years between 2005 and mid-2007 (see appendix, figure IA). Given that the overwhelming majority of the ABCP issuing conduits were bank-owned or sponsored off-balance sheet vehicles that were at that time not subject to the same regulatory capital constraints as were their on-balance sheet counterparts, a major explanation for the acceleration in US ABCP supply from mid-2004 is one that essentially puts it down to the regulatory arbitrage activity on the part of the parent commercial banks (see e.g. Acharya & Richardson, 2009; Acharya & Schnabl, 2010; Acharya et.al. 2013)[3]. In this explanation, the

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[3] For related supply-side explanations of the pre-crisis growth of the US ABCP market that identify lax government regulation and corporate governance weaknesses as important contributory factors see also Calomiris, (2009); Arteta et.al. (2013) and Covitz et.al. (2013). The more general contributory factors to regulatory arbitrage were the weaknesses in the Basel I accords, chief of which were that only one type of risk – credit risk – was identified in the setting of capital adequacy rules for banks and the lack of granularity in the definition of credit risk The Basel II Accord was intended to address these weaknesses, partly by identifying operational and market risks in addition to credit risk in the specification of minimum capital requirements, and partly by adding to this first pillar of bank regulatory standards two further pillars, those of supervisory review and market discipline. Although Basel II was published in June 2004, governments took several years to implement its proposals. In the US case, these were implanted in successive stages over the course of 2008.

year 2004 is seen as significant in that this was when the US financial regulatory authorities decided against increasing capital requirements for conduit guarantees that they had been considering since the Enron scandal of 2001: while the continuing threat of such regulation restrained the rate at which the banks engaged in regulatory arbitrage, that restraint was relaxed when the regulatory threat was lifted[4].

Although highly plausible, the regulatory arbitrage explanation for the post-2004 acceleration in ABCP supply also appears to be incomplete in that it pays insufficient attention to the change in the geographical composition of the conduit sponsoring commercial banks that occurred after 2004. Up to the early 2000s it was the US bank sponsored conduits that accounted for the majority proportion of ABCP supply whereas the situation was then reversed when the European bank sponsored conduits took over this position (see appendix, figure 2A). As the pre-2004 threat of Enron-induced type of conduit regulation did not generally apply to the European commercial banking sector[5], one would have expected the latter to have sharply increased its rate of ABCP supply well before 2004 when the differential between long and short term interest rates, and thus the profitable opportunities offered by regulatory arbitrage, were much higher than they were after 2004. The fact that the opposite happened in that the acceleration in European ABCP issuance only began from mid-2004 would indicate that in addition to any profit enhancing gains to be made from regulatory arbitrage, the commercial

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[4] As previously noted, although Basel II was published in June 2004, it took several years for the proposals to be implemented in the US thus giving further scope for US banks' regulatory arbitrage activities. One reason for the delay in Basel II's implementation was disagreement over its recommendation that the calculation of banks' capital requirements relative to credit risk should be based on a more nuanced and informed approach that takes into account each type of asset's risk profile. The large US banks insisted that they should be allowed to use their own advanced internal rating procedures for assessing all risk components, while US regulators maintained that capital decisions should not be left entirely to the banks. As Sheila Blair, Chair of the US Federal Deposit Insurance Corporation, put it in a speech given in June, 2007, "The advanced approaches come uncomfortably close to letting banks set their own capital requirements. That would be like a football match where each player has his own set of rules. There are strong reasons for believing that banks left to their own devices would maintain **less** capital -- **not** more -- than would be prudent." (Blair, 2007)

[5] As observed by Acharya et.al.(2013), although "European banks started to adopt International Financial Reporting Standards (IFRS) in the early 2000s….(and) were therefore required to consolidate conduits on their balance once they adopted IFRS ..most European bank regulators did not change capital requirements in accordance with 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 regulatory capital against conduit assets. As a result, European banks continued to benefit from lower capital requirements for conduits even after reporting financial statements according to IFRS" (2013, p.525)

banks, and the European commercial banks in particular, were responding to the pressure of investor demand for ABCP[6].

If a major function of the shadow banking system is to transform bank loans into tradable securities, there is in turn a two-fold purpose to this function. The traditional purpose of securitisation is "to transfer risks from the banking sector to outside investors and thereby disperse risks across the economy" (Acharya et.al.2013, p.515). For these 'outside investors', however, securitisation's other purpose is to serve as a source of supply of 'safe stores of value'. In this context, what became clear in the pre-crisis period was the division of labour between the three main types of off-balance sheet vehicle at the heart of the securitisation process: where the special purpose entities (SPEs) and structured investment vehicles (SIVs) concentrated on the production of long term debt securities (notably, asset backed securities (ABSs) and collateralised debt obligations (CDOs) respectively), the conduits specialised in the production of short term debt securities, notably, asset backed commercial paper. It has been argued that it was the rise in investor demand for 'money-like' claims that drove the pre-crisis growth of this latter part of the shadow banking system. The logic is clear: if a key function of financial intermediaries is to provide savers with money-like claims (see e.g. Diamond & Dybvig, 1983), then it follows that securitisation would have expanded rapidly in the pre-crisis period precisely because it was a financial innovation that enabled intermediaries to supply more money-like claims (see e.g. Gorton & Metrick, 2010; Krishnamurthy & Vissing-Jorgensen, 2013). As Sunderam has summarised this line of argument: "the so-called "shadow banking system" used highly-rated, long-term securitized bonds as collateral to back the issuance of money-like, short term claims. These claims, while not used directly in transactions, had the short-term safety and liquidity needed to function as stores of value, and thus serve as imperfect substitutes for money. In response to growing demand for such money-like claims from institutional investors and firms, the shadow banking system manufactured more of this short-term debt" (Sunderam, 2015, p.3)[7]. Sunderams' own contribution was to show empirically: (i) that investors did treat shadow bank debt as a money-like claim; (ii) that the sharp rise in money demand between

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[6] One exception to this line of argument concerns the German government controlled Landesbanks. As argued by Arteta et.al. (2013), the fact that these banks lost their formal government guarantees of liabilities in 2005 may explain why it was from that time point on that they were motivated to move their credit arbitrage activity into ABCP vehicles.

[7] The 'money-like' nature of ABCP has formed part of the basis for the view that shadow banking's role is to serve not only as a supplementary source of supply of securities for use as stores of value but also as a supplementary source of supply of money: 'shadow money'. See e.g. Pozsar (2014) or Gabor and Vestergaard (2016). For recent discussions of the potentially destabilising impact of shadow money on the economy see Mural (2017) and Caverzasi et.al (2019).

2004 and 2007 did play an important role in driving ABCP growth over this period; and (iii) that this growth reflected the increase in the elasticity of ABCP supply over this same period due to the growth of securitisation that made available more collateral to back ABCP.

The money creation explanation of the pre-crisis growth of the ABCP market is certainly compelling. This said, there are still some areas within it that remain empirically untested. One such area concerns the investor body on the demand side of the market. It is well known that the US MMMFs had in the immediate pre-crisis years significantly increased their holdings of ABCP relative to their holdings of financial commercial paper and commercial paper (Kacperczyk & Schnabl, 2010). Indeed, so prominent was the role played by the MMMFs in the ABCP market between 2004 and 2007 that, as noted by Kacperczyk & Schnabl, some observers went so far as to "argue that the growth of the asset-backed commercial paper market was fuelled by demand from money market funds" (Kacperczyk & Schnabl 2010, p.36). The key contribution of the present paper is to estimate the extent to which the MMMFs, and the institutional MMMFs in particular, "fuelled" the acceleration in ABCP supply between 2004 and 2007. Another untested area concerns the change in the geographical breakdown of the ABCP conduits that occurred between 2004 and 2007. The fact, as pointed out by Sunderam, that there was at that time an increase in the elasticity of supply of ABCP made possible by the growth of securitisation likely relates to the contemporaneous ascendency of the European shadow banking sector to a commanding position in ABCP production. Of the $900 billion US ABCP outstanding in mid-2007 produced by bank-sponsored conduits, European banks accounted for about 60% of this amount, US banks for about 30% and Japanese banks for the remainder (see appendix, figure 2A). The European banks clearly found it simpler to manufacture short term debt as compared with long term debt[8], and one reason for this is the ease with which they could buy long term securities to use as collateral for ABCP. A further contribution of this paper is to estimate the extent to which the European conduits drove the rapid expansion of ABCP supply between 2004 and 2007.

3. Theoretical framework

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[8] The European contribution to supplies of ABSs and CDOs in the pre-crisis era was almost negligible: of the $11 trillion ABSs and $3 trillion CDOs outstanding in mid-2007 the European banking sector accounted for a mere 17% of both amounts (Goda et.al., 2013)

The developments in the US banking system in the run up to the financial crisis were broadly consonant with Hyman Minsky's 'financial instability hypothesis' (Minsky, 1977; 1982; 1986)[9]. The core argument of this hypothesis is that prolonged stability in the real sector eventually causes instability in the financial sector because the progressive lowering of safety cushions generated by the confidence in economic conditions leads to a progressive undervaluation of risk. The stages of transition from low to successively higher levels of risk (which in Minsky's hypothesis divide into the 'hedge', 'speculative' and 'Ponzi' stages of financing) appear to neatly capture the pre-crisis momentum of events in the US: buoyed by the confidence generated by the years of the 'Great Moderation' and taking advantage of lax bank regulation –itself in large part a result of the stability of the Great Moderation period – the US commercial banks used their off-balance securitisation vehicles to increase their volumes of mortgage lending, first at a moderate rate and then at an accelerating rate. This paper contributes to this overarching explanatory framework for understanding the causes of the financial crisis by concentrating attention on the pre-crisis stages of growth of the market for US ABCP, the short term securities created by the unregulated shadow banks. In so doing, it singles out certain observed peculiarities associated with that growth.

The first peculiarity concerns the rise of the institutional MMMFs to become the dominant group within the prime MMMF sector from the late 1990s (see appendix, figure 3A). The most striking outcome of this development is that changes in the overall size of the prime MMMF sector as measured by its total assets began to closely correlate with the changes in the federal funds rate while there was no such correlation when retail MMMFs, which cater to households, were predominant in the prime MMMF sector (see appendix, figure 4A). Institutional investor demand for MMMF services is clearly more interest elastic than is household investor demand, and a likely explanation for this disparity is the differential impact of the $100,000 deposit insurance limit. For households, who as small investors are not typically constrained by this limit, the relevant asset class against which MMMF shares are compared are bank deposits: as long as the yields on those shares exceed the interests on bank deposits, households will not withdraw funds from the MMMFs. This is why there is no correlation between the size of MMMF assets and the federal funds rate in the period when retail MMMFs were predominant. By contrast, for corporate financiers and institutional asset

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[9] Although long popular with heterodox economists, Minsky's financial instability hypothesis would only come to command serious attention from mainstream economist after the outbreak of the subprime crisis. As Mark Carney, former governor of the Bank of England, observed in a speech given in 2018: with the financial crisis "Minsky became mainstream" (Carney, 2018)

managers, who as large investors are constrained by the deposit insurance limit, it is not bank deposits so much as other types of financial securities that are the relevant asset classes against which MMMF shares are compared. What then matters in this context are the two interdependent but also distinct aspects of MMMF shares: their 'storage' aspect, i.e. MMMF shares as a convenient means of holding cash in a safe and liquid form, and their 'yield' aspect, i.e. those same shares as a means of generating a return on investment. What became evident in the period 2001 to 2007 is that, when short term interest rates were low, only that minimal amount of institutional cash needed for liquidity purposes was directed into the safety of MMMF shares, whereas greater amounts of institutional cash were directed into MMMF shares to profit from their yield when short term rates were high.

A further peculiarity was the change in the composition of the commercial paper held by MMMFs: where that composition was traditionally weighted towards financial and corporate commercial paper with ABCP comprising only a small part, the situation was suddenly reversed over the 2004 to 2007 period. The simple explanation for this reversal is that the banks and corporations needing to finance their borrowing requirements were reluctant to issue short term paper when the short term rate was prohibitively high and preferred instead to lock into the unusually low long term borrowing rates. By contrast, no such considerations constrained either the ability or the motivation of the commercial banks to increase the issuance of ABCP to make up for the shortfall in the supply of short term paper demanded by the MMMFs. This brings us to yet another peculiarity, which was that it was the European commercial banks that took the lead in accommodating the MMMFs' demand for ABCP. While no single European country's banks could match the production rate of the US banks, it is nevertheless remarkable that the aggregate European contribution to ABCP supplies in the 2004 to 2007 period should have been substantially higher than that of the US. The fire station analogy comes to mind here: just as a local fire station that can cope with any small fire in its district has to call on the help of fire stations from neighbouring districts in the event of a large fire, so the help of the European commercial banks had to be enlisted in order to help meet the sharp increase in ABCP demand from 2004 onwards.

In addition to the marked change in the geographical breakdown of the ABCP conduits at this time, a final peculiarity concerns the equally marked change in the program breakdown of the conduits. These programs broadly divide into two categories: those where credit loans constitute the basic backing material for ABCP issuance (e.g. multi-seller, single seller and loan-backed programs) and those where securities constitute all or part of the backing material

(e.g. securities arbitrage, SIV and hybrid programs). Table1 shows that while loan backed conduit programs accounted for the majority proportion of all programs throughout the 2001-2007 period, the size of this majority was substantially smaller in the sub-period 2005-2007 than it was in the earlier sub-period 2001-2004. What explains this particular development? Why did the European commercial banks, who as shown in Table 1 took the lead in issuing securities-backed ABCP in the 2005-2007 sub-period, not continue to rely primarily on loan-backed programs? The most likely answer is that there are economic limits to the rate at which bank loans can be extended to households and small businesses and thus limits to the rate at which loan backed ABCP can be issued. It appears that where before 2004 the relatively low volume of investor demand for ABCP did not test these limits, the situation was suddenly reversed after 2004 following the acceleration in institutional MMMF demand for ABCP. It appears that rather than disappoint the MMMFs and lose the profitable opportunities offered by regulatory arbitrage, the European commercial banks in particular kept up the rate of ABCP supply in line with the demand rate by increasingly resorting to long term securities such as ABSs and CDO, which could be purchased quickly, as supplementary forms of collateral.

As observed by Bertaut et.al. (2012), the rate of European banks' acquisition of US asset backed securities accelerated so sharply after 2004 that their average aggregate holdings of these assets in the 2005-2007 period was double the average figure for the 2002-2004 period. In answer to the question as to why the Europeans increased their purchases of US ABS at a time when the profit making opportunities from funding these purchases with ABCP were diminishing, Bertaut et.al. pointed to the following possible explanations: that house price appreciation had held down delinquencies on subprime mortgages thus allowing ABS to maintain a record of dependability and an illusion of safety; that low yields on other assets had reduced the incentives for investors to switch from ABS to these other assets; and that, more generally, a culture of risk taking had developed amongst European banks, as amongst their US counterparts, that centred importantly around securitisation. (ibid. p.224)

An additional, and in our view equally plausible, answer to the above question is that there was a structural break in European motives for buying US ABS that occurred around end-2004. In the 2002-2004 period, they may have been supplying ABCP to fund their purchases of ABS whose triple-A rating made them appear "very safe, while offering slightly higher returns than Treasuries and Agencies" (Bertaut et.al. ibid.), but in the subsequent 2005-2007 period it was the other way round: the European banks by that time were buying ABS to use as collateral for the creation of the extra amounts of ABCP demanded by the US MMMFs. This

explanation tallies with Sunderam's argument that there was an increase in the elasticity of supply of ABCP from about 2004.

Table 1: Conduit type and location statistics, size in billion USD

	Australia	Size	Canada	Size	Europe	Size	US	Size	Japan	Size
2000q4										
Number of Conduits	3		12		87		95		*11*	
Type of conduits										
Loan-Backed					5	11.741	7	15.961	1	0.605
Multiseller	2	1.948	8	29.948	50	114.171	34	164.119	9	6.580
Singleseller	1	0.272			5	15.037	15	14.267		
CDO										
Hybrid					3	6.008	3	5.202	1	0.049
Repo/TRS										
Securities Arbitrage			4	1.899	24	66.724	35	33.234		
SIV										
Other							1	9.332		
Total		2.220		31.847		213.681		242.115		7.234
2005q2										
Number of Conduits	4		5		85		64		6	
Type of conduits										
Loan-Backed							1	2.532		
Multiseller	3	3.610	3	14.992	39	135.390	25	119.275	4	8.101
Singleseller					2	0.696	15	34.144		
CDO					1	0.624	2	3.313		
Hybrid	1	0			13	38.327	3	6.241	1	1.864
Repo/TRS										
Securities Arbitrage					22	85.772	10	17.565	1	4.408
SIV			2	1.500	7	9.843	6	14.384		
Other					1	5.101	2	1.704		
Total		3.610		16.492		275.753		199.158		14.373
2007q2										
Number of Conduits	5		6		98		67		5	
Type of conduits										
Loan-Backed							1	3.539		
Multiseller	3	7.587	4	24.506	41	209.373	23	171.266	4	12.711
Singleseller	1	0			8	35.328	18	50.350		
CDO										
Hybrid	1	3.074			16	68.445	5	10.101	1	3.092
Repo/TRS					2	12.214	1	11.418		
Securities Arbitrage					20	111.322	9	16.709		
SIV			2	1.550	11	24.649	8	16.587		
Other							2	11.585		
Total		10.661		26.056		461.331		291.555		15.803

From the above discussion we extract the following three hypotheses:

H1: the overall pattern of ABCP supply between 2001 and 2007 was jointly determined by the demand pull pressure from institutional MMMFs and by the regulatory arbitrage activity of the conduit sponsoring banks.

H2: as long as institutional MMMF demand pull pressure remained low, as happened between 2001 and 2004, US conduits could carry the major burden of ABCP supply, but when that pressure became exceptionally high, as happened between 2005 and 2007, European conduits had to take over the major burden of ABCP supply.

H3: as long as institutional MMMF demand pull pressure remained low, as happened between 2001 and 2004, credit-backed conduit programs could continue to account for the lion's share of all conduit programs, but when that pressure became exceptionally high, as happened between 2005 and 2007, the share of securities-backed conduit programs had to be significantly increased to help absorb that pressure.

4. Empirical Framework

This section outlines the empirical framework that will be used to test our three hypotheses. We take into account demand factors such as MMMF asset holdings as well the effective Federal Funds Rate, while controlling for various bank factors such as leverage, total assets, return on assets and the regulatory capital ratio. We also include the geographical location of the ABCP conduit sponsoring banks and the program breakdown of the conduits included in our sample.

4.1 Data and methodology

We use a panel dataset of ABCP issuance data obtained from Moody's Investor Service that gives quarterly information on program characteristics and the sponsor details of active conduits. Our dataset consists of all bank-sponsored conduits that issued ABCP in the US market over the period between 2000q4-2007q2. Non-bank sponsored conduits are excluded

from our sample as are bank-sponsored conduits that did not issue in the US market over this period. To construct our dataset we assigned an id number to each conduit by name, as banks typically sponsored more than one conduit. Any two conduits that had the same name and issued in the same quarter are treated as different conduits. Our dataset includes all conduits that issued ABCP in at least one quarter over the period 2001-2007, which is a total of 4183 conduits.

The baseline econometric model used to estimate the relationship between US ABCP issuance and such determining factors as the federal funds rate and MMMF asset holdings, while controlling for various bank factors, is the following:

$$ABCP_{i,t} = \beta_1 W_t + \beta_2 Interest\ rate_t + X_{i,t}\theta + \gamma_i + \varepsilon_{i,t} \quad (1)$$

The dependent variable ABCP is the average outstanding commercial paper issued in the US market by conduit i, $i=1….325$, at time t, t=2000q4…..2007q2. The variable W_t captures the (log of) total financial assets held by MMMFs, either by all categories (*MMMF*) or disaggregated into two subcategories: institutional (*INSTITUTIONAL*) and retail (*RETAIL*). Interest rate is the effective Federal Funds Rate, (*Fed rate*). $X_{i,t}$ is a vector that contains bank-specific variables such as return on assets (RETURN_ON_ASSET), regulatory capital ratio (TIER1_CAP_RATIO), leverage ratio (TOT_DEBT_TO_TOT_ASSET)[10] and short term to long term debt (SHORT_AND_LONG_TERM_DEBT). γ_i is the unobserved fixed effect that accounts for time-invariant conduit-specific features.

Table 2 provides a statistical summary of the variables included in the regression. The average issuance of ABCP across all conduits over the sample period is nearly $3 billion. Average MMMF financial asset holdings are $2.01 trillion, a figure dominated by institutional MMMF holdings that averaged $1.2 trillion over the period considered. Banks were rather well-capitalised with a mean and median tier 1 ratio above 8%, while their profitability as measured by return on assets was rather low with a mean and median below 1.

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[10] As the central focus of attention in Achara et.al. (2013) is bank regulatory arbitrage activity in the run up to the financial crisis, it made sense for these authors to take the ratio between bank book equity and bank total assets as the leverage ratio. The rationale was that: "Most regulatory arbitrage activities have the characteristic that they reduce risk-weighted assets (and, therefore, regulatory ratios) while maintaining the same level of total assets". A key concern of this paper is with the volume of ABCP demand from yield seeking institutional MMMFs. Given that one of the reasons why banks faced favourable financial conditions in the bond markets between 2001 and 2007 was the pressure of investor demand for yield, it seemed to us to make better sense to take total bank debt to total bank assets as the leverage ratio.

Table 2: Statistical Summary

Variable	Mean	Median	Maximum	Minimum	Standard Deviation	N
ABCP	3.094	1.912	26.958	0.000	3.621	4183
FED_RATE	3.058	2.470	6.470	1.000	1.781	4183
MMMF	2089.431	2053.477	2779.512	1812.211	210.895	4183
INSTITUTIONAL	1207.113	1229.100	1651.400	818.900	159.863	4183
RETAIL	796.561	804.600	931.300	662.500	91.575	4183
RETURN_ON_ASSET	0.721	0.676	4.432	-1.502	0.546	4183
TIER1_CAP_RATIO	8.559	8.420	21.820	0.800	1.630	4183
LEVERAGE RATIO	34.021	33.906	89.616	5.444	12.870	4183
SHORT_AND_LONG_TERM_DEBT	905.115	254.400	47032.160	0.531	3784.729	4183

Sources: Authors' computations are based on data from Moody's Investors Services, Federal Reserve Bank of Louis (FRED) and Bloomberg.

Notes: ABCP is average total asset-backed commercial paper outstanding in the US market in $billions, Money Market Mutual Funds (MMMF) are total financial assets held by MMMFs in $billions. Institutional and Retail are the two components of MMMFs, in $billions. Return on assets, TIER 1 capital ratio and Leverage ratio, measured as total debt to total assets, are ratios whereas short term and long term debt are in $billions.

Table 3 shows the pair-wise correlations among all variables. Both the federal funds rate and MMMF variables are positively correlated with average ABCP outstanding volume, the correlation being strongest in the institutional MMMF sector. The observed negative correlations between MMMF asset holdings and bank profitability, the tier 1 capital ratio and bank indebtedness may be explained by the fact that the variation in MMMF asset size over the sample period was far higher than the variations in the bank control factors. The differing signs of the correlation coefficients between the two MMMF subcategories and the bank control factors suggest that larger banks were associated with institutional MMMFs while smaller banks were associated with retail MMMFs.

Table 3: Correlation analysis

	ABCP	FED_RATE	MMMF	INSTITUTIONAL	RETAIL	RETURN_ON_ASSET	TIER1_CAP_RATIO	LEVERAGE RATIO	SHORT_AND_LONG_TERM_DEBT
ABCP	1								
FED_RATE	0.110	1							
MMMF	0.121	0.258	1						
INSTITUTIONAL	0.141	-0.035	0.850	1					
RETAIL	-0.070	0.091	0.426	-0.011	1				
RETURN_ON_ASSET	0.075	0.005	-0.127	-0.096	-0.105	1			
TIER 1_CAP_RATIO	0.004	-0.091	-0.051	-0.004	-0.056	0.239	1		
LEVERAGE RATIO	0.034	0.013	0.010	0.059	-0.107	-0.259	-0.171	1	
SHORT_AND_LONG_TERM_DEBT	-0.056	0.005	-0.013	-0.010	-0.015	-0.177	-0.249	-0.105	1

Sources: Authors' computations are based on data form Moody's Investors Services, Federal Reserve Bank of Louis (FRED) and Bloomberg.

Notes: ABCP is average total asset-backed commercial paper outstanding in the US market in $billions, Money Market Mutual Funds (MMMF) are total financial assets held by MMMFs in $billions. Institutional and Retail are the two components of MMMFs, in $billions. Return on assets, TIER 1 capital ratio and Leverage ratio, measured as total debt to total assets are ratios whereas short term and long term debt are in $billions.

4.2 Results of the baseline model

Table 4 gives the estimates of our baseline model obtained through a variety of panel estimation methods. Columns 1 and 2 in the table give the estimates of a panel OLS method without the fixed effect, while columns 3 to 5 give the estimates with the fixed effect included. As shown in all specifications, we find that the higher the federal funds rate the higher is the average volume of outstanding ABCP. Similarly, the MMMF coefficient is also positive and statistically significant indicating that an increase in the financial asset holdings of MMMFs increased outstanding ABCP by around $4 billion over the sample period. When the MMMF category is split into the institutional and retail subcategories as in column 5, we find that it was the institutional MMMF sector that was chiefly responsible for the strong positive relation between MMMF asset holdings and average ABCP outstanding volume. Column 1 of the table also indicates a strong positive relation between a conduit sponsoring bank's profitability, as measured by return on assets, and the volume of its conduit's ABCP issuance. Although the bank regulatory Tier 1 capital ratio coefficient is positive, it is not statistically significant when the OLS estimation method is used in any of the specifications across columns 1 to 5. There is similarly little evidence that the leverage ratio, here defined as total debt to total assets, has any significant role in explaining ABCP issuance. Finally, neither the size of the sponsoring banks nor their level of indebtedness as measured by short term and long term debt appear to have any significant role in determining the amount of outstanding ABCP over the sample period.

Table 4: ABCP average outstanding in the US market- Static Analysis

Variable	(1) OLS coefficient	(2) OLS coefficient	(3) OLS-FE coefficient	(4) OLS-FE coefficient
FED_RATE	0.166***	0.272***	0.220***	0.328***
	(0.048)	(0.056)	(0.035)	(0.041)
LOG(MMMF)	3.906***		3.566***	
	(0.794)		(0.056)	
LOG(INSTITUTIONAL)		4.213***		3.854***
		(0.672)		(0.462)
LOG(RETAIL)		-1.919*		-1.945**
		(0.998)		(0.598)
RETURN_ON_ASSET	0.656**	0.586*	-0.016	-0.351*
	(0.339)	(0.340)	(0.188)	(0.179)
TIER1_CAP_RATIO	-0.012	-0.031	-0.043	-0.094
	(0.116)	(0.116)	(0.073)	(0.071)
LEVERAGE RATIO	0.016	0.010	0.026**	0.009
	(0.016)	(0.015)	(0.012)	(0.012)
SHORT_AND_LONG_TERM_DEBT	-0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
N	4035	4035	4035	4035
Sample	2000q4-2007q2	2000q4-2007q2	2000q4-2007q2	2000q4-2007q2
Cross-sections	282	282	282	282
Fixed effect	No	No	Yes	Yes
R-squared	0.028	0.045	0.818	0.828

Notes: ***,**,* represent 1%, 5% and 10% significance levels respectively. The dependent variable is average ABCP outstanding in $billions. Robust Standard Errors in parenthesis.

4.3 Results of a dynamic version of the baseline model

Our empirical investigation also considers a dynamic version of our baseline model to account for any trending behaviour of ABCP issuance across banks. The first differences with a one-year lag are included in the following regression:

$$ABCP_{i,t} = \beta_0 ABCP_{i,t-1} + \beta_1 W_t + \beta_2 Interest\ rate_t + X_{i,t}\theta + \gamma_i + \varepsilon_{i,t} \quad (2)$$

Table 5 shows the results of our dynamic analysis using OLS estimation methods. There is similarity with Table 4 in respect of the federal funds rate in that its coefficient is positively and strongly statistically significant, again highlighting its predictive power in explaining the issuance of ABCP. There is also similarity in the fact that *log (INSTITUTIONAL)* remains

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positive and significant across all specifications whilst the *log (MMMF)* does not. This finding gives further confirmation that it was the institutional MMMF sector that was the main source of demand for ABCP during the sample period. While the regulatory capital ratio remains statistically insignificant when OLS is applied without fixed effects in columns 1 and 2 of table 5, it becomes significantly negative when OLS with fixed effects is used as shown in columns 3 and 4. This finding is in keeping with the regulatory arbitrage activity of banks as documented by Acharya et.al. (2013).

Table 5: ABCP average outstanding in the US market- Dynamic Analysis

Variable	(1) OLS coefficient	(2) OLS coefficient	(3) OLS-FE coefficient	(4) OLS-FE coefficient
ABCP(-1)	0.983***	0.981***	0.857***	0.850***
	(0.007)	(0.007)	(0.011)	(0.000)
FED_RATE	0.056***	0.055***	0.069***	0.077***
	(0.009)	(0.140)	(0.011)	(0.012)
LOG(MMMF)	-0.050		0.266	
	(0.207)		(0.253)	
LOG(INSTITUTIONAL)		0.298**		0.468***
		(0.140)		(0.177)
LOG(RETAIL)		-0.399***		-0.285
		(0.134)		(0.196)
RETURN_ON_ASSET	0.053*	0.040	0.078	0.013
	(0.028)	(0.029)	(0.070)	(0.072)
TIER1_CAP_RATIO	-0.005	-0.006	-0.051**	-0.053**
	(0.009)	(0.009)	(0.023)	(0.022)
LEVERAGE RATIO	0.001	0.000	0.003	0.001
	(0.001)	(0.001)	(0.004)	(0.004)
SHORT_AND_LONG_TERM_DEBT	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
N	3655	3655	3655	3655
Sample	2001q1-2007q2	2001q1-2007q2	2001q1-2007q2	2001q1-2007q2
Cross-sections	272	272	272	272
Fixed effect	No	No	Yes	Yes
R-squared	0.938	0.938	0.945	0.945

Notes: ***,**,* represent 1%, 5% and 10% significance levels respectively. The dependent variable is average ABCP outstanding in $billions. Robust Standard Errors in parenthesis.

As the estimates in Table 5 may be biased due to the fact that the lagged dependent variable $ABCP_{t-1}$ is correlated with the error term, we re-run our regressions using GMM estimation methods. This allows for the mitigation of the endogeneity among our key variables

and comprise as instruments lagged differences of the dependent variable and lagged levels of independent variables. Standard errors are corrected for heteroscedasticity (White, 1980). The results of our dynamic model using GMM are given in table 6. As shown, two types of GMM estimators have been used: the difference Arellano-Bond estimators in columns 1 and 2, and the system Blundell-Bond estimators in columns 3 and 4. Similar to the results in Table 5, the interest rate and MMMF asset holding coefficients are positive and statistically significant in both estimation methods. It is similarly noteworthy that the institutional MMMF coefficient is high and positive whilst the retail MMMF coefficient remains negative throughout the sample period as shown in columns 2 and 4 of the table. This again confirms that it was the institutional MMMF sector that was chiefly responsible for the positive relation between the average outstanding amounts of ABCP and MMMF asset holdings during the sample period. The return on asset coefficient is positive in all specifications thus highlighting a positive relation between ABCP issuance and profitability. The regulatory Tier 1 capital ratio is negative and strongly statistically significant, a finding which again confirms regulatory arbitrage activity on the part of the banks. Note also that the leverage ratio is now found to have a positive and statistically significant role in explaining ABCP issuance.

Table 6 : ABCP average outstanding in the US market- GMM analysis

Variable	(1) GMM-diff coefficient	(2) GMM-diff coefficient	(3) GMM-syst coefficient	(4) GMM-syst coefficient
ABCP(-1)	0.620***	0.579***	0.778***	0.811***
	(0.000)	(0.002)	(0.016)	(0.003)
FED_RATE	0.154***	0.188***	0.077***	0.110***
	(0.001)	(0.003)	(0.014)	(0.003)
LOG(MMMF)	0.656***		0.921***	
	(0.012)		(0.241)	
LOG(INSTITUTIONAL)		0.800***		0.463***
		(0.049)		(0.045)
LOG(RETAIL)		-0.172***		-0.199***
		(0.053)		(0.046)
RETURN_ON_ASSET	0.055***	0.009	0.470**	0.632***
	(0.009)	(0.017)	(0.192)	(0.031)
TIER1_CAP_RATIO	-0.201***	-0.158***	-0.237**	-0.408***
	(0.002)	(0.007)	(0.099)	(0.011)
LEVERAGE RATIO	0.022***	0.012***	0.066***	0.062***
	(0.000)	(0.001)	(0.012)	(0.002)
SHORT_AND_LONG_TERM_DEBT	0.000***	0.000***	0.000	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
N	3383	3383	3383	3383
Sample	2001q2-2007q2	2001q2-2007q2	2001q2-2007q2	2001q2-2007q2
Cross-sections	253	253	253	253
Sargan test, p-value	0.203	0.079	0.451	0.227
AR(2) test, p-value	0.535	0.533		

Notes: ***,**,* represents 1%, 5% and 10% significance levels respectively. The dependent variable is average ABCP outstanding in $billions. Robust Standard Error in parenthesis. Column (1) and (2) estimates are based on the Arellano and Bond (1991) two-step difference GMM estimator. Columns (3) and (4) are based on the Blundell and Bond (1999) system estimator. The Sargan statistic tests for overidentifying restrictions and AR(2) is the Arellano and Bond second-order autocorrelation test in first differenced errors.

In sum, our results provide strong empirical support for our first hypothesis that the general pattern of ABCP supply between 2001 and 2007 was jointly determined by the demand pull pressure from institutional MMMFs and by the regulatory arbitrage activity of the conduit sponsoring banks.

4.5. European conduits and conduit characteristics

As previously noted, the second sub-period of our sample period, 2005-2007, witnessed a steep increase in the ABCP issuance rate with European bank sponsored conduits being at the fore of this increase. To investigate these developments we modify the dynamic version of our model to include a dummy variable that separates out conduits that are sponsored by European banks. The dummy variable takes the value of one if the sponsoring bank is

headquartered in Europe and zero otherwise. There are 326 bank sponsored conduits in our sample (see appendix, Table 1A). Using the Bankscope database to identify the headquarter location of each sponsoring bank, the geographical breakdown of the conduits is as follows: 156 European, 134 US, 16 Canadian, 13 Japanese and 7 Australian.

$$ABCP_{i,t} = \beta_0 ABCP_{i,t-1} + \beta_1 W_t + \beta_2\, European_i + X_{i,t}\, \theta + \gamma_i + \varepsilon_{i,t} \quad (3)$$

We estimate model (3) by using the GMM first difference estimation method to take into account the location of the sponsoring bank both for the whole sample period 2001-07 and for the sub-period 2005-07. The results are given in table7. We note that while the coefficient for the institutional MMMF sector is positive for the whole sample period, that result is largely due to the exceptionally high positive coefficient registered in the sub-period of 2005-2007. We also note that while the coefficient associated with the European dummy variable is positive for the whole 2001-2007 period, that result is largely due to the very high positive coefficient registered in the sub-period 2005-2007. Indeed, a conduit sponsored by a European based bank issued nearly $ 40 billion more ABCP than did a non-European bank sponsored conduit in this sub-period. This finding supports our second hypothesis that the strength of institutional MMMF demand for ABCP after 2004 became so strong that it was the European banks that collectively took over the major burden of ABCP supply in this period.

Table 7: ABCP average outstanding in the US market, by location of issuing banks

Variable	(1) coefficient	(2) coefficient	(3) coefficient	(4) coefficient
ABCP(-1)	0.528***	0.622***	0.227**	0.281***
	(0.000)	(0.015)	(0.045)	(0.050)
FED_RATE	0.107***	0.124***	0.242***	0.215***
	(0.001)	(0.012)	(0.074)	(0.074)
LOG(MMMF)	0.676***		1.422**	
	(0.008)		(0.672)	
LOG(INSTITUTIONAL)		1.693***		4.574***
		(0.218)		(1.782)
LOG(RETAIL)		-0.213		-2.264
		(0.267)		(1.939)
RETURN_ON_ASSET	0.494***	0.363***	2.191***	2.562***
	(0.005)	(0.087)	(0.740)	(0.720)
TIER1_CAP_RATIO	-0.211***	0.143***	-0.933***	-0.943***
	(0.002)	(0.034)	(0.310)	(0.322)
LEVERAGE RATIO	0.002***	0.038***	0.067**	0.097***
	(0.000)	(0.006)	(0.033)	(0.036)
SHORT_AND_LONG_TERM_DEBT	0.000***	0.000***	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
EUROPEAN	0.399***	0.329***	0.410***	0.446***
	(0.001)	(0.026)	(0.142)	(0.097)
N	3383	3383	1111	1111
Sample	2001q2-2007q2	2001q2-2007q2	2005q2-2007q2	2005q2-2007q2
Cross-sections	253	253	157	157
Sargan test, p-value	0.176	0.636	0.273	0.514
AR(2) test, p-value	0.172	0.299	0.732	0.676

Notes: ***,**,* represents 1%, 5% and 10% significance levels respectively. The dependent variable is average ABCP outstanding in $billions. Robust Standard Error in parenthesis. All estimators are based on the Arellano and Bond (1991) two-step difference GMM estimator. The Sargan statistic tests for overidentifying restrictions and AR(2) is the Arellano and Bond second-order autocorrelation test in first differenced errors.

As a last step, we further modify our baseline model to take into account changes in the conduit program breakdown over the period 2001 to 2007. Drawing on information again obtained from Moody's Investor Service, we broadly divide ABCP programs into those backed chiefly by loans (multi-seller, single seller and loan-backed) and those chiefly backed by securities (securities arbitrage, hybrid, SIV, Repos/TRS, and CDO). In model 4 the dummy variable for loan-backed programs takes the value of one while the dummy variable for the securities backed programs, which are the omitted group, takes the value of zero. To check for any substantive change in the overall conduit programme breakdown that occurred between 2001 and 2007, we again run estimates for both the whole sample period and for the sub-period 2005 to 2007. Finally, to check for the lead role played by the European conduits in boosting the rate of ABCP supply in the 2005-2007 sub-period, we run two GMM estimates of model 4, one which only takes ABCP issued by European conduits into account and the other which takes into account ABCP issued by all conduits.

$$ABCP_{i,t} = \beta_0 ABCP_{i,t-1} + \beta_1 W_t + + X_{i,t}\theta + \gamma_i + \varepsilon_{i,t} \quad (4)$$

Table 8 presents the results for the European conduit only version of model 4. As shown, the MMMF coefficient is not statistically significant for the 2001q2-2007q2 sample period but then becomes strongly significant for the 2005-07 sub-period. By contrast, institutional MMMFs are significantly related to ABCP issuance over both the whole sample period and the second sub-period. The most significant fact as concerns program type is that while the coefficient associated with the *LOAN-BACKED* dummy variable is positive for the whole period 2001q2-2007q2 it switches sign and becomes negative for the sub-period 2005q2-2007q2. In other words, while the loan-backed conduits sponsored by European banks issued on average more ABCP in the US market during the whole period 2001q2-2007q2 than did the securities-backed conduits, the latter took the lead in the sub-period 2005q2-2007q2. As shown in column 3, loan-backed conduits issued on average $1.6 billion less ABCP over this sub-period than did the securities-backed conduits.

Table 8: European bank sponsored conduits ABCP average outstanding in US market by program type

Variable	(1) coefficient	(2) coefficient	(3) coefficient	(4) coefficient
ABCP(-1)	0.266***	0.214***	0.232***	0.269***
	(0.001)	(0.001)	(0.045)	(0.040)
FED_RATE	0.129***	0.527***	0.269***	0.244***
	(0.005)	(0.011)	(0.060)	(0.069)
LOG(MMMF)	3.285		3.283***	
	(0.057)		(0.550)	
LOG(INSTITUTIONAL)		6.802***		4.970***
		(0.124)		(1.516)
LOG(RETAIL)		-3.202		-1.818
		(0.100)		(1.868)
LOAN-BACKED CONDUITS	1.881***	1.802***	-1.615**	-1.838*
	(0.099)	(0.099)	(0.829)	(0.957)
RETURN_ON_ASSET	2.938***	2.053***	0.274***	0.195
	(0.046)	(0.068)	(1.474)	(1.415)
TIER1_CAP_RATIO	-0.061***	-0.187***	0.987	0.897
	(0.010)	(0.015)	(0.645)	(0.586)
LEVERAGE RATIO	-0.001	0.051***	-0.144**	-0.126*
	(0.002)	(0.002)	(0.073)	(0.070)
SHORT_AND_LONG_TERM_DEBT	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
N	1648	1648	624	624
Sample	2001q2-2007q2	2001q2-2007q2	2005q2-2007q2	2005q2-2007q2
Cross-sections	119	119	84	84
Sargan test, p-value	0.208	0.456	0.418	0.296
AR(2) test, p-value	0.637	0.676	0.476	0.463

Notes: ***,**,* represents 1%, 5% and 10% significance levels respectively. The dependent variable is average ABCP outstanding in $billions issued by European bank sponsored conduits. Robust Standard Error in parenthesis. All estimators are based on the Arellano and Bond (1991) two-step difference GMM estimator. The Sargan statistic tests for overidentifying restrictions and AR(2) is the Arellano and Bond second-order autocorrelation test in first differenced errors.

Table 9 presents the results of model 4 where all conduits active in the US ABCP market over the sample period are included. Whilst all the variables have the expected sign, as above, the coefficient of loan-backed conduits is positive for the 2001q2-2007q2 period and negative for the 2005q2-2007q2 sub-period. However, the coefficient for the sub-period 2005q2-2007q2 is not statistically significant indicating that conduit characteristics did not seem to play a role in explaining the increase in ABCP outstanding amount during this sub-period. This is in stark contrast to the results for the European banks in which it was the securities-backed conduits that dominated in this sub-period.

Table 9: ABCP average outstanding in the US market, by program type

Variable	(1) coefficient	(2) coefficient	(3) coefficient	(4) coefficient
ABCP(-1)	0.626***	0.750***	0.188**	0.126**
	(0.000)	(0.010)	(0.078)	(0.064)
FED_RATE	0.149***	0.117***	0.223***	0.229***
	(0.001)	(0.115)	(0.039)	(0.083)
LOG(MMMF)	0.781***		3.293***	
	(0.005)		(0.849)	
LOG(INSTITUTIONAL)		0.966***		3.393*
		(0.129)		(1.825)
LOG(RETAIL)		-0.024		0.113
		(0.084)		(2.294)
LOAN-BACKED CONDUITS	5.394***	5.078***	-1.303	-0.530
	(0.013)	(0.654)	(1.388)	(2.344)
RETURN_ON_ASSET	0.062***	-0.024	2.223***	2.239***
	(0.003)	(0.084)	(0.666)	(0.754)
TIER1_CAP_RATIO	-0.204***	0.123***	-0.954***	-0.870**
	(0.001)	(0.037)	(0.336)	(0.342)
LEVERAGE RATIO	0.022***	0.018***	0.048	0.043
	(0.000)	(0.005)	(0.040)	(0.035)
SHORT_AND_LONG_TERM_DEBT	0.000***	0.000***	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
N	3383	3383	1111	1111
Sample	2001q2-2007q2	2001q2-2007q2	2005q2-2007q2	2005q2-2007q2
Cross-sections	253	253	157	157
Sargan test, p-value	0.258	0.441	0.809	0.459
AR(2) test, p-value	0.492	0.522	0.51	0.52

Notes: ***,**,* represents 1%, 5% and 10% significance levels respectively. The dependent variable is average ABCP outstanding in $billions. Robust Standard Error in parenthesis. All estimators are based on the Arellano and Bond (1991) two-step difference GMM estimator. The Sargan statistic tests for overidentifying restrictions and AR(2) is the Arellano and Bond second-order autocorrelation test in first differenced errors.

The results presented in tables 8 and 9 give strong empirical support to our third hypothesis that when institutional MMMF demand for ABCP became exceptionally high, as happened between 2005 and 2007, the share of securities-backed conduit programs had to be significantly increased to help absorb that pressure.

5. Summary and conclusion

In light of the severity of the financial crisis of 2007-8 and the extensive damage subsequently done to the global economy, it is imperative that we have a full understanding of the root causes of the crisis. As argued at the outset, Minsky's financial instability hypothesis provides a useful overarching explanatory framework for achieving that understanding. The purpose of the present contribution to that framework has been to pay particular attention to the role played by the shadow bank ABCP conduits between 2001 and 2007, a period that saw a steady and then, from 2005, a very rapid growth in US ABCP volume. Several authors have focussed on the supply-side drivers behind this volume growth and provided evidence showing the important role played by regulatory arbitrage. Other authors have focussed on the demand-side drivers behind the ABCP volume growth and provided evidence showing the important role played by the investor demand for money-like securities. To our knowledge, our paper contains the first attempt at an integrated analysis of the supply-side and demand-side factors that drove ABCP growth in the pre-crisis period. We provide new evidence that confirms the first of our hypotheses that both sets of growth drivers played an equally important role. Proceeding from the observation that institutional investor demand for ABCP was highly interest elastic, we advanced a second hypothesis that the steep increase in ABCP demand that correlated with the steep rise in the federal funds rate between 2005 and 2007 gave European banks both the opportunity and the motive to expand their rates of ABCP supply to the point where they could collectively take over the major burden of that supply previously carried by the US banks. Our evidence gives strong support to this second hypothesis. Finally our evidence also gives strong support to the third hypothesis advanced in this paper, which was that the rapid acceleration in the pace of ABCP demand from 2005 led the European banks to begin to rely more heavily on securities-backed programs than was previously the case, the reason being that these were quicker to construct as compared with credit loan-backed programs. The significance of these results is that it was because the European banking sector had taken the lead in US ABCP issuance between 2005 and 2007 and, in so doing, had relied

heavily on purchases of ABSs and CDOs to use as collateral backing for these instruments, that it suffered such huge damage when the subprime crisis broke out in the summer of 2007. In light of this fact, it is important that there be further research into the European involvement in the US ABCP market in the run up to the crisis. While we believe that the present paper represents a useful start in that research, we also acknowledge the possible limitations imposed by its highly aggregative approach. Thus, future research should be based on a more disaggregated analysis that looks more closely at the separate contributions made by the banking sectors of the different European countries to ABCP growth in the pre-crisis period.

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Appendix

Figure 1A: US Commercial paper Issuance: 2004-2009
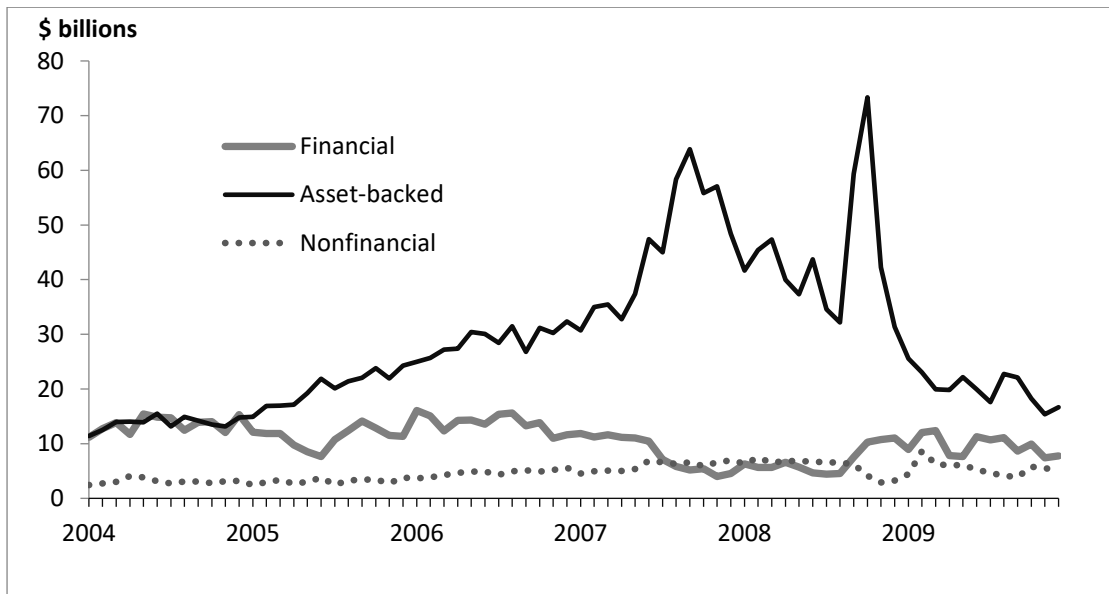
$ billions

Source: Federal Reserve Bank of Louis (FRED)

Figure 2A: US ABCP supply by region
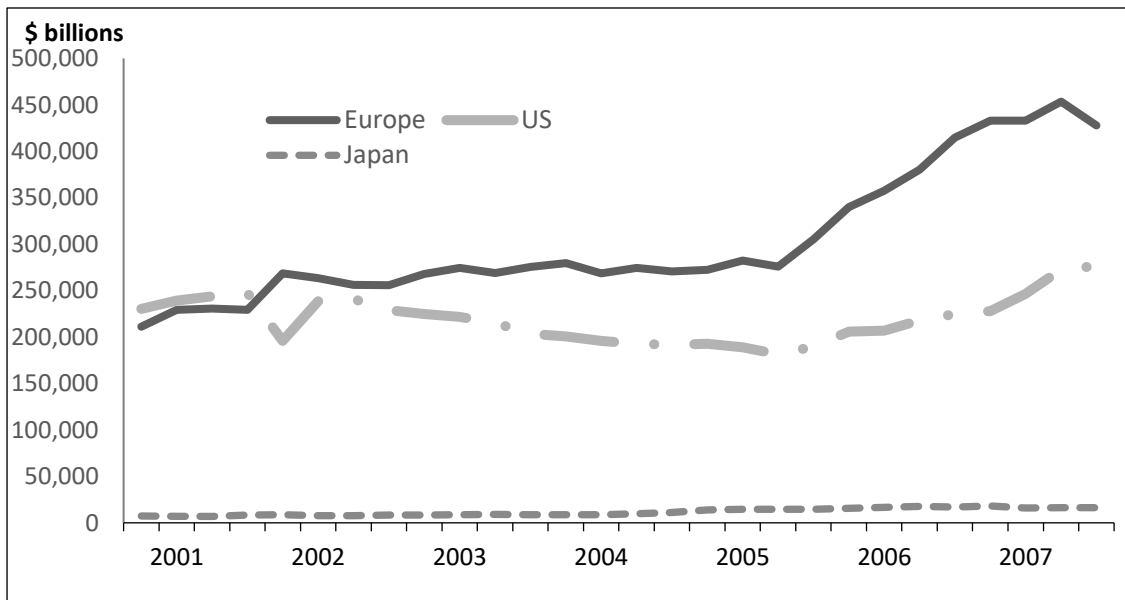
$ billions

Source: Moody's Investors Services, Authors' own calculations

Figure 3A: MMMF Assets in billion USD (right scale); Percentage Share of Retail and Institutional MMMF assets (left scale)
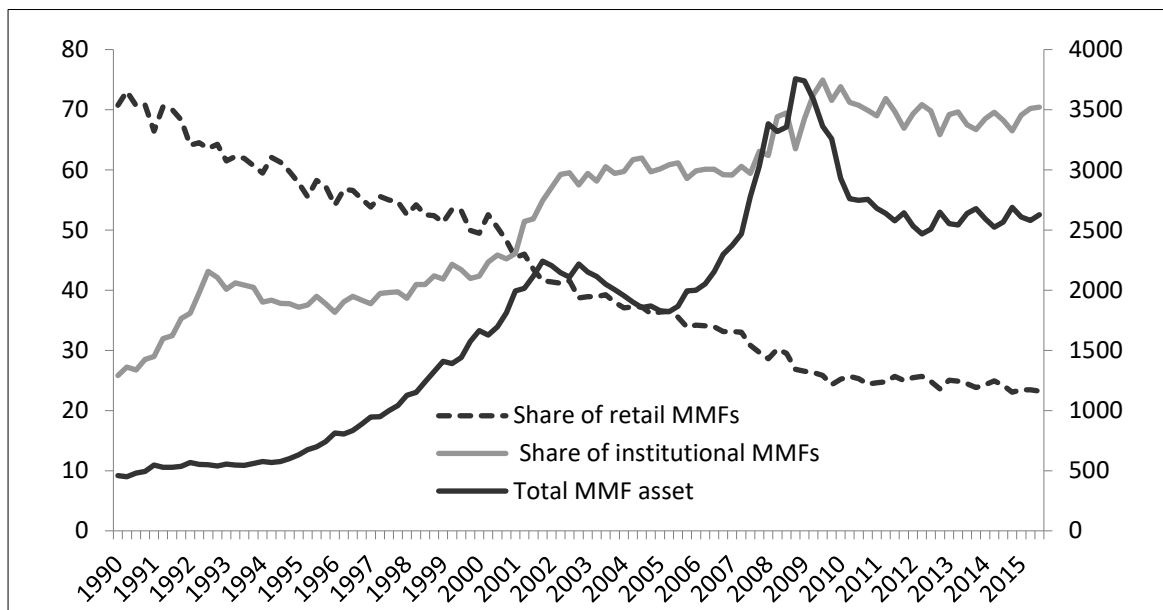
Source: Federal Reserve Bank of Louis (FRED)

Figure 4A: MMMF Assets in billion USD (right scale) and the Federal Funds Rate (left scale): 1975-2013

Source: Federal Reserve Bank of Louis (FRED)

Table 1A: Conduits contained in the sample

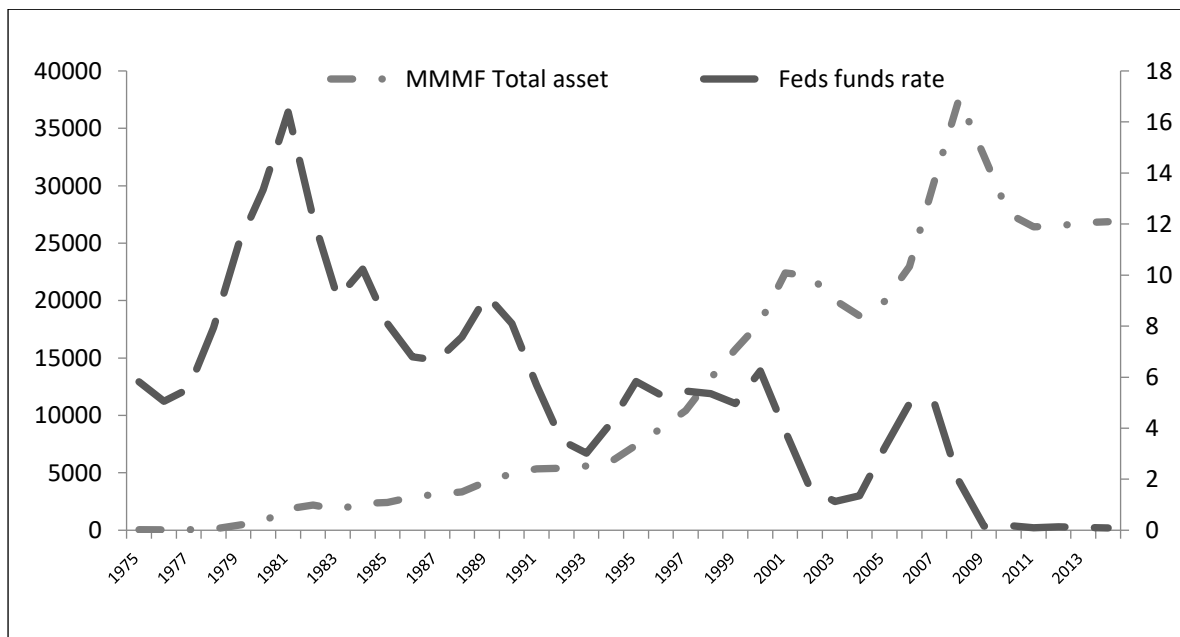| Conduit name	Sponsor bank	Location
Aeltus CBO V, Limited	Aeltus Investment Management, Inc. / Chase Manhattan Bank	US
Albis Capital Corporation (formerly Glencore Asset Funding Corporation)	Glencore International AG / Chase Manhattan Bank	US
Amoco Managers Acceptance Corporation	Amoco Oil Corporation / Chase Manhattan Bank	US
Anglesea Funding LLC / Anglesea Funding PLC	Bank of New York	US
APRECO Incorporated	Citibank, N.A.	US
Aquifer Funding, LLC / Aquifer Funding Limited	Bank of America N.A.	US
Asset Portfolio Funding Corporation	JPMorgan Chase Bank	US
BA Emerald Notes Program	Bank of America, N.A.	US
Beta Finance Incorporated	Citibank International PLC	US
Bishop's Gate Residential Mortgage Trust	Cendant Mortgage Corporation / Bank One, N.A.	US
Blue Ridge Asset Funding Corporation	Wachovia Bank, N.A.	US
Broadhollow Funding, LLC	American Home Mortgage Investment Corp.	US
Bunge Asset Funding Corporation	Bunge International Ltd. / Chase Manhattan Bank	US
CAFCO, LLC	Citibank, N.A.	US
Capital One Multi-Asset Execution Trust	Capital One Bank	US
Catapult-PMX Funding, LLC	Paramax Capital Markets, LLC / LaSalle Bank National Association	US
CC (USA) Incorporated	Citibank International PLC	US
Centauri Corporation / CC (USA) Incorporated	Citibank International PLC	US
Centre Square Funding Corporation	First Union National Bank	US
Centric Capital Corporation	Wachovia Bank, N.A.	US
Chariot Funding LLC	JPMorgan Chase Bank	US
Charta Corporation	Citibank, N.A.	US
CharterMAC Certificate Trust I	First Tennessee Bank, N.A.	US
Ciesco, L.P.	Citibank, N.A.	US
Clipper Receivables Corporation	State Street Bank and Trust Company	US
Cobblestone Funding L.L.C.	Citigroup Global Markets	US
Conduit Asset Backed Securities Company Limited	Artesia Banking Corporation / Chase Manhattan Bank	US
Corporate Asset Funding Company, Incorporated	Citibank, N.A.	US
Corporate Receivables Corporation	Citibank, N.A.	US
CPI Funding Corporation	Lord Securities Corporation/ JPMorgan Chase Bank	US
CRC Funding, LLC	Citibank, N.A.	US
CXC Incorporated	Citibank, N.A.	US
DAKOTA Certificate Program	Citibank (South Dakota), N.A.	US
Declaration Funding I, Limited	Independence Fixed Income Associates, Inc. / Chase Manhattan Bank	US
Deer Valley Funding Ltd. / Deer Valley Funding LLC	Merrill Lynch Bank USA	US
Delaware Funding Company, LLC	JPMorgan Chase Bank	US
DNA Finance Corporation	Genentech Inc. / Chase Manhattan Bank	US
Dorada Finance Incorporated	Citibank International PLC	US
Eagle I CBO Limited	Federated Investment Counseling / Bank of New York	US
Emerald Certificates Program	MBNA America Bank, N.A.	US
Eminent Funding I, Limited	TCW Group / Chase Manhattan Bank	US
Enterprise Funding Corporation	Bank of America, N.A.	US
Eureka Securitization Plc/Incorporated	Citibank, N.A.	US
Fairway Finance Company LLC	BMO Nesbitt Burns	US
Falcon Asset Securitization Corporation	Bank One, N.A.	US
FCCII, Incorporated	First National Bank of Omaha	US
First Credit Corporation	First National Bank of Omaha	US
First Express Funding Corporation	First Tennessee Bank, N.A.	US
Five Finance Incorporated	Citibank International PLC	US
Forrestal Certificate Funding Trust	Bank of America, N.A.	US
Fountain Square Commercial Funding Corporation	Fifth Third Bank	US
Frigate Funding Corporation	State Street Bank and Trust Company	US
Galaxy Funding, Incorporated	Firstar Bank, N.A.	US
Galleon Capital Corporation	State Street Bank and Trust Company	US
Golden Funding Corporation	System Capital Corporation / Chase Manhattan Bank	US
Govco Incorporated	Citibank, N.A.	US
Grenadier Funding, Limited	ACA Management, L.L.C. / JPMorgan Chase Bank	US
Hatteras Funding Corporation	Bank of America, N.A.	US
Hudson Street Funding Corporation	Goldman, Sachs & Co.	US
Independence Funding LLC	Bank of America, N.A.	US
IndyMac Bank, F.S.B. - North Lake Capital Funding	IndyMac Bank, F.S.B.	US
Ivory Funding Corporation	Bank One, N.A.	US
Jupiter Securitization Corp.	JPMorgan Chase Bank	US
Keel Capital Inc. / Spinnaker Capital Pty Limited	State Street Global Markets LLC	US
Kitty Hawk Funding Corporation	Bank of America, N.A.	US
KKR Pacific Funding Trust	KKR Financial Advisors III / Deutsche Bank Trust Company Americas	US
KKR Atlantic Funding Trust	KKR Financial Advisors III / Deutsche Bank Trust Company Americas	US
KZH-KMS	Chase Manhattan Bank	US
Lake Front Funding Company LLC	Bank One, N.A.	US

Table 1A (continued)

Conduit name	Sponsor bank	Location
Liquid Funding	Bear Sterns Bank PLC	US
Lockhart Funding LLC	Zions First National Bank	US
Luminent Star Funding Statutory Trust I	Luminent Mortgage Capital Inc. / LaSalle Bank N.A.	US
Madison Funding Corporation	Bank One, N.A.	US
Market Street Funding Corporation	PNC Bank, N.A.	US
MOAT Funding LLC	Chase Manhattan Bank	US
MPF Limited	Alliance Capital Management L.P. / State Street Bank and Trust Company	US
MPF Two Limited	Alliance Capital Management L.P. / State Street Bank and Trust Company	US
Newbury Funding CBO I Limited	Colonial Advisory Services, Inc. / Bank of New York	US
Newcastle Certificates Program	Morgan Stanley Dean Witter, Discover & Co.	US
North Coast Funding LLC	National City Bank	US
Ocala Funding LLC	Taylor, Bean & Whitaker Mortgage Corporation / Lasalle Bank N.A.	US
Old Slip Funding Corporation	Bank of New York	US
Panterra Funding, LLC	Citibank, N.A.	US
Park Avenue Receivables Corporation	JPMorgan Chase Bank	US
Perry Funding Corporation, Series CAB & NJED	Bank of America, N.A.	US
Perry Global Funding Limited, Series A	Bank of America, N.A.	US
Perry Global Funding Limited, Series A & B	Bank of America, N.A.	US
Perry II Funding Corporation, Series Jersey, Hydro-Quebec (HQ), Quebec,	Bank of America, N.A.	US
Perry III Funding Corporation, Series Philadelphia & ROSE	Bank of America, N.A.	US
Pooled Accounts Receivables Capital Corporation	BMO Nesbitt Burns	US
Preferred Receivables Funding Corporation	Bank One, N.A.	US
Providian Master Trust Series 1993-3	Providian National Bank	US
Quincy Capital Corporation	Bank of America, N.A.	US
Ranger Funding Company LLC	Bank of America, N.A.	US
Receivables Capital Company LLC	Bank of America, N.A.	US
Receivables Capital Corporation	Bank of America, N.A.	US
Revolving Commitment Vehicle Corporation	Morgan Guaranty Trust	US
Sedna Finance Incorporated	Citibank, N.A.	US
Steamboat Funding Corporation	Bank of New York	US
Stellar Funding Corporation	Firstar Bank, N.A.	US
Sunbelt Funding Corporation	Compass Bank	US
Sweetwater Capital Corporation	Mellon Bank	US
Three Rivers Funding Corporation	Mellon Bank	US
Ticonderoga Funding, LLC / Ticonderoga Master Funding Ltd.	Bank of America, N.A.	US
Trainer Wortham First Republic CBO I, Limited	Trainer, Wortham & Company, Inc. / Chase Manhattan Bank	US
Ullswater Corporation	JPMorgan Chase Bank	US
Ultimate Finance Corporation (formerly Amoco Managers Acceptance Corp	Amoco Oil Corporation / JPMorgan Chase Bank	US
Variable Funding Capital Corporation	Wachovia Bank, N.A.	US
Venus Funding Corporation	Century Capital Markets LLC / U.S. Bank National Association	US
Vetra Finance Inc	Citibank, N.A.	US
Waterfront Funding Corporation	M&I Marshall & Ilsley Bank	US
WCP Funding Incorporated	Citibank, N.A.	US
Westways Funding I, Limited	TCW Group / Chase Manhattan Bank	US
Westways Funding II, Limited	TCW Group / Chase Manhattan Bank	US
Westways Funding III, Limited	TCW Group / Chase Manhattan Bank	US
Westways Funding IV, Limited	TCW Group / Chase Manhattan Bank	US
Westways Funding V, Limited	TCW Group / Chase Manhattan Bank	US
White Pine Corporation Limited / White Pine Finance LLC	Bank One, N.A.	US
Yorktown Capital, LLC	Bank of America, N.A.	US
Zane Funding, LLC	Merrill Lynch Bank USA	US
Zela Finance Corporation / Zela Finance Inc	Citibank International plc	US
Beta Finance Corporation	Citibank International PLC	US
Capital USA Funding II, L.P.	Capital USA, LLC	US
Centauri Corporation	Citibank International PLC	US
Citibank Capital Markets Assets II LLC	Citibank, N.A.	US
Citibank Capital Markets Assets LLC	Citibank, N.A.	US
Dorada Corporation	Citibank International PLC	US
Five Finance Corporation	Citibank International PLC	US
Immunex Funding Corporation	Immunex Corporation / Chase Manhattan Bank	US
Oasis Asset Management Limited	Citibank International PLC	US
Perry Global Funding Limited, Series A & B	Bank of America, N.A.	US
Sandlot Funding LLC	U.S. Central Federal Credit Union	US
Wood Street Funding Corporation	PNC Bank, N.A.	US
Indomitable Funding Ltd.	Bank of America, N.A.	US
Advantage Asset Securitization Corporation	Fuji Bank, Limited	Japan
Albion Capital Corporation S.A.	Bank of Tokyo-Mitsubishi, Ltd.	Japan
Broadway Capital Corporation	Bank of Tokyo-Mitsubishi, Ltd.	Japan
Dynamic Funding Corporation	Fuji Bank, Limited	Japan

Table 1A (continued)

Conduit name	Sponsor bank	Location
Golden Fish Limited / Golden Fish LLC	Norinchukin Bank	Japan
Gotham Funding Corporation	Bank of Tokyo-Mitsubishi, Ltd.	Japan
Manhattan Asset Funding Company LLC	Sumitomo Mitsui Banking Corporation / Bankers Trust Company	Japan
Parthenon Receivables Funding LLC	Swiss Re Financial Products & Bank of Tokyo-Mitsubishi, Ltd.	Japan
Victory Receivables Corporation	Bank of Tokyo-Mitsubishi UFJ	Japan
Working Capital Management Co., L.P.	Industrial Bank of Japan	Japan
Golden Fish LLC	Norinchukin Bank	Japan
Strategic Asset Funding Corporation (SAFCO), Tranche B	Sanwa Bank / Toyo Trust Company of New York	Japan
Working Capital Management Co. II	Industrial Bank of Japan	Japan
A.M. Funding Corporation	Credit Suisse First Boston	Europe
ABEL Funding Pty. Limited / Tasman Funding Incorporated	ABN AMRO Australia Limited	Europe
Abington Square Funding, LLC	HSBC Bank PLC	Europe
ACE Overseas Corporation	Societe Generale Australia Limited	Europe
Cobbler Funding Limited / Cobbler Funding LLC	WestLB AG	Europe
Ajax Bambino Funding Limited / Ajax Bambino Funding Inc.	ING Bank N.V.	Europe
Alpine Securitization Corporation	Credit Suisse First Boston	Europe
Altamira Funding LLC	Banco Santander Central Hispano, S.A.	Europe
Amstel Funding Corporation	ABN AMRO Bank N.V.	Europe
Amsterdam Funding Corporation	ABN AMRO Bank N.V.	Europe
Antalis S.A.	Societe Generale	Europe
Aquinas Funding LLC	Rabobank Nederland	Europe
AriesOne Metafolio Corporation	Hudson Castle Group Inc. / Deutsche Bank Trust Company Americas	Europe
Arth Capital Corporation	Glencore AG / Deutsche Bank Trust Company Americas	Europe
Aspen Funding Corporation	Deutsche Bank AG	Europe
Asscher Finance Limited	HSBC Bank plc	Europe
Atlantic Asset Securitization Corporation	Credit Lyonnais	Europe
Atlantis One Funding Corporation	Rabobank Nederland	Europe
Atlantis Two Funding Corporation	Rabobank Nederland	Europe
Atomium Funding Corporation / Atomium Funding LLC	KBC Bank N.V. / JPMorgan Chase Bank	Europe
Austra Corporation	Société Générale Australia Limited	Europe
Autobahn Funding Company LLC	DG Deutsche Genossenschaftsbank AG	Europe
Barton Capital Corporation	Societe Generale	Europe
Bavaria Finance Funding I LLC	Bayerische Hypo-und Vereinsbank AG	Europe
Bavaria GLB Corporation	Bayerische Hypo-und Vereinsbank AG	Europe
Bavaria TRR Corporation	Bayerische Hypo-und Vereinsbank AG	Europe
Bavaria Universal Funding Corporation	Bayerische Hypo-und Vereinsbank AG	Europe
Beacon Funding Limited / Beacon Funding LLC	HSH Nordsbank AG	Europe
Beethoven Funding Corporation	Dresdner Bank AG	Europe
Berkeley Square Finance LLC / Berkeley Square Finance Ltd.	Deutsche Bank Trust Company Americas	Europe
BEST Funding Limited	Bankgesellschaft Berlin AG	Europe
Black Forest Funding Corporation	Bayerische Hypo-und Vereinsbank AG	Europe
BLUE SPICE, LLC	Deutsche Bank AG	Europe
Blue Topaz LLC	Deutsche Bank AG	Europe
Brahms Funding Corporation	Dresdner Bank AG	Europe
Bryant Park Funding LLC	HSBC Bank PLC	Europe
Cable Beach L.P.	Deutsche Bank AG	Europe
Cancara Asset Securitisation Limited / Cancara Asset Securitisation LLC	Lloyds TSB Bank PLC	Europe
Cantabric Financing PLC / Cantabric Financing LLC	Banco Santander S.A.	Europe
Carrera Capital Finance LLC / Carrera Capital Finance Ltd.	HSH Nordbank AG / JP Morgan Chase Bank NA	Europe
Certain Funding Corporation	Societe Generale	Europe
Check Point Charlie Incorporated	Bankgesellschaft Berlin AG	Europe
Classic LLC	Calyon	Europe
Cobbler Funding Limited / Cobbler Funding LLC	Nationwide Building Society	Europe
Compass Securitization LLC	Westdeutsche Landesbank Girozentrale	Europe
Coral Capital Limited / Coral Capital, LLC	DZ Bank AG	Europe
Cullinan Finance Limited / Cullinan Finance Corporation	HSBC Bank Plc	Europe
Eaton Vance Variable Leverage Fund Ltd.	Deutsche Bank AG	Europe
Ebbets Funding LLC / Ebbets Funding Plc	Deutsche Bank Trust Company Americas	Europe
Erasmus Capital Corporation	Rabobank Nederland	Europe
Fenway Funding, LLC	IBEX Capital Markets, LLC / Deutsche Bank Trust Company Americas	Europe
Four Winds Funding Corporation	Commerzbank AG	Europe
Fox Trot CDO Ltd.	Rabobank Nederland	Europe
Gemini Securitization Corp LLC	Deutsche Bank AG	Europe
George Street Finance Pty Ltd.	Royal Bank of Scotland	Europe
Giro Balanced Funding Corporation	Bayerische Landesbank Girozentrale	Europe
Giro Funding U.S. Corporation	Bayerische Landesbank	Europe
Giro Lion Funding Limited	Bayerische Landesbank	Europe
Giro Multi-Funding Corporation	Bayerische Landesbank Girozentrale	Europe
Gramercy Capital Corporation	Credit Suisse First Boston	Europe

Table 1A (continued)

Conduit name	Sponsor bank	Location
Grampian Funding Limited / Grampian Funding LLC	HBOS Treasury Services plc	Europe
Grand Funding Corporation	ABN AMRO Bank N.V.	Europe
Grand II Funding Corporation	ABN AMRO Bank N.V.	Europe
Greenwich Funding Corporation	Credit Suisse First Boston	Europe
Greyhawk Funding LLC	Westdeutsche Landesbank Girozentrale	Europe
Hannover Funding Company LLC	Norddeutsche Landesbank Girozentrale	Europe
Harrier Finance Limited / Harrier Finance (US) Limited	WestLB AG	Europe
High Peak Funding LLC	Erste Bank / Chase Manhattan Bank	Europe
Hudson-American Realty Protection LLC	Bayerische Hypo-und Vereinsbank AG	Europe
Jade Capital Corporation	Bayerische Hypo-und Vereinsbank & Industrial Bank of Japan / Mizuho Trus	Europe
K2 (USA) LLC	Dresdner Bank AG	Europe
Kaiserplatz Funding	Commerzbank AG / Barclays Bank PLC	Europe
KBC Commercial Paper Trust	KBC Bank N.V.	Europe
Kestrel Funding Plc / Kestrel Funding US LLC	WestLB AG	Europe
La Fayette Asset Securitization LLC	Credit Lyonnais (New York Branch)	Europe
Lake Constance Funding Limited / Lake Constance Funding LLC	Landesbank Baden-Wuerttemburg	Europe
Lakeside Funding LLC	Deutsche Bank Trust Company Americas	Europe
Landale Funding Limited / Landale Funding LLC	HBOS Treasury Services plc	Europe
LMA S.A. (Liquidités de Marché)	Calyon	Europe
Loch Ness Limited / Ness LLC	Royal Bank of Scotland PLC	Europe
Lone Star Funding LLC	Associates First Capital Corporation / Bankers Trust Company	Europe
Lyon Short Term Funding Corporation	Credit Lyonnais	Europe
Mane Funding Corp.	ING Bank N.V.	Europe
Maximilian Capital Corporation	Bayerische Hypo-und Vereinsbank AG	Europe
Mermaid Funding Corporation	Rabobank Nederland	Europe
Monte Rosa Capital Corporation	ING Bank N.V.	Europe
Mica Funding, LLC	Stanfield Global Strategies, LLC (formerly Ceres Capital, LLC) / Deutsche B	Europe
Mont Blanc Capital Corporation	ING Bank N.V.	Europe
Montauk Funding Corporation	Westdeutsche Landesbank Girozentrale	Europe
Monument Gardens Funding LLC	Rabobank International	Europe
Moriarty Limited	Abbey National Treasury Services PLC	Europe
Ness LLC	Royal Bank of Scotland	Europe
Newport Funding Corporation	Deutsche Bank AG	Europe
Nieuw Amsterdam Receivables Corporation	Rabobank Nederland	Europe
Nightwatch Funding LLC	ABN AMRO Bank N.V.	Europe
North Sea Funding LLC	ABN AMRO Bank N.V.	Europe
Orchid Funding Corporation	ABN AMRO Bank N.V.	Europe
Granite Funding LLC	Ceres Capital LLC / Bankers Trust Company	Europe
FIDEX PLC	BNP Paribas	Europe
Eiger Capital Corporation	ING Bank N.V.	Europe
Paradigm Funding LLC	Westdeutsche Landesbank Girozentrale	Europe
Peacock Funding Corporation	Credit Suisse First Boston	Europe
Pennine Funding LLC	Halifax PLC	Europe
Picaros Funding plc / Picaros Funding LLC	KBC Bank N.V. / KBC Financial Products UK Limited	Europe
Polonius Incorporated	Danske Bank	Europe
Premier Asset Collateralized Entity Limited / Premier Asset Collateralized En	Société Générale	Europe
Premier Cru Funding Corporation	ABN AMRO Bank N.V.	Europe
Public Square Funding LLC, Series I	Key Bank, N.A. / Bankers Trust Company	Europe
Public Square Funding LLC, Series II	Key Bank, N.A. / Bankers Trust Company	Europe
Regency Markets No. 1 LLC	HSBC Investment Bank PLC	Europe
Repeat Offering Securitisation Entity Funding Incorporated (ROSE)	National Westminster Bank PLC	Europe
Rhein-Main Securitisation Limited	Deutsche Bank AG	Europe
Rheingold Securitisation Limited	Deutsche Bank AG	Europe
Rhineland Funding Capital Corporation	IKB Deutsche Industriebank AG / Canadian Imperial Bank of Commerce	Europe
Romulus Funding Corporation	IntesaBci S.p.A. / JPMorgan Chase Bank	Europe
Rosy Blue International S.A.	KBC Bank N.V. / Chase Manhattan Bank (London Branch)	Europe
Saratoga Funding Corp. LLC	Deutsche Bank AG	Europe
Scaldis Capital LLC	Fortis Bank S.A./N.V.	Europe
Sceptre International Incorporated	Barclays Bank PLC	Europe
Sedona Capital Funding Corp LLC	Deutsche Bank AG	Europe
Sheffield Receivables Corporation	Barclays Bank PLC	Europe
Silver Tower Funding Limited / Silver Tower US Funding LLC	Dresdner Bank AG	Europe
Silver Tower US Funding LLC	Dresdner Bank AG	Europe
Simba Funding Corp/Simba Funding Corp. (US)	ING Bank N.V.	Europe
Solitaire Funding Limited	HSBC Bank PLC	Europe
Stanfield Victoria Finance Limited / Stanfield Victoria Funding, LLC	Stanfield Global Strategies, LLC / Deutsche Bank Trust Company Americas	Europe
Starbird Funding Corporation (formerly Global Receivables Corporation)	BNP Paribas	Europe
Stratford Receivables Company Llc	Barclays Bank PLC	Europe
Sunflowers Funding Corporation LLC	ABN AMRO Bank N.V.	Europe

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Table 1A (continued)

Conduit name	Sponsor bank	Location
Surrey Funding Corporation	Barclays Bank PLC	Europe
Tahoe Funding Corp., LLC	Deutsche Bank AG	Europe
Tango Finance Limited / Tango Finance Corporation	Rabobank Nederland	Europe
Tasman Funding Incorporated	ABN AMRO Bank N.V.	Europe
Tempo Finance Limited / Tempo Finance Corporation	Rabobank International	Europe
Thames Asset Global Securitization No. 1, Incorporated	National Westminster Bank PLC	Europe
Three Crowns Funding LLC	Skandinaviska Enskilda Banken AB	Europe
Times Square Funding, LLC	Eurohypo AG, New York Branch	Europe
Trident Capital Finance Incorporated	Societe Generale	Europe
Tulip Funding Corporation	ABN AMRO Bank N.V.	Europe
Whistlejacket Capital Ltd. / Whistlejacket Capital LLC	Standard Chartered Bank	Europe
Windmill Funding Corporation	ABN AMRO Bank N.V.	Europe
Bills Securitisation Limited	Deutsche Bank AG	Europe
Certain Funding Limited	Societe Generale	Europe
Citation Capital Incorporated	Deutsche Bank AG / Bankers Trust Company	Europe
Compass Securitisation Limited	Westdeutsche Landesbank Girozentrale	Europe
Eliopée Limited	BNP Paribas	Europe
K2 Corporation	Dresdner Bank AG	Europe
Nantucket Funding Corp., LLC	Deutsche Bank AG	Europe
Ormond Quay Funding PLC	Sachsen LB Europe plc	Europe
Scaldis Capital Limited	Fortis Bank S.A./N.V.	Europe
Silver Tower Funding Limited	Dresdner Bank AG	Europe
TempUS Funding LLC	Rabobank International, New York Branch	Europe
Twin Towers Incorporated	Deutsche Bank AG	Europe
Viking Asset Securitisation Limited	Unibank A/S	Europe
Arabella Funding Ltd.	Bayerische Hypo-und Vereinsbank AG	Europe
Bavaria Securitisation Limited	Bayerische Hypo-und Vereinsbank AG	Europe
ABSC Capital Corporation, Incorporated	Canadian Imperial Bank of Commerce	Canada
Asset Securitization Cooperative Corporation	Canadian Imperial Bank of Commerce	Canada
Asset-Backed Securitisation Corporation Limited / ABSC Capital Corporatio	Canadian Imperial Bank of Commerce	Canada
Exelsior Incorporated	XL Capital / Royal Bank of Canada	Canada
Liberty Street Funding Corporation	Bank of Nova Scotia	Canada
Links Finance Corporation	Bank of Montreal (London Branch)	Canada
Old Line Funding Corporation	Royal Bank of Canada	Canada
Parkland Finance Corporation / Parkland (USA) LLC	Bank of Montreal (London Branch)	Canada
SPARC, LLC	Canadian Imperial Bank of Commerce	Canada
Special Purpose Accounts Receivable Cooperative Corporation	Canadian Imperial Bank of Commerce	Canada
Superior Funding Capital Corporation	Canadian Imperial Bank of Commerce	Canada
Thunder Bay Funding Incorporated	Royal Bank of Canada	Canada
White Point Funding, Inc.	Royal Bank of Cananda, New York Branch	Canada
Exelsior Finance Limited	XL Capital / Royal Bank of Canada	Canada
Great Lakes Funding Capital Corporation	Canadian Imperial Bank of Commerce	Canada
Links Finance LLC	Bank of Montreal (London Branch)	Canada
CentreStar Capital No.1, LLC	National Australia Bank Limited	Australia
Coast Asset Corporation	ANZ Investment Bank	Australia
Sydney Capital Corporation / Waratah Securities Australia Limited	Westpac Banking Corp.	Australia
Titan Securitisation Limited / TSL (USA) Inc.	National Australia Bank Ltd.	Australia
Waratah Securities Australia Limited/ Sydney Capital Corp.	Westpac Banking Corp.	Australia
MTF Securities Limited	Commonwealth Bank of Australia	Australia
TSL (USA) Inc.	National Australia Bank Ltd.	Australia