The Greenspan conundrum of 2005-7 and the acceleration in US ABCP supply: a single 'reach for yield' story

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Abstract

The period 2005 through to mid-2007 saw a sharp acceleration in the rate of supply of US asset backed commercial paper (ABCP). This same period also saw the yield on 10-year US treasury bonds remain stubbornly below the federal funds rate, an event so unusual as to cause the then Chairman of the Federal reserve, Alan Greenspan, to talk of a bond yield 'conundrum'. The central hypothesis of this paper is that these parallel developments were causally linked, with the reach for yield on the part of institutional investors being the key linking factor. To support this hypothesis, we use a dynamic system Generalized Method of Moments (GMM) model to estimate the relationship between US ABCP issuance in the pre-crisis period and such determining factors as short term interest rates, the strength of demand for US ABCP from US institutional money market mutual funds (MMMFs), the geographical breakdown of the bank-sponsored conduits that were the principal suppliers of ABCP and conduit characteristics.

1. Introduction

To understand the financial crisis one must know why the shadow banking system had in the preceding period grown to a size large enough to wreak havoc in the regular banking sector when it seized up in the summer of 2007. As concerns the growth of the asset backed securities (ABSs) and collateralised debt obligations (CDOs), the long term securities issued by the shadow banking entities, there is now widespread acknowledgement that one of the principal driving forces behind this growth was the reach for yield on the part of institutional investors (see e.g. Cabellero,2009, 2010; Lysandrou, 2009, Bernanke, 2011; Goda et.al, 2013, Goda and Lysandrou,2014). However, this is not the case as regards the growth in asset backed commercial paper (ABCP), the short term securities issued principally by the bank sponsored conduits. The dominant position here continues to be one that favours supply push factors over demand pull pressures, one of the main arguments being that many US and European commercial banks took advantage of the absence of any strong regulation covering off-balance

sheet vehicles and their activities to maximise profits through regulatory arbitrage (see e.g. Acharya and Schnabl,2010; Acharya et.al., 2013; Arteta et. al.,2013)[1]

The problem with this type of argument is that it cannot satisfactorily account for a striking peculiarity in the pre-crisis growth rate of the US ABCP market. From its origins in the late 1980s, the size of that market had grown steadily to reach about $600 billion by end-2004, at which point there was then a sudden acceleration in the rate of US ABCP issuance such that by the summer of 2007 the overall value of the market had almost doubled to $1.1 trillion, with bank-sponsored conduits accounting for about 75% of this amount. Why that acceleration at precisely that point in time? In our view, the most plausible answer is to be found in the behaviour of the federal funds rate. From 1% in June, 2004, that rate had risen to 4% by June, 2005, and to 5.25% by June 2006 where it remained until the outbreak of the subprime crisis the following year. Given that throughout this two and a half year period the yield on 10 year-Treasuries lay for much of the time below the policy rate, it stands to reason that institutional investors would have looked to short term securities as a supplementary means of satisfying their need for yield. The aim of this paper is to give empirical backing to this hypothesis.

The structure of the paper is as follows. Section two explains how the reach for yield came to be the key driver behind the exceptionally rapid growth of the US ABCP market between 2005 and 2007. Section three explains the data and the methodology that will be used to support this explanation. Section four provides some results. Section five provides a short summary. Section six concludes.

2. The events surrounding the pre-crisis growth of the US ABCP market

Our story is that the supply of US ABCP was rapidly expanded in 2005-7 principally in order to accommodate the excess demand for yield spilling over from the long term US bond markets. The story can be broken down into five parts.

(i) From about 2001 onwards there was a pronounced decline in yields across all of the major 'ground-floor' US bond markets (treasury, municipal and corporate) caused primarily,

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[1] Although Kacperczyk and Schnabl (2010) provide a detailed analysis of the demand-side of the US ABCP market in the pre-crisis era they do not go so far as to give primacy to demand pull pressure in the pre-crisis growth of that market. They acknowledge the fact that "some observers argue that the growth of the asset-backed commercial paper market was fuelled by demand from money market funds" (2010, p.36) but they do not specify who these observers are.

if not exclusively, by the exceptionally large inflows of funds from foreign private and foreign official investors (see appendix, figure 1A). To help accommodate these inflows the US banking system rapidly expanded the supply of 'first-floor' debt securities, principally securities backed by residential mortgage loans. It is noteworthy that of the $9 trillion US ABS outstanding in mid-2007, over one half of these securities had been created in the previous four years (Bank of England, 2007a). Given that the increased rate of ABS supply was never going to be enough to fully satisfy foreign and domestic institutional demand for yield, as attested by the continuing fall in the ABS spread over US treasuries, the US banking system also began from around 2003 onwards to rapidly expand the supply of 'second-floor' debt securities, securities backed by securities backed by mortgage and other credit loans. From approximately $ 0.25 trillion in 2002, the US CDO market had grown twelvefold to $3 trillion by the summer of 2007 (Blundel-Wignall, 2007; IMF, 2008). It is noteworthy in this respect that while conforming (prime agency) mortgage loans constituted the majority part of the US mortgage market up to 2004, between 2005 and 2007 it was the non-conforming segment of this market (subprime, alt-A and jumbo) that became predominant (Bank of England, 2007b).

(ii) The rapid expansion in both US conforming and non-conforming mortgage loans, the raw material needed for ABSs and cash CDOs, was to some degree facilitated by the easing of US monetary policy following the end of the dot.com boom. From 6.5% in late 2000, the federal funds rate fell to 1% in June 2003 where it remained until June 2004. However, just as the low short term interest rate period gave boost to mortgage lending, that boost in turn helped to usher in a period of high short term interests when the federal reserve, concerned about the possible inflationary consequences of increased consumer spending fuelled in part by the wealth effects of rising house prices, raised the federal funds rate by a quarter percent at a time in seventeen consecutive steps starting in June 2004. In preceding periods of monetary policy tightening, such as in 1988-9, 1994-5 and 1999-2000, the yield on 10-year Treasuries kept track with the target federal funds rate. On this occasion, however, it did not. When the policy rate fell by 5.5 % between 2001and 2004 the yield on 10-year Treasuries fell by 3.57 %, from 6.77% to 3.2%; but what was more unusual is that while the policy rate rose by 4.25% to 5.25% between mid-2004 and mid-2007, the yield on 10-year Treasuries rose by only 2% over the same period, to 5.2%, a development that caused Chairman of the Federal Reserve, Alan Greenspan, to talk of a bond yield conundrum in his congressional testimony in February, 2005. Conundrum or not, the fact that the short term rate remained above the long term rate for much of the 2005-2007 period (see appendix, figure 2A) made it highly likely that institutional

investors would look to the short term securities market as a supplementary means of satisfying their need for yield. The clues that strongly indicate this to have been the case are to be found on both the demand side of the US ABCP market and on the supply side.

(iii) The demand side clue pertains to the US money market mutual funds (MMMFs) that first originated in the early 1970s. These basically divide into 'government' MMMFs (that invest solely in securities issued by the government and its agencies) and 'prime' MMMFs (that invest in private sector securities) and while the former group continued to account for the majority part of all MMMF asset holdings right up to end-2004, it was the latter group that took over this mantle between 2005 and 2007 (Kacperczyk and Schnabl, 2010). Prime MMMFs in turn divide into 'retail' and 'institutional' MMMFs, and while the former group remained the larger one in terms of asset holdings up to about 1999-2000, the situation was reversed thereafter (see appendix, figure 3A). It is noteworthy that the point at which institutional MMMFs became predominant is also exactly the point at which the overall size of US MMMF asset holdings begin to mirror short run interest rates: down when the rates were down in 2001-2004, and sharply up when the rates were up between June 2004 and July, 2007 (see appendix, figure 4A). What is also noteworthy is that where prior to 2005 the composition of MMMF commercial paper asset holdings was heavily weighted towards financial and corporate commercial paper with ABCP comprising only a small part, over the next two and a half years the situation was reversed (Kacperczyk and Schnabl, 2010). 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 willingness of bank-sponsored conduits to increase the issuance of ABCP to make up for the shortfall in the supply of short term paper demanded by the MMMFs (see appendix, figure 5A).

(iv) The above observation brings us to the supply side clues pointing to the pre-crisis growth of the US ABCP market as a reach for yield story. The first of these concerns the geographical breakdown of the bank-sponsored conduits that accounted for approximately $750 billion out of the total $1.1 trillion of US ABCP outstanding in mid-2007. Of this $750 billion, European banks accounted for about $460 billion, US banks for about $270 billion and Japanese banks for the small remainder (see appendix, figure 6A). Taken individually, no European country's banks, not even those of Germany, could quite match those of the US in terms of the percentage share of US ABCP supply. This said, it is nevertheless remarkable that

the aggregate percentage share of the European banks should have been substantially above that of the US banks when we consider that the contemporaneous European contribution to supplies of ABSs and CDOs 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 (Bertaut et.al, 2012). Just as remarkable as the European dominance of the US ABCP market in the pre-crisis period is the speed with which this dominance was established. Up to 2001 the European banks' share of this market remained below that of the US banks and while this share then increased above that of the latter between mid-2001 and mid-2005, the rate of this increase remained fairly steady so that from about $230 billion at the start of this four year period the European banks' share only reached about $ 280 billion by the end of it. However, everything abruptly changed in the following two year period up to mid-2007 when it was the European bank sponsored conduits that took the lead in collectively powering the steep rise in US ABCP issuance with the result that their share of that market rose from $280 billion to $460 billion. One possible reason for the discrepancy between the European banks' minor contribution to ABS and CDO issuance, on the one hand, and their major contribution to ABCP issuance, on the other, are the very different construction requirements needed by these different types of debt securities. The short term and typically non-tradable nature of ABCP means that these instruments are relatively easy to construct as compared with ABSs that, as long term instruments, require more paperwork if they are to be capable of being traded away from the initial conditions of issuance. The difference in technical difficulty and complexity is even pronounced in the case of CDOs given that the inclusion of securitised subprime mortgage loans in the mixture of backing collateral entails the use of sophisticated credit enhancement techniques (CETs) to make these products in any way viable as investable assets. Thus when the institutional demand for short term paper began to expand rapidly from early 2005, the European banks were well able to join with their US counterparts in accommodating this expansion

(v) A further supply side clue pointing to the primacy of this yield pull pressure in the pre-crisis growth of the US ABCP market concerns the programme breakdown of the market. These programmes broadly divide into those where credit loans form the major collateral behind ABCP issuance, the principal ones being multi-seller, single seller and loan-backed programmes, and those where securities are the major backing collateral, the principal programmes here being securities arbitrage, hybrid (that combine multi-seller and securities arbitrage characteristics) and SIV. It is noteworthy that where in mid-2001 the three major

credit loan backed programmes accounted for 77.1% of all ABCP outstanding at that point, by mid-2007 their percentage share had fallen to 62.8% while the share of the three major securities backed programmes rose from 21.3% to 32.8% over the same period (Ahern, 2007). This development in a sense mirrored what was happening at the same time in the CDO market. Despite the high rate of supply of cash CDOs after 2002, this rate was still not enough to satisfy the rapid rise in demand for yield, which is why from about 2004 it was synthetic CDOs that became the dominant component of total CDO stocks ($2 trillion out of $3 trillion by mid-2007). Unlike cash CDOs that take months to be created because they require the physical involvement of household borrowers and of the commercial banks that lend to them in their creation, synthetic CDOs take only a few days to be established in that they involve nothing other than the use of credit default swaps. A similar situation appeared to arise in the ABCP market from about mid-2005 in that while the loan backed programmes continued to carry the major burden of ABCP supply, the high rate of demand for these products combined with the limits to the amounts of loans that could be mustered as collateral in the time needed meant that securities backed programmes, which could be launched more quickly, had to be called upon to help carry the burden.

This explanation as to why European bank sponsored conduits continued their purchases of US ABS in the period 2005-2007 differs markedly from that given by Bertaut et.al. (2012). In their version of events in this period they start with the observation that "the factors that explain European interest in ABS were likely similar to those motivating investors in the United States", chief amongst these factors being the triple-A rating of ABS that made these assets appear "very safe, while offering slightly higher returns that Treasuries and Agencies" (2012, p.224). Bertaut et.al. then go on to make the assumption that the factors motivating Europeans to purchase ABS in the 2002-2004 period continued to be the primary motivating factors behind European purchases of ABS in the 2005-2007 period. Faced with the question as to why the Europeans would continue to purchase ABS at a time when the profit opportunities from funding these purchases with ABCP had diminished so greatly, their answer is that, having first gathered pace in the 2002-2004 period, the European demand for ABS then acquired a momentum of its own for a number of reasons including (i) the possibility 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, (ii) the possibility that low yields on other assets had reduced the incentives for investors to switch from ABS to these other assets and (iii) more generally, the possibility that a culture of risk

taking had developed amongst European banks, as amongst their US counterparts, that centred importantly around securitisation (2012, p.224).

In our view, this line of argument does not appear to square with the facts. In the first place, the European banks' motive for buying ABS with ABCP funding in the 2002-2004 period appears to differ from that of the US banks in that the latter's rate of supply of ABCP (partly backed by ABS) actually declined in this period while the former's rate of supply remained modestly positive (see appendix, figure 7A): it would appear that over this period the US banks were more sensitive to the MMMF's rate of demand for ABCP, which was then negative, while the European banks were less sensitive to this demand and more concerned with exploiting the profit opportunities offered by the differential between long and short term yields. In the second place, there is the question concerning the European banks' rate of acquisition of US ABS over the 2002 to 2007 period. If the 'momentum' argument is correct, we should have seen this rate of acquisition slow down while remaining positive in the sub-period 2005-7 or, at the very least, be maintained at roughly the same average level as was maintained in the earlier sub-period of 2002-2004. In fact the contrary was the case, for as shown in figure 7A in the appendix (a figure reproduced from Bertaut et.al (2012)), the rate of European banks' acquisition of ABS accelerated sharply in the 2005-2007 period, so much so that average European holdings of these assets in this period were double their holdings in the 2002-2004 period. This acceleration in European ABS purchases taken in conjunction with the acceleration in the European rate of ABCP supply over the same 2005-2007 period (as shown in figure 6A) suggests that there was a structural break in the European motives for buying ABS that occurred around end- 2004: in the 2002-2004 period, Europeans may have been supplying APCP to fund their purchases of ABS, but in the 2005-2007 bond yield conundrum period it was the other way round: Europeans were by that time buying ABS to use as collateral in creating ABCP.

To summarise, the bond yield conundrum of 2005-7 and the corresponding acceleration in the rate of US ABCP supply over the same time span are not two different stories but two sides of the same reach for yield story. Others have attempted to estimate the contribution of yield pull pressure to the bond yield conundrum (see Goda et.al., 2013, for an overview of the literature). By contrast, there has to our knowledge been no systematic attempt to estimate the contribution of yield pull pressure to the rate of US ABCP issuance in the conundrum period. Thus what follows is the first time that such an attempt has been mounted.

3. Data and Methodology.

We use a dynamic system Generalized Method of Moments (GMM) two-step first difference model (Arellano and Bond, 1991) to estimate the relationship between ABCP issued in the US market and such determining factors as the federal funds rate, MMMF asset holdings, the geographical breakdown of the banks sponsoring ABCP conduits and differences in conduit characteristics. More formally the baseline econometric model is:

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

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=2001q2…..2007q2. *MMMF* is the log of total financial assets held by MMMF. Interest rate is the effective Federal Funds Rate, (*Fed rate*). $X_{i,t}$ is a vector that contains information of the different types of conduits. Dummy variables were constructed for each type of programs for which the value of one is given to a representative type and zero otherwise. The programs included are: multiseller, securities arbitrage, hybrid, SIV, Repos/TRS, loan-backed, CDO and fully sponsored. Single seller and other types of programs are the omitted group. γ_i is the unobserved fixed effect that accounts for time invariant conduit-specific features. GMM estimation methodology eliminates the fixed effect by first differencing variables and corrects for all sources of endogeneity between the dependent and independent variables by using as instruments lagged differences of the dependent variable and lagged levels of independent variables. Standard errors are corrected for heteroscedasticity (White, 1980).

Following the initial specification of the model, where we take total MMMF assets, we modify it to so as to separate institutional MMMF assets from retail MMMF assets. We further modify the 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.

We also run a second model that takes into account the bond yield conundrum outlined above:

$$(2) \quad ABCP_{i,t} = \beta_0 ABCP_{t-1} + \beta_1 MMMF_t + \beta_2 Yield\ Spread_t + X_{i,t}\theta + \gamma_i + \varepsilon_{i,t} \quad (2)$$

Where *Yield Spread* is the difference between the effective Federal Funds rate and the 10-year Treasury yield rate.

We use a panel dataset of ABCP issuance obtained from Moody's Investor Service quarterly information on all active conduits[2]. Our dataset consists of all bank sponsored conduits that have issued ABCP in the US market for the period between 2001q2-2007q2. We exclude all conduits that have not issued in the US market. The information obtained from Moody's Investor Service concerns conduit characteristics and sponsor details. The characteristics include credit support type (fully or partially sponsored) and program type. Only bank sponsored conduits are included in our sample.

To construct our dataset we assign an id number to each conduit by name. Any two conduits that have the same name and that have issued in the same quarter are treated as different conduits. We include not only conduits that have issued in all consecutive quarters for the period between 2001-2007 but also those that have issued in only a few quarters. Furthermore, the dataset includes those conduits that according to Moody's issue ABCP in the US market but have issued zero ABCP in a particular quarter. In other words, any conduit that has issued in at least one quarter covered in our time span is included in our sample.

In order to distinguish European conduits from non-European ones the bank sponsor location is used. Bankscope is used to identify the headquarter location of each bank. There are a total of 325 bank sponsored conduits in our sample: 156 European, 135 US, 16 Canadian, 12 Japanese and 6 Australian (See appendix Table 1A)

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[2] Moody's Investors Services published quarterly spreadsheets, Program Index, which contains information on conduits rated by Moody.

4.Results

The results of our benchmark model are shown in Table 1, column 1. The interest rate coefficient is positive and statistically significant suggesting that an increase in the federal fund rate increases outstanding ABCP by about $102 million. The MMMF coefficient is also positive and significant implying that a 1 % increase in MMMF asset holdings increases the issuance of ABPC by about $1.1 billion. In the second column we add the European bank sponsored dummy variable. As shown, the coefficient of this variable is positive and strongly significant, which is in accordance with our hypothesis that European conduits were the major drivers of ABCP growth in the sample period each issuing on average $75 million more than a non-European conduit. In the third column the MMMF category is split into the institutional and retail subcategories while the forth column again includes the European banks sponsored dummy variable. As can be seen in both columns, it is institutional MMMFs that were responsible for this positive relation while retail MMMF asset holdings over the sample period were negatively related to average ABCP issuance. Furthermore, looking at the program types, the results suggest that SIV, securities arbitrage, multiseller[3], hybrid and Repos/TRS are all positively related to ABCP issuance. In other words, all these types of programs issued more than single seller and other type programs. The coefficient associated with SIV type conduit is by far the largest out of all, which is in the range of 15.811 and 8.823. The coefficient associated with Repos/ TRS on the other hand has the least magnitude than the other programs. Loan-backed programs and CDO programs are negatively related with average ABCP outstanding for the period 2001q2-2007q2. Finally, Table 1 shows that a program that is fully sponsored issues more ABCP than a program that is partially sponsored.

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[3] The time invariant dummy variables (i.e. multiseller programs) have been interacted with a linear time trend (in this case the interaction with *TR* is included in the Tables). This is to overcome the issue of including time constant variables in a fixed-effect panel estimations (Wooldridge 2009). Therefore, the estimated coefficient for these interacted dummies is interpreted as a change overtime.

Table 1: ABCP average outstanding in the US market by program type, location, MMMF and short term rates , 2001Q2-2007Q2

Dependent variable ABCP outstanding	(1)	(2)	(3)	(4)
ABCP(-1)	0.720***	0.692***	0.706***	0.733***
	(0.000)	(0.000)	(0.000)	(0.000)
Fed Rate	0.102***	0.011***	0.110***	0.058***
	(0.000)	(0.000)	(0.000)	(0.000)
log(MMMF)	1.154***	1.416***		
	(0.000)	(0.001)		
log(Institutional)			2.437***	1.514***
			(0.003)	(0.000)
log(Retail)			-1.298***	-0.566***
			(0.002)	(0.001)
Sec.Arbitrage	7.141***	7.460***	7.142***	5.627***
	(0.033)	(0.028)	(0.036)	(0.026)
SIV	15.811***	10.843***	12.802***	8.823***
	(0.037)	(0.042)	(0.045)	(0.027)
Repos/TRS	0.604***	0.070	0.101	0.941***
	(0.163)	(0.108)	(0.126)	(0.156)
Multiseller*TR	3.759***	2.446***	2.331***	2.976***
	(0.032)	(0.027)	(0.032)	(0.026)
Loan-Backed	-1.529***	-2.425***	-2.556***	-1.909***
	(0.002)	(0.003)	(0.004)	(0.001)
Hybrid	2.623***	2.611***	1.947***	3.627***
	(0.032)	(0.027)	(0.032)	(0.026)
CDO	-0.010	0.240***	-0.365***	-2.048***
	(0.006)	(0.013)	(0.040)	(0.002)
Full	1.242***	1.334***	1.174***	2.027***
	(0.003)	(0.008)	(0.009)	(0.002)
European		0.075***		0.024***
		(0.000)		(0.000)
Observations	4229	4229	4229	4229
AR(2)	0.556	0.118	0.552	0.228
Prob(J-statistic)	0.404	0.401	0.441	0.501

NOTES: ***,**,* represents 1, 5 and 10% significance level respectively. The dependent variable is average ABCP outstanding in $ billion. Robust Standard Error in parenthesis. All estimators are based on the Arellano and Bond (1991) two- step GMM estimator. Program type includes multi-sellers, securities arbitrage, SIV, REPOS/TRS, Loan -Backed, Hybrid and CDO. Other types of program and single-seller are the omitted group.

Table 2 presents the results when we run the same baseline model and specification for two sub-periods: 2001q1-2005q2 and 2005q2-2007q2. Note that for the first sub-period the interest rate and MMMF coefficients are negative but then become positive for the second sub-period, 2005q2-2007q2, with institutional MMMFs being responsible for the positive MMMF coefficient. Note also the particularly strong contribution of the securities arbitrage, multiseller and hybrid programmes to US ABCP growth in the second sub-period.

Table 2: ABCP average outstanding in the US market by program type, location, MMMF and short term rates, 2005Q2-2007Q2

Dependent variable ABCP outstanding	2001Q2-2005Q2	2005Q2-2007Q2	2001Q2-2005Q2	2005Q2-2007Q2
ABCP(-1)	0.602***	0.671***	0.803***	0.691***
	(0.000)	(0.000)	(0.002)	(0.000)
Fed Rate	-0.109***	0.174***	-0.007***	0.035***
	(0.006)	(0.000)	(0.011)	(0.001)
log(MMMF)	-0.900***	0.679***		
	(0.068)	(0.005)		
log(Institutional)			0.692***	8.107***
			(0.211)	(0.020)
log(Retail)			-0.021***	-7.540***
			(0.113)	(0.019)
Sec.Arbitrage	-4.779*	7.308***	-9.590***	8.583***
	(2.590)	(0.011)	(2.033)	(0.039)
SIV*TR	-0.449	-0.199***	-3.385	-0.270***
	(2.597)	(0.002)	(2.851)	(0.001)
Repos/TRS		1.453***		9.866**
		(0.040)		(0.112)
Multiseller	-6.754***	5.662***	--3.107***	5.602***
	(2.429)	(0.098)	(1.118)	(0.135)
Loan-Backed*TR	-2.644***	1.709***	-1.140***	0.999***
	(0.129)	(0.264)	(0.102)	(0.154)
Hybrid	-10.431***	5.140***	-6.248***	2.031***
	(2.462)	(0.102)	(1.161)	(0.130)
CDO	-5.873	0.239***	5.574	2.031***
	(8.338)	(0.028)	(9.832)	(0.130)
Full	13.055***	1.384***	0.525***	1.376***
	(3.153)	(0.007)	(6.576)	(0.043)
Observations	2931	1447	2931	1408
AR(2)	0.251	0.899	0.328	0.983
Prob(J-statistic)	0.534	0.444	0.520	0.361

NOTES: ***, **, * represents 1, 5 and 10% significance level respectively. The dependent variable is average ABCP outstanding in $ billion. Robust Standard Error in parenthesis. All estimators are based on the Arellano and Bond (1991) two-step GMM estimator. Program type includes multi-sellers, securities arbitrage, SIV, REPOS/TRS, loan backed, hybrid and CDO. Other types of program and single-seller are the omitted group. SIV*TR applies to the 2001-2005 time span. Loan-Backed*TR applies to both sub-periods. There are no Repos/TRS programs in the period 2001q2-2005q2.

Table 3 shows the results of model (2) in which interest rate spreads replace the federal funds rate variable. We estimate the model over the 2001q2-2007q2 time period as well as for two sub-periods namely 2001q2-2005q2 and 2005q2-2007q2. The coefficient of yield spread for the whole sample period is positive and equal to 0.113. This implies that as the spread widens the issuance of ABCP increases by nearly $113 million. The results for the other two sub-

periods are in line with the findings in model (1). In the period 2001-2005 the yield spread and MMMF demand for ABCP are negatively related to ABCP issuance as expected. By contrast, the yield spread and MMMF demand are positively related to ABCP issuance in the period 2005-2007, which is in line with our argument concerning the direct link between the bond yield conundrum and investor search for yield. The results for all other control variables are the same as in model (1), which is a clear indication that the results are robust.

Table 3. ABCP average outstanding in the US market by program type, yield spread and MMMF, 2001Q2-2007Q2

Dependent variable ABCP outstanding	2001Q2-2007Q2	2001Q2-2007Q2	2001Q2-2005Q2	2001Q2 2005Q2	2005Q2-2007Q2	2005Q2-2007Q2
ABCP(-1)	0.723***	0.736***	0.604***	0.804***	0.676***	0.676***
	(0.000)	(0.000)	(0.002)	(0.002)	(0.000)	(0.000)
Yield spread	0.113***	0.078***	-0.063***	-0.034***	0.168***	0.053***
	(0.000)	(0.000)	(0.003)	(0.006)	(0.001)	(0.001)
log(MMMF)	1.215***		-0.543***		0.977***	
	(0.001)		(0.059)		(0.004)	
log(Institutional)		2.223***		2.914***		7.877***
		(0.002)		(0.184)		(0.023)
log(Retail)		-0.721***		-1.9111***		-7.059
		(0.002)		(0.111)		(0.022)
Sec.Arbitrage	7.127***	7.020***	-3.763*	-7.467**	7.305***	9.119***
	(0.050)	(0.038)	(2.003)	(3.003)	(0.008)	(0.317)
SIV	14.679***	8.049***	1.922	-4.822	-0.192***	-0.232***
	(0.053)	(0.042)	(2.039)	(3.097)	(0.002)	(0.001)
Repos/TRS	0.677***	1.317***			1.436***	10.437***
	(0.199)	(0.158)			(0.076)	(0.823)
Multiseller	3.774***	2.563***	-6.002***	-9.023***	5.768***	6.239***
	(0.050)	(0.038)	(1.871)	(2.960)	(0.038)	(0.320)
Loan-backed	-1.607***	-1.919***	-2.322***	-3.071***	1.860***	1.138***
	(0.002)	(0.002)	(0.106)	(0.201)	(0.188)	(0.122)
Hybrid	2.703***	3.181***	-10.018***	-12.840***	5.199***	2.741***
	(0.050)	(0.038)	(1.898)	(2.954)	(0.037)	(0.320)
CDO	-0.072***	-1.580***	-3.299	-1.648	0.066***	0.737***
	(0.008)	(0.043)	(6.450)	(3.135)	(0.015)	(0.012)
Full	1.256***	1.397***	13.346***	13.970***	1.377***	1.559***
	(0.006)	(0.007)	(3.210)	(3.132)	(0.017)	(0.021)
Observations	4229	3872	2931	2931	1447	1447
AR(2)	0.733	0.568	0.582	0.147	0.888	0.888
Prob(J-statistic)	0.373	0.328	0.505	0.412	0.458	0.446

NOTES: ***, **, * represents 1, 5 and 10% significance level respectively. The dependent variable is average ABCP outstanding in $ billion. Robust Standard Error in parenthesis. All estimators are based on the Arellano and Bond (1991) two-step GMM estimator. Program type includes multi-sellers, securities arbitrage, SIV, REPOS/TRS, loan backed, hybrid and CDO. Other types of program and single-seller are the omitted group. There are no Repos/TRS programs in the period 2001q2-2005q2.

Table 4 shows the results of the same GMM estimation taking only the ABCP outstanding related to US bank based sponsored conduits for the whole period of 2001q2-2007q2, and then for the two sub-periods, 2001q2-2005q2 and 2005q2-2007q2. The first and the second columns show that while the MMMF and interests rate coefficients are in line with the findings above the same cannot be observed for the other variables. Nearly all the coefficients associated with programme type are negatively correlated with ABCP issuance, with the exception of the SIV coefficient, which is positive and very large. Looking at the second sub-period of 2005q2-2007q2, the institutional MMMF coefficient is positive and significant while the retail MMMF coefficient is positive but less significant. However the coefficients of all conduit programs are negative in the period 2005q2-2007q2, except for CDO program types. This could be explained by the fact that US banks were able to sponsor CDO type programs, a finding that is in line with our reasoning explained above.

Table 4: US bank sponsored conduits ABCP average outstanding by program type

Dependent variable ABCP outstanding	2001Q2-2007Q2	2001Q2-2007Q2	2001Q2-2005Q2	2001Q2 2005Q2	2005Q2-2007Q2	2005Q2-2007Q2
ABCP(-1)	0.659***	0.656***	0.433***	0.436***	0.746***	0.749***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)
Fed Rate	0.108***	0.089***	0.149***	0.227***	-0.021***	-0.141***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.002)	(0.007)
log(MMMF)	1.470***		0.870***		2.097***	
	(0.007)		(0.005)		(0.038)	
log(Institutional)		0.366***		2.612***		8.827***
		(0.013)		(0.012)		(0.164)
log(Retail)		1.653***		0.092***		-7.996***
		(0.005)		(0.007)		(0.132)
Sec.Arbitrage	-3.437***	-2.793***	-18.092***	-18.081***	-7.350***	-6.804***
	(0.516)	(0.583)	(0.497)	(0.538)	(0.919)	(0.180)
SIV*TR	28.846***	30.508***	0.859***	1.036***	-0.305***	-0.301***
	(0.879)	(0.677)	(0.034)	(0.027)	(0.022)	(0.031)
Repos/TRS	-0.037	-0.049	-	-	-6.841	-6.431
	(1.165)	(0.869)			(1.115)	(1.277)
Multiseller	-2.610***	-2.141***	7.163***	7.277***	-8.137	-7.650***
	(0.109)	(0.089)	(0.122)	(0.292)	(1.090)	(1.003)
Loan-backed*TR	-0.220***	0.008***	0.153***	0.183***	-0.089	-0.198**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.137)	(0.098)
Hybrid*TR	-0.158***	-0.135***	0.248***	0.271***	-0.297***	-0.270***
	(0.002)	(0.003)	(0.006)	(0.008)	(0.031)	(0.010)
CDO	4.964	4.811	2.450	0.161	0.106	0.494*
	(1.066)	(0.687)	(0.571)	90.119)	(0.555)	(0.290)
FULL*TR	-0.099**	-0.061***	-0.407***	-0.382***	0.020***	0.023***
	(1.001)	(0.001)	(0.01)	(0.001)	(0.001)	(0.001)
Observations	1506	1506	1076	1076	481	481
AR(2)	0.976	0.942	0.950	0.933	0.992	0.978
Prob(J-statistic)	0.508	0.449	0.332	0.365	0.520	0.514

NOTES: ***,**,* represents 1, 5 and 10% significance level respectively. The dependent variable is average ABCP outstanding in $ billion. Robust Standard Error in parenthesis. All estimators are based on the Arellano and Bond (1991) two-step GMM estimator. Program type includes multi-sellers, securities arbitrage, SIV, REPOS/TRS, loan backed, hybrid and CDO. Other types of program and single-seller are the omitted group. Loan-backed*TR, Hybrid*TR, and Full*TR applies to all sub-periods. SIV*TR applies to the sub-periods 2001-2005 and 2005-2007. There are no Repos/TRS and CDO programs in the period 2001q2-2005q2.

Table 5 shows the results of the GMM estimation taking only the ABCP outstanding related to European bank based sponsored conduits for the whole period of 2001q2-2007q2, and then for the two sub-periods, 2001q2-2005q2 and 2005q2-2007q2. Two things become clear when we compare these results with those of table 4: first, that the European bank sponsored conduits were by far the more responsive to institutional MMMF demand for ABCP in the 2005 to 2007 period as compared with the US bank sponsored conduits, and second, that the European response was particularly concentrated on the securities arbitrage, multi-seller and

hybrid programmes. These results are consistent without conjecture that there was an acceleration in European demand for ABS over the bond yield conundrum period principally in order to use as collateral in ABCP issuance to meet institutional MMMF demand.

Table 5. European bank sponsored conduits ABCP average outstanding by program type

Dependent variable ABCP outstanding	2001Q2-2007Q2	2001Q2-2007Q2	2001Q2-2005Q2	2001Q2 2005Q2	2005Q2-2007Q2	2005Q2-2007Q2
ABCP(-1)	0.287***	0.821***	0.685***	0.209***	0.066*	0.329***
	(0.003)	(0.000)	(0.000)	(0.012)	(0.038)	(0.011)
Fed Rate	0.087***	0.076***	-0.149***	0.123***	0.440***	0.188***
	(0.007)	(0.000)	(0.001)	(0.030)	(0.067)	(0.024)
log(MMMF)	4.950***		-1.008***		2.915***	
	(0.110)		(0.009)		(0.635)	
log(Institutional)		1.163***		6.810***		13.753***
		(0.013)		(0.786)		(0.802)
log(Retail)		-0.118***		-3.525***		-10.762***
		(0.006)		(0.508)		(0.759)
Sec.Arbitrage	7.412***	7.424***	-3.212***	-8.506	10.561***	10.723***
	(0.497)	(0.058)	(0.072)	(6.037)	(2.693)	(0.530)
SIV	2.141	6.996***	-2.613***	-16.090*	-0.595*	-1.394***
	(2.675)	(0.103)	(0.082)	(8.930)	(0.348)	(0.156)
Repos/TRS	4.777***	0.421	-	-	8.835	0.383
	(1.332)	(0.378)			(6.564)	(0.060)
Multiseller	6.228***	2.602***	-2.978***	-11.363**	4.085	13.276***
	(0.675)	(0.055)	(0.073)	(5.404)	(4.817)	(1.161)
Loan-backed	-1.891***	-0.885***	-1.930***	-5.828***		
	(0.144)	(0.005)	(0.010)	(1.118)		
Hybrid	18.067***	2.072***	-3.888***	-8.415	7.971*	11.583***
	(0.784)	(0.059)	(0.071)	(6.217)	(4.754)	(1.509)
CDO	-0.104	-1.078	-	-	-0.589	-0.710
	(0.540)	(1.438)			(1427)	(0.650)
Full	5.061**	1.956***	(12.722)***	4.775	-	-
	(1.015)	(0.009)	(0.229)	(4.705)		
Observations	2089	2089	1404	1404	763	763
AR(2)	0.858	0.929	0.493	0.163	0.320	0.889
Prob(J-statistic)	0.404	0.515	0.518	0.327	0.572	0.108

NOTES: ***,**,* represents 1, 5 and 10% significance level respectively. The dependent variable is average ABCP outstanding in $ billion. Robust Standard Error in parenthesis. All estimators are based on the Arellano and Bond (1991) two-step GMM estimator. Program type includes multi-sellers, securities arbitrage, SIV, REPOS/TRS, loan backed, hybrid and CDO. Other types of program and single-seller are the omitted group. There are no Repos/TRS and CDO programs in the period 2001q2-2005q2.

6.Summary

The results presented above are broadly consistent with our conjecture that the driving force behind the acceleration in US ABCP supply in the Greenspan conundrum period of 2005-7 was the reach for yield pressure spilling over from the long term US bond markets. First, there is the timing of the acceleration: the jump in demand for ABCP from institutional MMMFs occurs exactly during the conundrum period; second, there is the geographic

breakdown of the conduits involved in the acceleration: it was the European bank-sponsored conduits that accounted for the bulk of the increased supply of ABCO during the conundrum period; third, there is the change in the ABCP programme breakdown of the conduits: it was the securities backed programmes that increased their percentage share of total US ABCP supply during the conundrum period.

The above results by no means contradict the argument that the banks sponsoring the conduits had both the opportunity (the exploitation of lax bank regulation) and the incentive (the exploitation of maturity mismatches) to boost their supply of US ABCP during the conundrum period. However, what the results do call into question is the much stronger argument that profit seeking activities on the part of the banks continued to be the primary driving force behind ABCP supply right up to the outbreak of the subprime crisis in the summer of 2007. If this was the case then why did the sudden acceleration in ABCP supply not occur before June 2004 when the yield differential between long and short term US securities was substantially higher thus offering substantially greater profit opportunities for the banks? Why did the European banks, who always found it much easier to issue ABCP as compared with ABSs and CDOs, wait until after June 2004 to boost their supply of this paper? And why was it that the percentage share of securities backed ABCP programmes, as distinct from credit loan backed programmes, only rose substantially after June 2004 and not before this date?

Our suggested answer to all of these questions is that the banks could not increase their rate of ABCP supply before June 2004, and thus did not need to depend more heavily on securities backed programmes to overcome the limits on credit loan backed programmes, simply because at that time there was no corresponding increase in the level of ABCP demand from MMMFs. On the contrary, the same set of circumstances offering banks the opportunity to profit handsomely from expanding ABCP supply before June 2004 were also precisely those deterring MMMFs from redirecting their demand for short term commercial paper away from other types of paper and towards ABCP. In sum, the unusually rapid growth of the US ABCP market during the conundrum period makes sense only if causal primacy for this growth is given to demand pull pressures with supply push considerations given a supporting enabling role.

6.Conclusion

In light of the severity of the financial crisis of 2007-8 and the enormous damage subsequently done to the global economy, it is imperative that we have a full understanding the root causes of the crisis. That point has yet to be reached. While many gaps in our understanding have been filled, some still remain. One is the absence of a satisfactory explanation as to why the ABCP market, a key component of the shadow banking system in the pre-crisis period, experienced unusually rapid growth in the short time span between 2005 and 2007. The present paper has sought to provide such an explanation.

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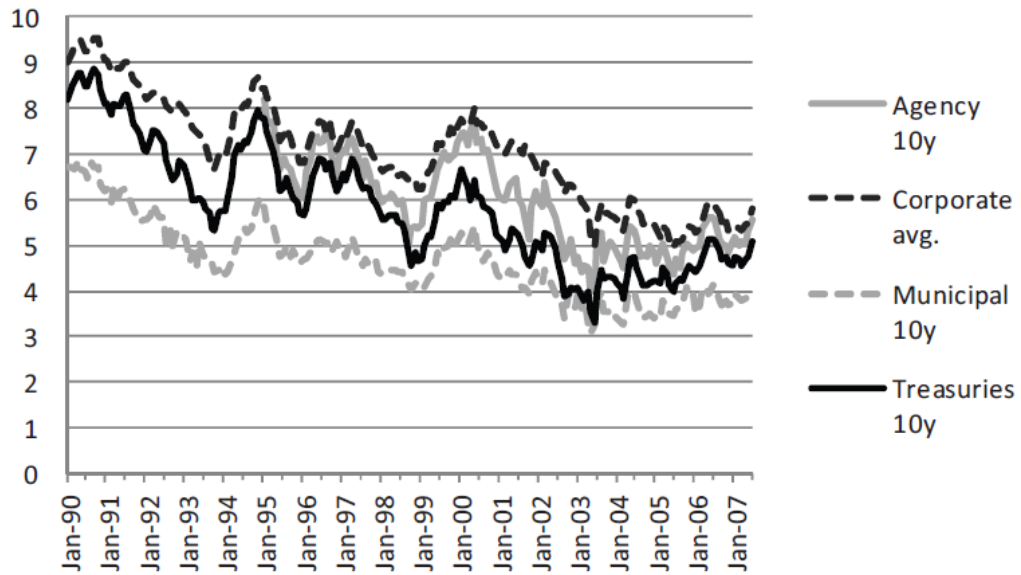
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Appendix

Figure 1A

US Bond Yields, 1990-2007

Source: Goda et.al (2013)

Figure 2A

Long and short term interst rates in the US (1990-2007)

Figure 3A

MMMF Assets in $US bn (right scale)
Percentage Share of Retail and Institutional MMMF assets (left scale)

Source: Federal Rerve, Bank of St Louis
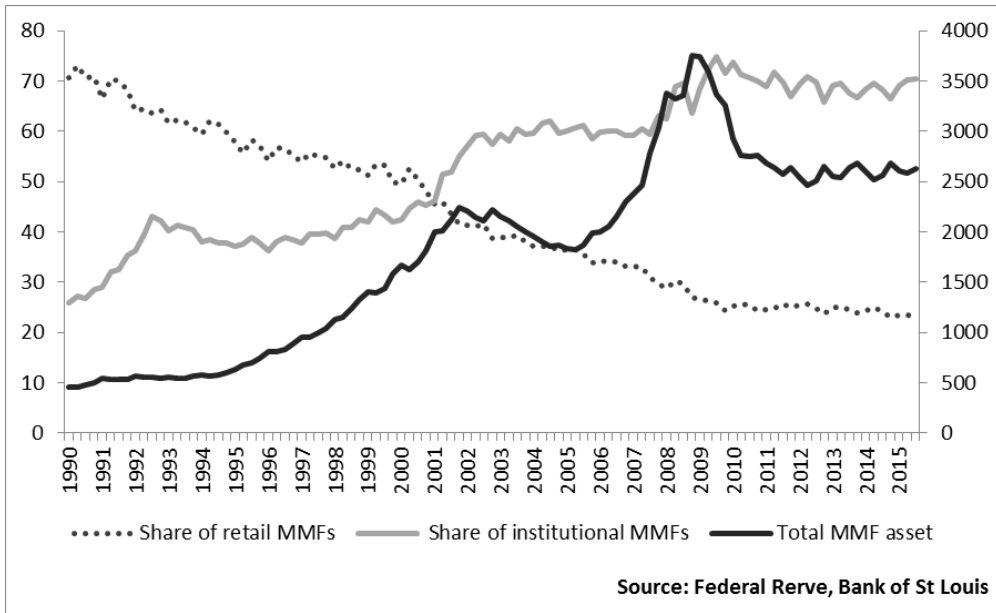
Figure 4A

MMMF Assets and the Federal Funds Rate: 1975-2013

Source: Federal Reserve
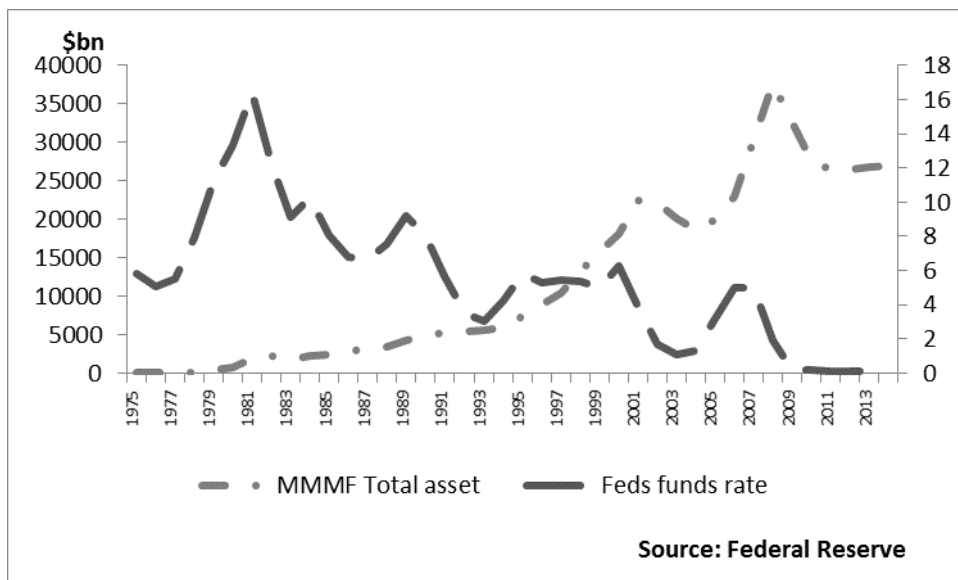
Figure 5A

US Commercial paper Issuance: 2004-2009
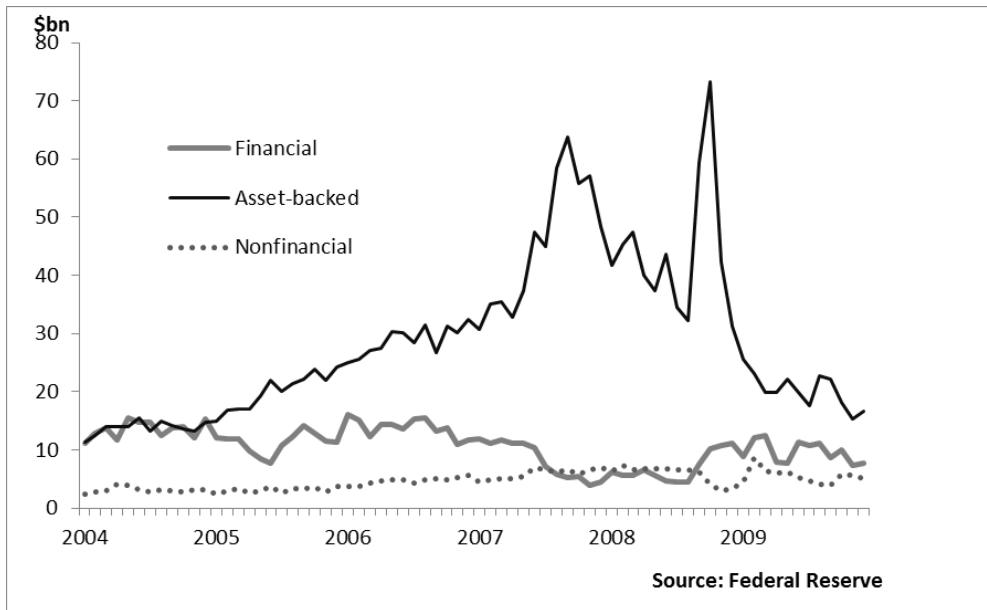
Figure 6A

US ABCP supply by region

Source: Moody's Investor Services

Figure 7A.

European holdings of foreign long term-debt securities

Source: Bertaut et.al. (2012)

Table 1A Conduits contain in the sample

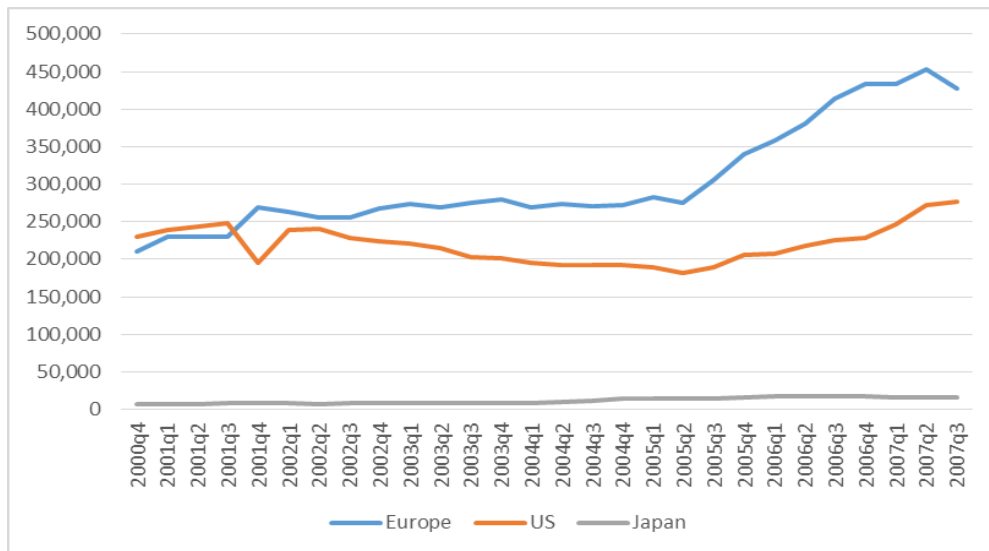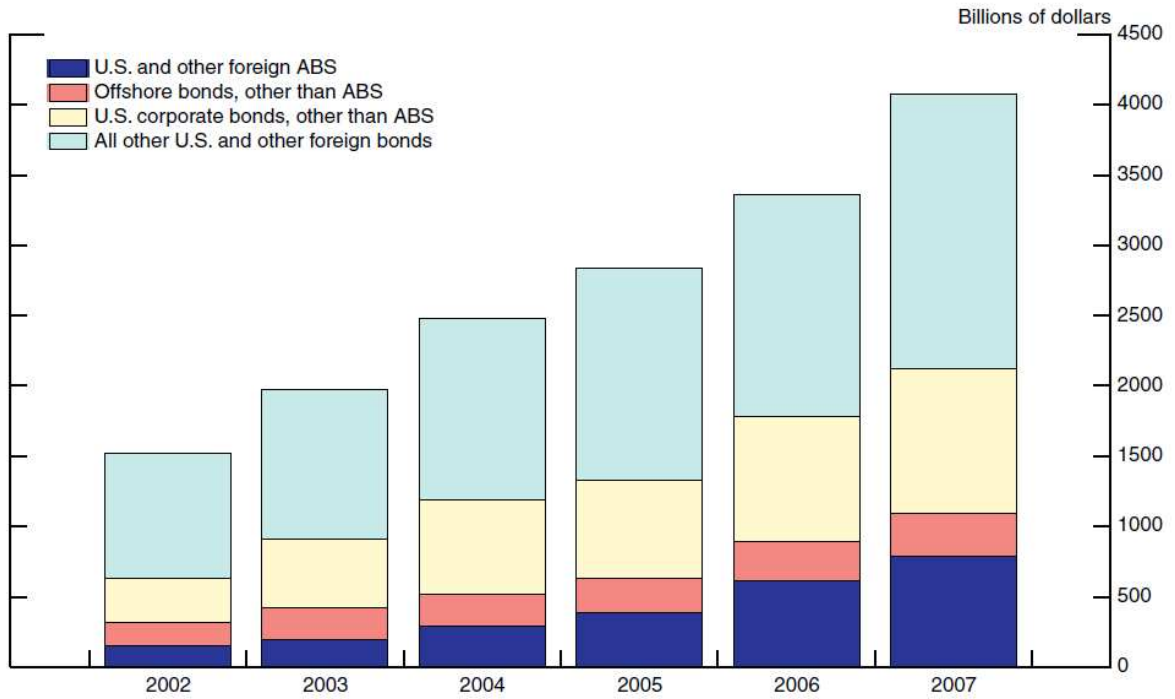| Conduit name	Sponsor bank	Location
Aeltus CBO V, Limited	Aeltus Investment Management, Inc. / Chase Manhattan Bank	US
Albis Capital Corporation	Glencore AG / JPMorgan Chase Bank	US
Amoco Managers Acceptance Corporation	Amoco Oil Corporation / Chase Manhattan Bank	US
Anglesea Funding LLC / Anglesea 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. / JPMorgan Chase 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 LLC	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
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 Corporation	Morgan Guaranty Trust	US
DNA Finance Corporation	Genentech Inc. / JPMorgan Chase 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 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

Table 1A (continued) Conduits contain in the sample

Conduit name	Sponsor bank	Location
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 Corporation (formerly International Sec	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
Liquid Funding Ltd.	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 & 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 Company LLC	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, & ACE	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

Table 1A (continued) Conduits contain in the sample

Conduit name	Sponsor bank	Location
Ultimate Finance Corporation (formerly Amoco Managers Acceptance Corporation)	Amoco Oil Corporation / JPMorgan Chase Bank	US
Variable Funding Capital Corporation	Wachovia Bank, N.A.	US
Venus Funding Corporation	U.S. Bank National Association	US
Vetra Finance Inc	Citibank, N.A.	US
Waratah Securities Australia Limited/ Sydney Capital Corp.	Westpac Banking Corp.	US
Waterfront Funding Corporation	M&I Marshall & Ilsley Bank	US
WCP Funding Incorporated	Citibank, N.A.	US
Westways Funding I, Limited	TCW Group / JPMorgan Chase Bank	US
Westways Funding II, Limited	TCW Group / Chase Manhattan Bank	US
Westways Funding III, Limited	TCW Group / JPMorgan Chase 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 / JPMorgan Chase 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
CPI Funding Corporation	Lord Securities Corporation/ JPMorgan Chase Bank	US
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
MTF Securities Limited	Commonwealth Bank of Australia	Australia
TSL (USA) Incorporated	National Australia Bank Limited	Australia
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 Corporation, Incorporated	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 / Links Finance LLC	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 Canada, New York Branch	Canada
Exelsior Finance Limited	XL Capital / Royal Bank of Canada	Canada

Table 1A (continued) Conduits contain in the sample

Conduit name	Sponsor bank	Location
Great Lakes Funding Capital Corporation	Canadian Imperial Bank of Commerce	Canada
Links Finance LLC	Bank of Montreal (London Branch)	Canada
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	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. / Antalis U.S. Funding Corp.	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 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 LLC	Lloyds TSB Bank PLC	Europe
Cantabric Financing PLC / Cantabric Financing LLC	Banco Santander Central Hispano, S.A.	Europe
Carrera Capital Finance LLC / Carrera Capital Finance Ltd.	HSH Nordsbank AG / JP Morgan Chase Bank	Europe
Certain Funding Corporation	Societe Generale	Europe
Check Point Charlie Incorporated	Bankgesellschaft Berlin AG	Europe
Classic LLC	Calyon	Europe
Cobbler Funding LLC / Cobbler Funding Limited	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
Erasmus Capital Corporation	Rabobank Nederland	Europe
Four Winds Funding Corporation	Commerzbank AG	Europe
Fox Trot CDO Ltd.	Rabobank Nederland	Europe
Gemini Securitization Corporation LLC	Deutsche Bank AG	Europe
George Street Finance Pty Ltd./ George Street Finance LLC	Royal Bank of Scotland PLC	Europe

Table 1A (continued) Conduits contain in the sample

Conduit name	Sponsor bank	Location
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
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
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 Trust & Banking Co., Ltd.	Europe
K2 (USA) LLC	Dresdner Bank AG	Europe
Kaiserplatz Funding	Commerzbank AG	Europe
KBC Commercial Paper Trust	KBC Bank N.V.	Europe
Kestrel Funding US LLC	WestLB AG	Europe
La Fayette Asset Securitization LLC	Credit Lyonnais (New York Branch)	Europe
Lake Constance Funding Ltd./ Lake Constance Funding LLC	Landesbank Baden-Wuerttemburg	Europe
Lakeside Funding LLC	Deutsche Bank AG	Europe
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 / Deutsche Bank Trust Company Americas	Europe
Lyon Short Term Funding Corporation	Credit Lyonnais	Europe
Mane Funding Corporation	ING Bank N.V.	Europe
Maximilian Capital Corporation	Bayerische Hypo-und Vereinsbank AG (Singapore Branch)	Europe
Mermaid Funding Corporation	Rabobank Nederland	Europe
Monte Rosa Capital Corporation	ING Bank N.V.	Europe
Mica Funding, LLC	Stanfield Global Strategies LLC / Deutsche Bank Trust Company Americas	Europe
Mont Blanc Capital Corporation	ING Bank N.V.	Europe
Montauk Funding Corporation	Westdeutsche Landesbank Girozentrale	Europe
Monument Gardens Funding LLC	Rabobank Nederland	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	WestLB AG	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 Entity LLC	Société Générale	Europe

Table 1A (continued) Conduits contain in the sample

Conduit name	Sponsor bank	Location
Premier Cru Funding Corporation	ABN AMRO Bank N.V.	Europe
Public Square Funding LLC, Series I	Key Bank, N.A. / Deutsche Bank Trust Company Americas	Europe
Public Square Funding LLC, Series II	Key Bank, N.A. / Deutsche Bank Trust Company Americas	Europe
Regency Markets No. 1 LLC	HSBC Investment Bank PLC	Europe
Repeat Offering Securitisation Entity Funding Incorporated (ROS	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. / JPMorgan Chase Bank (London Branch)	Europe
Saratoga Funding Corp. LLC	Deutsche Bank AG	Europe
Scaldis Capital Limited / Scaldis Capital LLC	Fortis Bank S.A./N.V.	Europe
Sceptre International Incorporated	Barclays Bank PLC	Europe
Sedona Capital Funding Corporation	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 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
Surrey Funding Corporation	Barclays Bank PLC	Europe
Tahoe Funding Corporation	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	Société Générale	Europe
Tulip Funding Corporation / Tulip Euro 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
Ebbets Funding LLC / Ebbets Funding Plc	Deutsche Bank Trust Company Americas	Europe
Fenway Funding, LLC	Hudson Castle Group Inc. / Deutsche Bank Trust Company Americas	Europe
Harrier Finance Limited / Harrier Finance (US) Limited	WestLB AG	Europe
Albion Capital Corporation S.A.	Bank of Tokyo-Mitsubishi UFJ	Japan
Broadway Capital Corporation	Bank of Tokyo-Mitsubishi, Ltd.	Japan
Dynamic Funding Corporation	Fuji Bank, Limited	Japan
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, Ltd. / Deutsche Bank Trust Company Americas	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