

Lysandrou, Photis; Shabani, Mimoza

Working Paper

The Explosive Growth of the ABCP Market Between 2004 and 2007: A 'Search for Yield' Story

CITYPERC Working Paper, No. 2016-03

Provided in Cooperation with:

City Political Economy Research Centre (CITYPERC), City, University of London

Suggested Citation: Lysandrou, Photis; Shabani, Mimoza (2016) : The Explosive Growth of the ABCP Market Between 2004 and 2007: A 'Search for Yield' Story, CITYPERC Working Paper, No. 2016-03, City, University of London, City Political Economy Research Centre (CITYPERC), London

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CITYPERC Working Paper Series

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Between 2004 and 2007: A 'Search for Yield' Story

Photis Lysandrou and Mimoza Shabani

CITYPERC Working Paper No. 2016-03
City Political Economy Research Centre
cityperc@city.ac.uk / [@cityperc](#)

City, University of London
Northampton Square
London EC1V 0HB
United Kingdom

CITY
UNIVERSITY OF LONDON
— EST 1894 —

The Explosive Growth of the ABCP Market between 2004 and 2007

A ‘Search for Yield’ Story

Photis Lysandrou¹ and Mimoza Shabani²

Abstract The years immediately preceding the financial crisis of 2007 witnessed an explosive growth in the supplies both of the long term securities issued by the shadow banking entities, the ABSs and CDOs, and of the short term securities issued by these entities, notably ABCP. While it is widely accepted that the search for yield was the major driving force behind ABS and CDO growth, the same is not true of the ABCP market where other factors such as regulatory arbitrage on the part of banks or the safety and liquidity concerns of institutional investors are seen as having been the more important growth driving force. This paper argues that the search for yield did play a crucial role in ABCP growth between 2004 and 2007. To back up this argument, the paper points to four close correlations that were peculiar to this particular three year span: (i) that between ABCP growth and the federal funds rate and the rate on ABCP; (ii) that between ABCP growth and the growth of US MMMF asset holdings; (iii) that between ABCP growth and the changes in the geographical and functional breakdown of the institutions supplying ABCP; (iv) and, finally, that between ABCP growth and the changes in the programme breakdown of the ABCP market.

JEL Classification: G20; G21

Keywords: asset backed commercial paper · search for yield

¹ Professor and Senior Research Fellow at CITYPERC, City, University of London.

² Lecturer in Financial Economics, University of East London.

1. Introduction

To understand the financial crisis one must above all understand the reasons why in the immediate run up to the crisis the shadow banking system had grown to a size sufficiently large as to be able to wreak havoc in the regular banking sector when that system collapsed in the summer of 2007. As concerns the explosive growth in the supplies of the long term securities issued by the various shadow banking entities – asset backed securities (ABSs) and collateralised debt obligations (CDOs) – there is now wide agreement that the principal driving force behind this growth was the search for yield on the part of institutional investors (Cabellero, 2009, 2010; Lysandrou, 2009, Bernanke, 2011; Goda et.al, 2013, Goda and Lysandrou, 2014). By contrast, there is no such agreement as regards the equally explosive growth in the supply of short term securities – notably, asset backed commercial paper (ABCP) – issued by shadow banking entities. Although some authors (e.g. Pozsar, 2011, more on whom below) have argued that demand pull pressure from institutional investors played as significant a role in the pre-crisis growth of short term securities as in that of long term securities, they have not stretched the comparison to include the driving force behind this pressure: yield may have been a primary consideration in the case of long term securities but in the case of the short term securities other considerations such as those to do with safety and liquidity appear to have been far more important.

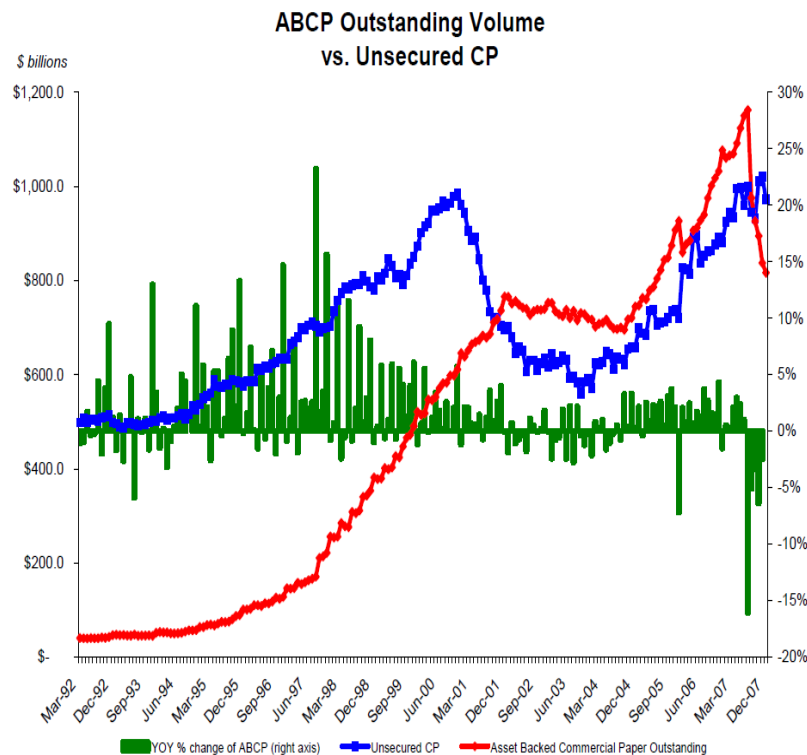
This paper will argue that the search for yield did in fact play a significant role in the growth of the ABCP market in the immediate pre-crisis era, albeit that in its case, as distinct from those pertaining to the ABS and CDO markets, the yield factor figured as prominently on the supply side of the market as on the demand side. To back up this argument, the paper will point to four developments that were peculiar to the period between mid-2004 and mid-2007. The first two developments, which are pertinent to the demand pull explanation of ABCP growth, was the close correlation between the rise in ABCP quantities and the rise in the federal funds rate relative to the long term treasury rate – that, on the contrary, continued to fall over this period - and the correlation between ABCP growth and the growth of the US money market mutual funds' (MMMFs) asset holdings. The other two developments, which are pertinent to the supply push explanation of ABCP growth, concern, first, the changes in the geographical and functional breakdown of the institutions supplying ABCP and, second, the changes in the programme breakdown of the ABCP market: where prior to 2004 it was the large US commercial banks that were the principal drivers behind ABCP growth, after that point it was

European banks and non-bank financial institutions that become the leading driving force; and where prior to 2004 the overwhelmingly dominant type of ABCP programmes were those such as ‘multi-seller’ or ‘single-seller’ programmes where credit-risk is the main risk factor priced into the securities backing the commercial paper issued, from that point on and up to mid-2007 it is ‘market value’ programmes, where market risk is the main risk factor in security pricing, which fuelled the volume growth of ABCP.

The structure of the paper is as follows. Section two discusses the reasons why yield considerations are not seen as having been key to the pre-crisis growth of the ABCP market. Section three looks at how the search for yield pressure that had built up in the long term US debt markets spilled over into the ABCP market. Section four looks at the pre-crisis growth of the ABCP market from the demand pull perspective. Section five looks at the pre-crisis growth of the ABCP market from the supply push perspective. Section six concludes.

2. Current views on pre-crisis ABCP growth

By the summer of 2007 the global supply of outstanding ABCP had grown to around \$1.5 trillion – the bulk of which, \$1.2 trillion, was issued in the US - a striking figure when we consider that these financial instruments only made their appearance in the 1980s. However, what is also striking about the expansion of the ABCP market over the period prior to the outbreak of the financial crisis is the highly uneven rate of that expansion. As can be seen in figure 1 profiling US dollar-denominated commercial paper, while the ABCP growth rate was fairly steady over the ten years between 1992 and 2002, that rate flattened between 2002 and 2004 and then exploded between mid-2004 and mid-2007 with the result that US ABCP outstanding volume had more than doubled in these three years. In light of the fact that it was the ABCP conduits that were the principal shadow bank entities through which the accumulating problems with subprime-backed securities were fed through to the regular banking sector with devastating consequences, it is important to know why the US ABCP market had expanded so quickly in so short a time span.

Figure 1

Source: Ahern (2007)

Although there appear to have been suggestions that the search for yield on the part of institutional investors may have been the major driving force behind ABCP growth from 2004, they have not been formulated in any systematic and empirically-backed manner thus leaving the field open to two other major lines of explanation for this development. The first of these foregrounds the role played by regulatory arbitrage on the part of the large commercial banks that sponsored the conduits. A good example of this type of explanation of ABCP growth is the paper by Acharya and Schnabl published in 2010 in which they “conjecture based on descriptive evidence of the regulation of ABCP conduits across countries, that bank risk taking was driven primarily by ‘weak’ regulation in the sense that it allowed banks to hold assets in conduits with little capital relative to the required capital for assets on bank balance sheets” (2010, p.4). We do not find this argument convincing. Certainly, weak bank regulation was an important ‘enabling’ factor in the growth of ABCP inasmuch as the commercial banks were hardly likely to have been as willing to create or sponsor ABCP conduits on the scale that they did had these off-balance sheet vehicles been subject to the same tight capital requirement constraints as applied to on-balance sheet assets. However, the uneven rate of ABCP growth

illustrated in figure 1 puts in serious doubt the stronger claim that regulatory arbitrage on the part of the commercial banks was the main ‘motivating’ factor behind that growth.

Acharya and Schnabl argue that while the threat of a tightening of the regulation concerning off-balance sheet vehicles in the wake of the Enron scandal served to dampen ABCP growth between 2002 and 2004, the subsequent evaporation of this threat led to resumed ABCP growth after 2004. This argument may appear to tally with the observed pattern of ABCP growth over the twenty year period prior to the crisis in that there appears to be a correlation between the ‘go-stop-go’ phases of ABCP growth on the one hand and the ‘weak-threat of strong-weak’ phases of regulation on the other. However, the argument does not tally with the significant quantitative differences between the two ‘go’ phases of ABCP growth: how can ‘weak’ regulation explain a doubling of US ABCP stocks from around \$600 billion to \$1.2 trillion in the second ‘go’ phase spanning a mere three years between end-2004 and mid-2007 when in the first ‘go’ phase spanning a ten year period between 1992 and 2002 weak regulation was accompanied by a far more slow, albeit steady, rate of ABCP expansion? Clearly, something more than weak regulation is needed to fill this explanatory gap.

For this something more, it is necessary to look at what was happening on the demand side of the ABCP market in the years prior to the crisis. One author who has done so is Pozsar who published a paper in 2011 in which he argued that demand-pull pressure from institutional investors, not regulatory arbitrage on the part of the banks, was the major driver of pre-crisis ABCP growth. Pozsar’s line of argument basically breaks down as follows: (i) the growth of institutional cash pools (cash held by an assortment of institutions including corporations and pension and mutual funds), a growth fuelled by a variety of factors (such as the globalisation of corporations, the growth of institutional asset management and the growth of income and wealth inequality), inevitably brought with it a corresponding demand for safe, short term assets in which the accumulating amounts of cash could be stored; (ii) faced with a shortage of banks that could spread the institutional cash pools across in insured, \$100,000 increments (the deposit insurance limit), institutional investors could have simply lent the cash to banks and thus become their unsecured creditors but instead chose the more rational, because more safe, option of investing in what Pozsar terms “insured deposit alternatives” i.e. short term securities; (iii) due to the increasing shortage of the safest short term securities, namely, US treasury bills (a problem primarily caused by the increases in foreign central banks’ holdings of these

securities for exchange rate management purposes) institutional investors have had to divert substantial portions of their cash pools into a range of privately guaranteed instruments, including ABCP, issued by the shadow banking system.

Although Pozsar has stretched the demand-side story of pre-crisis shadow banking growth to include the growth of the short term liabilities of this sector in addition to that of the sector's long term liabilities, he has stopped short of stretching the comparison to include the subject of yield: in his view, the search for yield may have been the chief motivating factor behind institutional investors' demand for the ABSs and the CDOs issued by shadow bank entities, but in the case of ABCP and other short term instruments it is safety and liquidity alone that were the overriding considerations in the minds of these investors. To quote Pozsar: the "rationale for institutional cash pools' aversion to bank deposits, together with the identification of the structural 'deficit' of short-term government guaranteed instruments *refutes* (his emphasis) the argument that the primary reason behind institutional cash pools' holdings of privately insured deposit alternatives was yield. It was not, as on one and three month tenors, these alternatives yielded less than negotiable CD's, and while they yielded more than short-term government guaranteed instruments, they were not held for yield reasons but because there was an insufficient supply of short-term government guaranteed instruments. This shortage naturally pushed cash pools toward relatively high yielding alternatives to bills that were still low yielding relative to uninsured CD's (2011, p.11)

Two objections to this argument can be made, one on logical grounds and the other on empirical grounds. Pozsar contradicts himself when he states that had yield been a primary consideration in the short-term investments of institutional investors they would have diverted more, if not all, of their cash into uninsured CDOs: for apart from the fact that CDs are not exactly the most liquid type of short term security (the offer of relatively high yields on CDs is precisely contingent on the fact that they cannot be cashed in before the redemption date without incurring a heavy penalty) this statement also prompts the question as to how the banks could have increased their supplies of CDOs in the amounts needed to accommodate institutional cash pools while at the same time maintaining the high credit rating and safety record of these instruments. The empirically based objection concerns the uneven pattern of ABCP growth in the pre-crisis period. While Acharya and Schnabl at least try to address this issue in their regulatory arbitrage version of ABCP growth, Pozsar by contrast simply ignores it. Yet if safety and liquidity are the only two considerations uppermost in institutional investors' minds when

buying short term instruments, then one has to explain, firstly, why the steady increase in the rate of US ABCP growth before 2002 is followed by a break in continuity in that rate between 2002 and 2004 and, secondly, why that episode is then followed by a suddenly acceleration in ABCP growth between 2004 and 2007. Given that there was an unbroken trend increase in the size of institutional cash pools over this entire period, it follows that a third consideration, in addition to those of safety and liquidity, had to have played a key role in institutional investors' decisions as to when and as to how much to invest in ABCP. That third consideration was the need for yield as we shall now begin to explain.

3. The search for yield pressure in the long term debt markets and why this spilled over into the ABCP market

The three off-balance sheet vehicles that can be said to constitute the 'core' of the shadow banking system inasmuch as these are the ones that actually manufacture asset-backed securities are the special purpose entities (SPE's), structured investment vehicles (SIV's) and conduits³. As regards the long-term securities supplied by the SPEs and SIV's in the pre-crisis years, there is, as already noted, wide if not universal agreement that the steep increase in that supply in this period was principally driven by investor demand for yield. The basis for this agreement is provided by the following pieces of descriptive evidence: (i) the huge increase in foreign and domestic demand for US treasury, municipal and corporate bonds from about end-2001 (see appendix, figure 1A); (ii) the corresponding decline in the yields on all of these US debt securities after 2001(see appendix, figure 2A); (iii) the rise in the rate of supply of ABS from about 2002 (see appendix, figure 3A); (iv) the rise in the rate of supply of CDOs from about the same time (see appendix, figure 4A).

In connection with the market for ABS, it should be noted that that these financial instruments had been in existence for over four decades prior to the crisis of 2007 but, as can be seen in figure 3A, well over half of the \$11 trillion of ABS outstanding in mid-2007 had been created just in the preceding four years. It should also be noted that despite this rapid increase in ABS

³ For more detail on the distinction between the 'core' and the 'periphery' of the shadow banking system see Lysandrou and Nesvetailova (2015).

supplies, the yield on these instruments still continued to fall as can be seen in figure 2A. This last observation helps to explain the rapid expansion in CDOs. These financial products have been around since the 1980s and even by end-2001 the global stock of these products amounted to no more than \$250 billion and yet, as can be seen in figure 4A, over the next five years that stock grew twelvefold to \$3 trillion. However, what is striking about the CDO market between 2002 and mid-2007 is not merely the rate of its expansion over this short time span but also the change in its composition as the percentage share of ‘cash’ CDOs fell sharply relative to that of ‘synthetic’ CDOs, artificial CDOs created by taking cash CDOs as the underlying reference entities for credit default swaps (‘index tranche’ CDOs are also synthetic CDOs with the difference that it is a single tranche of a cash CDO rather than the latter in its entirety that is taken as the reference entity). This radical change in the composition of CDOs was the clearest manifestation not only of the pressure on the US banking sector to create extra yield bearing securities to meet investor demand but also of the limits on that sector’s ability to meet that demand for securities.

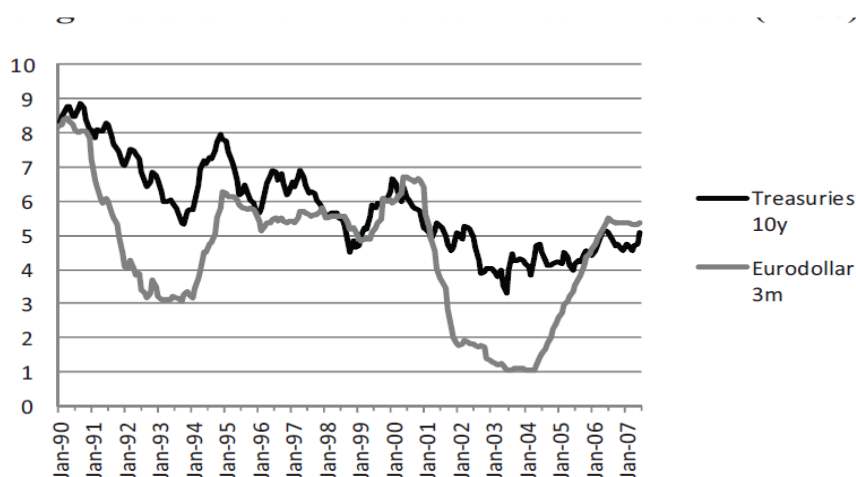
The crux of the matter is that the creation of large amounts of asset backed securities requires the extension of large amounts of loans, a criterion that was best met in the pre-crisis years through residential mortgage loans: of the \$11 trillion worth of ABS outstanding in mid-2007, 83% of this figure was US ABS and about 80% of this latter figure was in turn comprised of US residential mortgage backed securities. As can be seen in figure 5A in the appendix, most of the ABS growth between 2000 and 2004 was powered by prime mortgage lending, i.e. lending to households who met all the standard credit criteria; however, figure 5A also shows that as the limits on the numbers of prime borrowers became particularly pressing by 2004, from that time to mid-2007 the US banks had to bring increasing numbers of non-conforming borrowers (those who did not meet standard credit criteria for one reason or other) into the residential mortgage market in order to obtain the raw material needed for the creation of yield bearing securities. As we know, the sub-prime and other non-conforming backed securities were mixed together with prime backed securities to create cash CDOS, which grew in volume from around \$250 billion in 2002 to about \$1 trillion in 2007. Despite this high rate of supply of cash CDOs it was still not enough to satisfy the demand for yield, which is why between 2004 and 2007 it was synthetic CDOs that became the dominant component of total CDO stocks (\$2 trillion out of \$3 trillion by mid-2007). The important point to note in this particular regard is that synthetic CDOS help to overcome the economic limits on loan extensions because

they do not require the involvement of household borrowers and of the commercial banks that lend to them in their creation in the way that the physical presence of these agents are required for the creation of ABSs and cash CDOs.

The upshot of the above is that the story behind the rapid growth of the shadow banking system between 2002 and 2007 is one of the system constantly trying and constantly failing to fully satisfy the demand for yield spilling over from the US market for ‘ground floor’ debt securities (securities the interests on which are financed out of government tax revenues or corporate profits): there is to begin with the failure to fully satisfy the demand for ‘first floor’ securities (securities backed by bank loans) and then there is the subsequent failure to fully satisfy the demand for ‘second-floor’ securities (securities backed by securities that are backed by loans). In light of this failure, it is a reasonable conjecture that the shadow banking system also began to rapidly expand its supplies of short-term securities from about 2004 onwards in order to help soak up the excess demand for yield spilling over from the long term securities markets. Although there has as yet been no general acknowledgement of this possibility, there are several clues that point in its favour the first of which concerns the highly unusual relation between long and short term US interest rates that arose between 2004 and 2007 as shown in figure 2.

Figure 2

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



Source: Goda et.al (2013)

It is normally the case that short and long term interest rates rise and fall in tandem but we can see from figure 2 that when the US Federal Reserve began to raise the federal funds rate from the end of 2004 the yield on 10 year treasury bonds term rates continued its downward trend. The demand for yield pressure was responsible for both of these occurrences, directly so in the case of the treasury bond rate for the reasons explained above, and indirectly in the case of the federal funds rate in that while the rise in this rate was precipitated by fears that the inflationary pressures spilling over from the US housing market would spread to the entire US economy these pressures were ultimately caused by the attempts to expand the supplies of the mortgage loans needed as the raw material for the mass production of ABSs and CDOs. It is here that we come to the primacy of yield-seeking demand in ABCP growth between 2004 and 2007, for the irony is that, having helped to boost short term US interest rates above the long term rates, investors then proceeded to take full advantage of this boost by rapidly expanding their short term asset holdings. The next section expands on the details.

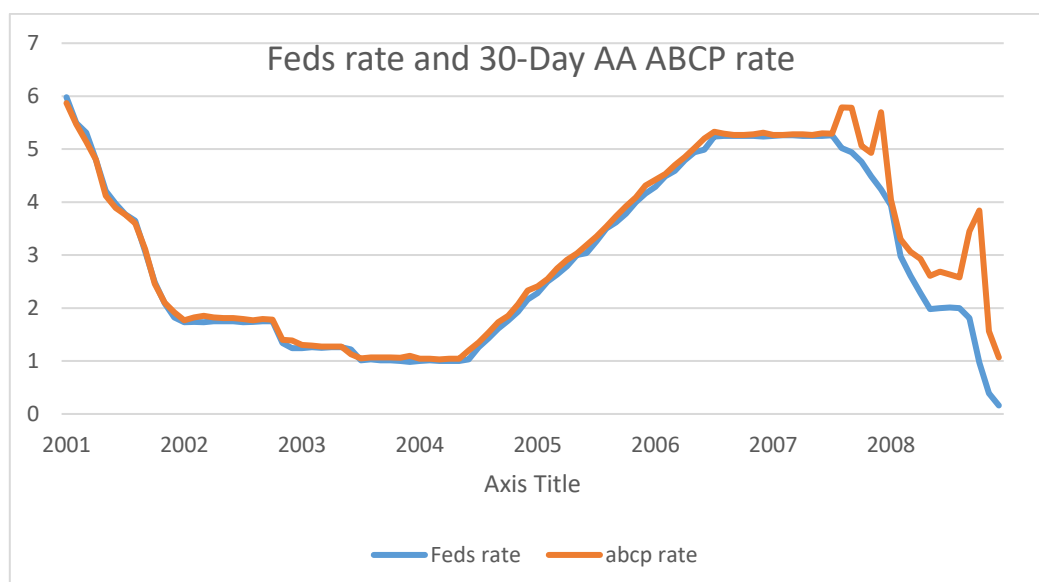
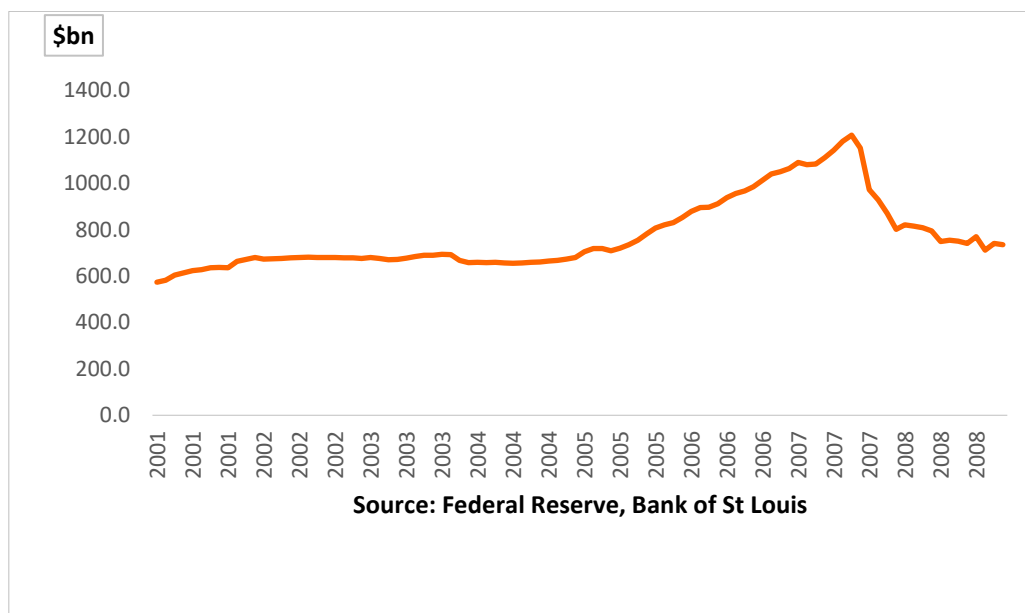
4. The pre-crisis growth of the ABCP market: the demand-pull perspective

The US market for commercial paper basically comprises three segments: those for financial commercial paper, non-financial commercial paper and asset-backed commercial paper. The ABCP segment is the youngest of the three, having only been established in the 1980's. It also remained the smallest in size right up to the early 2000s when the situation started to change, first gradually as the ABCP segment began to match the other segments and then rapidly between 2004 and mid-2007 when it became by this latter point in time the largest segment accounting for over 60% of all US commercial paper (\$1.2 trillion out a total of \$2 trillion). If we compare the federal funds rate between 1990 and 2007 shown in figure 2 with the rate of ABCP growth over the same period as shown in figure 1, we see no correlation between the two rates up to the late 1990s (ABCP supplies appear to have continued their steady upward rate of increase regardless of the up and down movements in the federal funds rate). However, as can be seen by comparing figure 3 (showing US ABCP volume growth between 2001 and 2007) with figure 4 (showing the federal funds rate and the rate on 30 day AAA ABCP, data for which only become available from 2001, over the same six year period), there is an exceptionally close correlation between the quantity and yield dimensions of the US ABCP market, with the ABCP supply rate staying flat with the fall in ABCP yield between 2002 and

2004 and subsequently rising in line with the rise in yield between 2004 and 2007. This close correlation gives the first strong indication that over this period it is the variation in the level of institutional investors' demand for ABCP that is the chief determinant of the variation in the level of ABCP supply.

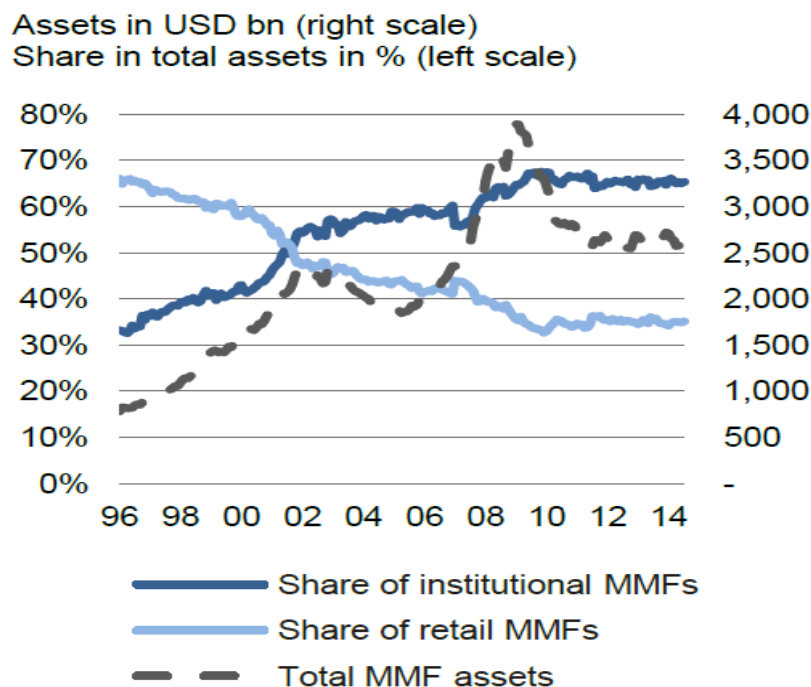
Figure 3 & 4

US ABCP outstanding volume



Further indication of the primacy of yield-searching demand in ABCP volume growth is given by the data regarding the asset holdings of the US money market mutual funds, the major intermediary vehicles through which institutional investor demand for short term commercial paper was fed through into the commercial paper market. MMMFs first emerged in the US in the early 1970s to exploit the opportunity offered by the regulatory cap on the interest that banks could pay on deposits. As the cap was set at a rate below money market yields, the MMMFs provided households with a profitable alternative to bank deposits in that while offering the same level of safety (MMMFs invest only in such short term assets as to be able to maintain a stable value of \$1 per share) they at the same time provide money market linked yields to clients. However, while regulatory arbitrage was the main driver of US MMMF growth as measured by net asset holdings up until the mid-1990s this thereafter ceased to be the case as interest rate regulation was abolished in 1984 and interstate bank restrictions were lifted in 1994. Rather, the main driver of MMMF growth from this time on was the institutionalisation of this industry's client base as shown in figure 5.

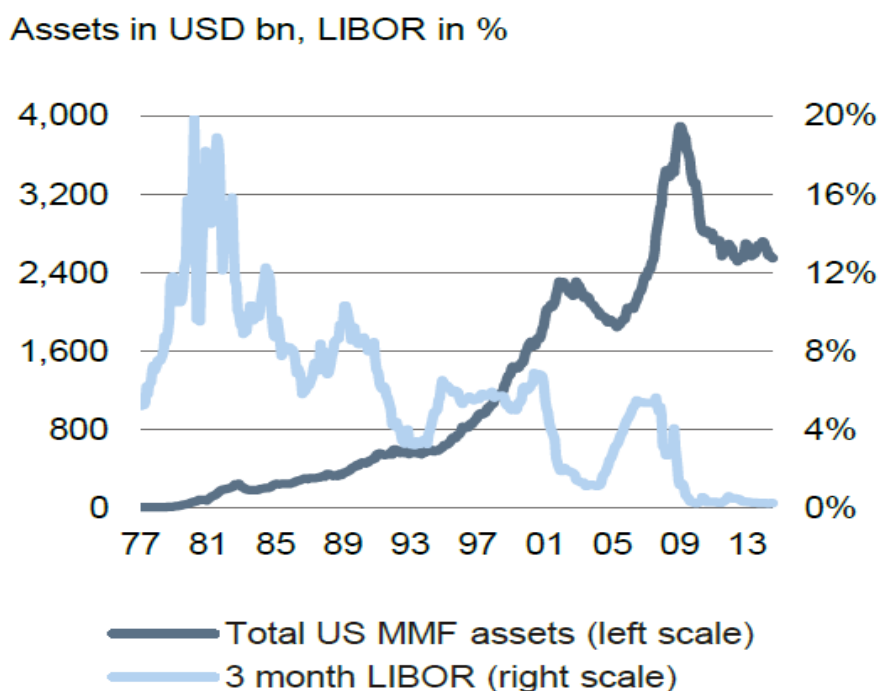
Figure 5



Source: Deutsche Bank (2105)

‘Retail MMMFs’, which cater to small household investors, were the predominant investor type up to the late 1990s, but after that date it is ‘institutional MMMs’ that cater to large investors such as corporations, pension funds and insurance companies that become the predominant type. The major reason for the popularity of MMMFs with institutional investors is that, with the continuing growth in the volumes of cash held by the investors, MMMFs offered a convenient and economically efficient way of storing large amounts of this cash in a safe and liquid form. This said, the fact that yield considerations in addition to those of safety and liquidity were another major reason for the popularity of MMMFs becomes clear if we focus on the historical process by which institutional MMMFs gained ascendancy over retail MMMFs. As can be seen in figure 5, that process breaks down into three distinct phases: (a) the phase between 1996 and 2002 when the share of institutional MMMFs in total MMMF assets was rising rapidly; (b) the phase between 2002 and 2004 when the share of institutional MMMFs continued to rise but at a much slower rate; and (c) the phase between 2004 and 2007 when the share of institutional MMMF again rose at a relatively high rate.

Figure 6



Source: Deutsche Bank (2105)

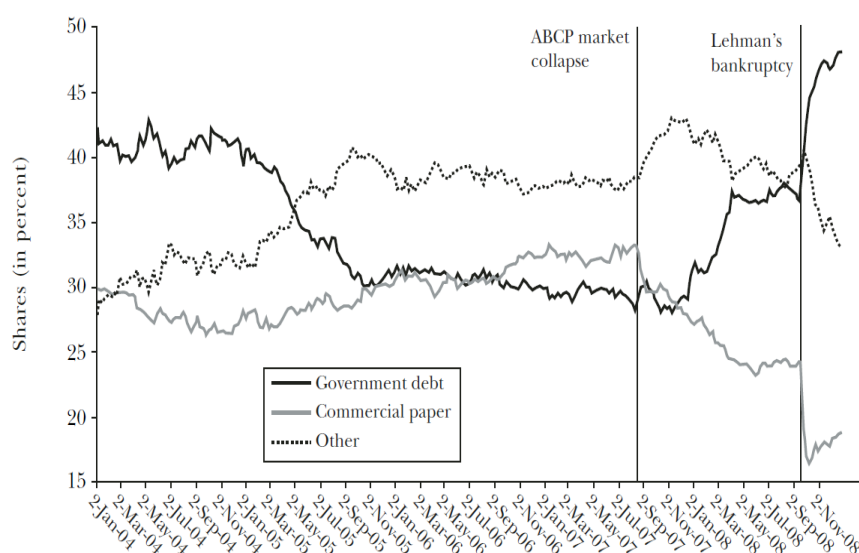
The most striking outcome of the ‘institutionalisation’ of the MMMF client base is that from about 2000, the critical point at which the assets of institutional MMMFs begin to predominate over those held by retail MMMFs, changes in the overall size of this sector as measured by its total assets begin to mirror the changes in the federal funds rate as can be seen in figure 6. The explanation for this phenomenon essentially comes down to the fact that institutional investor demand for MMMF services is far more sensitive to money market rates than is the demand exercised by household investors. For households the relevant short term asset choice is between bank deposits and MMMF holdings, and as long as the yields delivered by MMMFs 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 before the late 1990s when retail MMMFs were predominant. By contrast, the relevant asset choice for institutional investors such as pension funds and insurance companies is not only between different types of short term investments (e.g. between direct holdings of T-bills, corporate commercial paper, CDs and so on and indirect holdings of these instruments via MMMF investments) but also between short and long term investments (e.g. between holding shares in MMMFs and holding bonds and equities). The point is that for many of the large institutional asset managers, holding stocks of cash is a necessary part of the portfolio management process in that these stocks fill in the gaps between the sales and purchases of long term securities in addition to meeting any other liquidity needs. A further point, however, is that the amounts of these interim cash holdings will tend to fall when short term interest rates are low relative to long term rates in that only the minimum amount needed for liquidity purposes will be held as the yield factor declines in importance, while the amounts of interim cash stocks will tend to rise when short term rates are high relative to the long term rates in that more cash will be held than is usually needed with the excess amount being directed into short term instruments to take advantage of the high yield on them. This is why, as we say and as is made clear in figure 6, changes in the rate of MMMF asset growth exactly match changes in the federal funds rate from about 2000 on when institutional MMMFs become dominant.

With the above points in mind, we can begin to understand what exactly happened between 2004 and 2007 in the US ABCP market. Given the increased inflows of cash from institutional investors seeking to benefit from the rise in short term yields after 2004, the MMMFs obviously had to find equivalent amounts of short term securities to accommodate these inflows. Furthermore, given that US treasury bills were in short supply for the reasons specified above,

the MMMFs were forced to resort to short term financial assets supplied by the private sector. As can be seen in figure 7, while ‘government’ MMMFs (those that only invest in the securities issued by the US government or its agencies) were the predominant type of MMMF up to early 2005, ‘prime’ MMMFs (those that invest in securities issued by private institutions) subsequently became the predominant type, with the increase in investment in commercial paper being a particularly significant driver behind this development.

Figure 7

Money Market Funds’ Asset Shares in Total Holdings, January 2004–December 2008



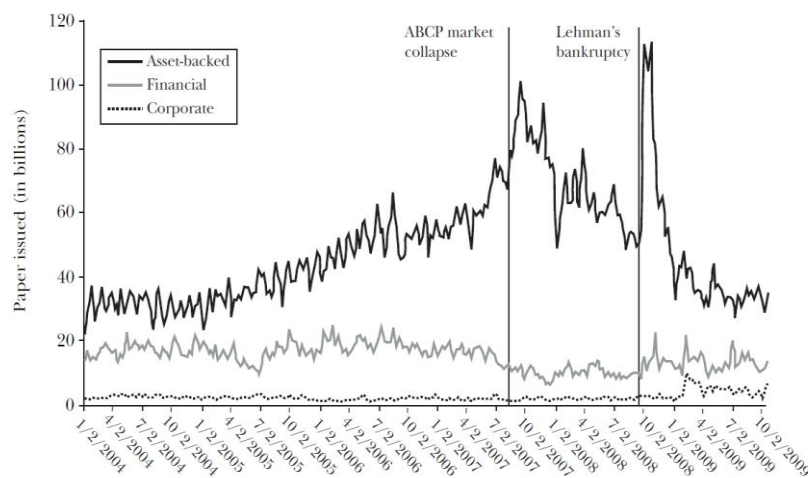
Source: Kacperczyk and Schnabl (2010)

While MMMFs increased their overall holdings of commercial paper in the immediate pre-crisis period, it is clear from figures 8 (showing ABCP issuance) and 9 (showing ABCP volume outstanding) that it was the ABCP segment of the commercial paper market that was by far the most responsive to MMMF demand. The reason why the other segments were less responsive is that the supplies of financial and non-financial commercial paper are ultimately determined not only by the amount of debt that the issuing corporations wish to carry but also by the structure of that debt. In light of the continuing fall in long term interest rates while short term

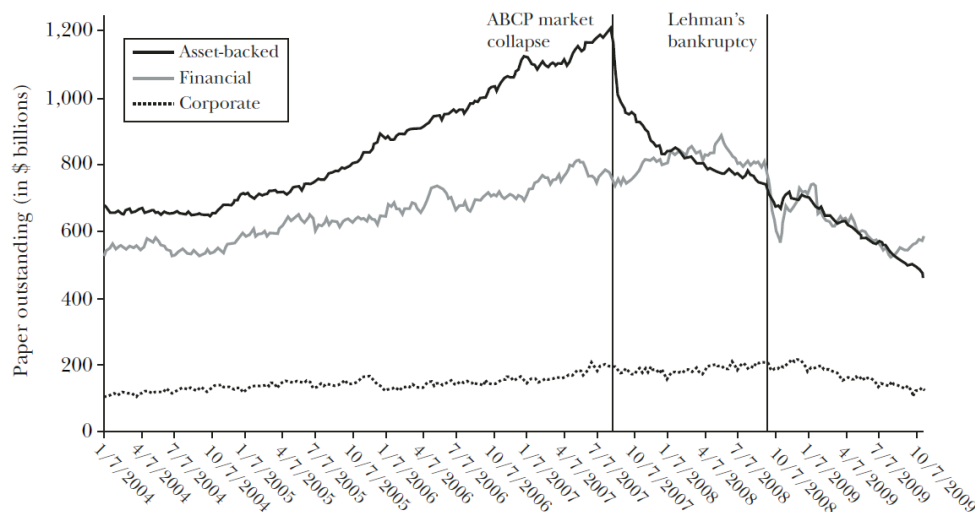
rates continued to rise between 2004 and 2007, many fund raising corporations chose to lock into the low long term rates by issuing more bonds and cutting back on their issuance of commercial paper. Thus faced with an increasing shortage of financial and non-financial commercial paper relative to the amounts needed to accommodate their institutional clients' need for yield, the MMMFs had little option but to turn to the shadow banking system, and to its conduits in particular, to make good the shortfall. That the conduits were in a position to do so precisely came down to the fact that from 2004 CDOs and other structured finance securities began to figure far more prominently as backing collateral for ABCP issuance: unlike the yields on blue chip corporate bonds that fell close to or below short term rates between end-2004 and mid-2007, the yields on CDOs consistently remained above short term rates over this entire period thus giving conduits motivation to continue expanding ABCP volume.

Figure 8

Commercial Paper Issuances, January 2004–October 2009



Source: Kacperczyk and Schnabl (2010)

Figure 9**Commercial Paper Outstanding, January 2004–October 2009**

Source: Kacperczyk and Schnabl (2010)

To summarise, the rapid growth of the US ABS and CDO markets in the pre-crisis era and the equally rapid growth of the US ABCP market in the same era are not two different stories so much as two sides of the same story: that concerning the reach for yield. This said, there is one important feature that distinguishes the two sides of the yield story, namely, that pertaining to the geographical origin of the shadow bank entities that mass produced the yield bearing securities. While the SPEs and the SIV's responsible for the long term securities remained predominantly US in origin right up to the outbreak of the subprime crisis, the same was not true of the ABCP conduits. In their case, the US domination that had prevailed ever since their inception in the 1980s gave way to European domination after 2002. An explanation for this development is given in the next section.

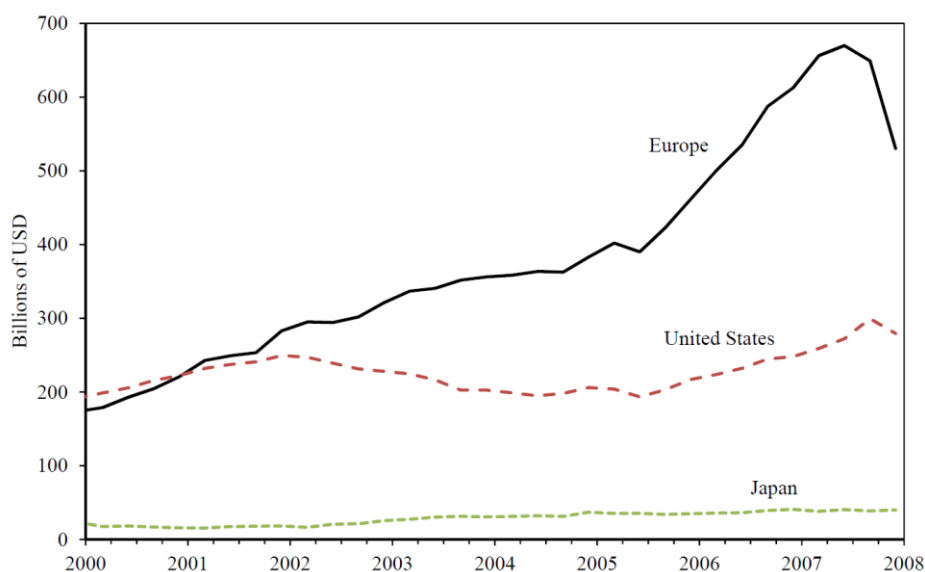
5. The pre-crisis growth of the ABCP market: the supply-push perspective

In addition to the doubling in the size of the global ABCP market between 2004 and 2007, there were two other notable developments in this market over the same period. The first was

the change in the geographical and functional breakdown of the institutions sponsoring the ABCP conduits. That fact that of the \$1.5 trillion worth of ABCP outstanding at mid-2007 \$1.2 trillion were dollar-denominated paper issued in the US does not mean that the majority of the sponsoring institutions were US domiciled. In fact, the contrary was the case for as shown in figure 10 it was European domiciled commercial banks that, having taken over the number one spot in ABCP production from the US banks by about 2002, then became the driving force behind the accelerated rate of ABCP production through to 2007. The parallel development over the same period was the notable increase in the percentage share of non-bank institutions in global ABCP supply. Where ABCP conduits sponsored by non-bank financial institutions had accounted for approximately \$100 billion of the \$700 billion of global ABCP outstanding at end 2004 (i.e. about 14% of the total), by mid-2007 they accounted for some \$400 billion out of the global stock of ABCP of \$1.5 trillion then outstanding (i.e. about 28% of the total).

Figure 10

Global ABCP outstanding by region



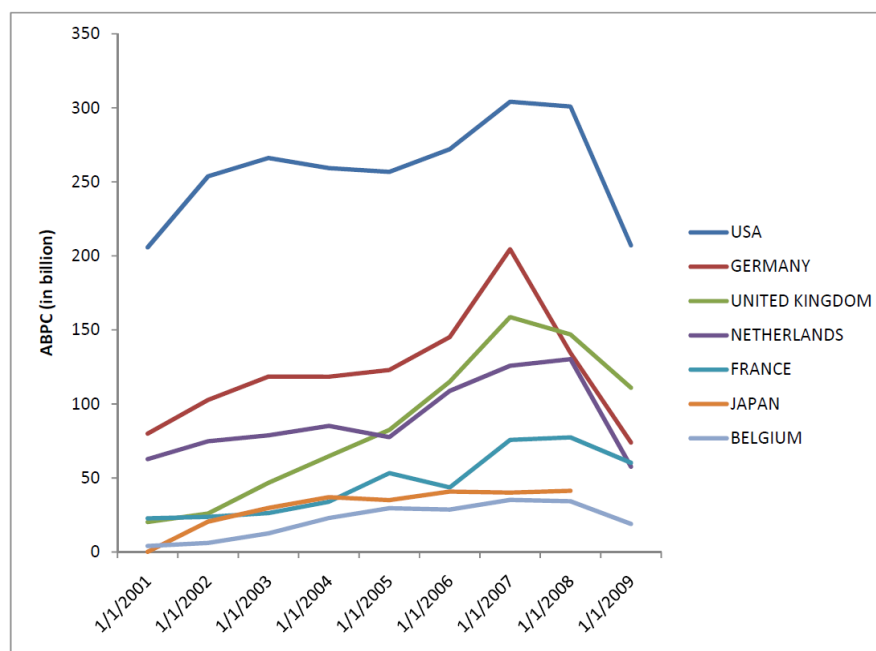
Source: Arteta et.al (2013)

Whatever the functional differences separating the non-European banks from the non-financial institutions that sponsored ABCP conduits, they shared one common feature that separated them both from US commercial banks: this is that where the latter at the time of low yields in the US could still make large profits out of the extension of mortgage loans and out of the

securitisation and the re-securitisation of these loans, non US banks and non-bank financial institutions had no such direct access to the US housing market and hence no such direct means of making profits in this way. Thus what they did instead was to insert themselves as the intermediary institutions between the creators of ABS and CDOs on the one hand and the buyers of ABCP on the other. In other words, their way of generating yield in the 2004-7 period was to exploit to the full the maturity mismatch and yield gap between long and short term securities. Nowhere was this exploitation more pronounced than in the case of Germany's Landesbanken. When German government guarantees of the assets held by these banks were withdrawn in 2005, the latter had to cut back on the amounts of risk that they could take and hence on the amounts of loans that they could extend, cuts that meant that they had to find alternative methods of generating yield. As it turned out, one favourite method of doing so was to set up off-balance conduits that would purchase US ABS and the highly rated tranches of US CDOs for use as collateral for ABCP issuance. As can be seen in figure 11, German banks led by the Landesbanken were particularly prominent in driving ABCP growth between mid-2005 and mid-2007.

Figure 11

Growth in bank-sponsored ABCP by country



Source: Arteta et.al (2013)

Further confirmation that the search for yield was as important a factor on the supply side of the ABCP market between 2004 and 2007 as on the demand side concerns the programme breakdown of ABCP programmes. As can be seen in figure 12a, ‘multi-seller’ programmes were far and away the dominant type in 2000, commanding some 63% of all ABCP programmes outstanding at that point in time. These are typically programmes where banks remove from their balance sheets the various loans that they have made to their business or household clients (corporate loans, credit card loans, auto loans and so on) and pass them on to the conduits who use these loans as backing collateral for ABCP issuance. As the credit risk on the collateral assets can be readily monitored given the one to one relations between the banks and the clients that they lend to, the risk premiums and hence the yields on these assets will not be significantly higher than the yields on benchmark assets (although they will usually be high enough to allow, for example, for securities arbitrage – borrowing at Libor to buy assets that give a small premium over Libor). However, as can be seen in figure 11b, by 2007 the share of multi-seller programmes had fallen to 43% of all ABCP programmes outstanding while the percentage share of ‘hybrid’ and ‘SIV’ programmes rose. What marked these out from many of the other conduit programmes is that they relied more heavily on investment grade structured finance securities such as ABSs and CDOs for the collateral backing of ABCP rather than on credit loans. As these securities were priced according to market valuations of risk, they tended to carry higher returns thus allowing for an even more profitable exploitation of maturity mismatches between assets and liabilities than was possible for other ABCP programmes.

Figure 11

(a)

ABCP Market by Program Type
Moodys's Rated Programs as of September 30, 2000

Program Type	ABCP Outstanding (\$ Mil.)	% by Outstanding	Number	% by Number
Multi-Seller	348,853.0	63.4%	144	48.0%
Sec. Arbitrage	106,366.0	19.3%	73	24.3%
Single-Seller	48,191.0	8.8%	57	19.0%
Loan-Backed	26,793.0	4.9%	17	5.7%
Hybrid	10,867.0	2.0%	8	2.7%
Other	9,583.0	1.7%	1	0.3%
Total	\$550,653	100.0%	300	100.0%

(b)

ABCP Market by Program Type
Moodys's Rated Programs as of September 30, 2007

Program Type	ABCP Outstanding (\$ Mil.)	% by Outstanding	Number	% by Number
Multi-Seller	655,526.0	49.4%	140	37.2%
Sec. Arbitrage	173,761.0	13.1%	42	11.2%
Single-Seller	173,588.0	13.1%	74	19.7%
Hybrid	153,259.0	11.5%	36	9.6%
SIV	95,292.0	7.2%	60	16.0%
Repo/TRS	56,176.0	4.2%	11	2.9%
SIV-LITE	5,170.0	0.4%	8	2.1%
Loan-Backed	3,413.0	0.3%	1	0.3%
Other	11,271.0	0.8%	4	1.1%
Total	\$1,327,456	100.0%	376	100.0%

Source: Ahern (2007)

From the above we can see why the US and European commercial banking sectors took such a massive hit from their conduits when the subprime crisis finally broke out in full force on August 9th 2007, the day when the French bank BNP Paribas announced that it could not value the structured financial securities held by three of its hedge funds. Up to that fateful announcement, the ABCP yield premium over the treasury bill rate had averaged between 8-10 basis points but within 24 hours of that announcement the yield premium had jumped to 150 basis points. The fact that some buyers of ABCP were only willing to roll over short term loans at unusually high rates was bad enough, but what then made matters far worse was that many other buyers simply refused to roll over loans at any price thus forcing banks to take their conduits' assets back on to their balance sheets. Ideally, the investors in ABCP should have distinguished between those conduits who mainly held conventional loans and securities as backing collateral from those who had mainly held what turned out to be the highly toxic CDOs. That this was not possible in practice largely came down to the fact that, owing to the highly complex and opaque nature of CDOs, investors could not easily ascertain which conduits were exposed to these securities and to what extent and thus simply went for the safe option of withdrawing funds from all of them.

It was because the commercial banks were allowed to make zero or minimal capital provision for the off-balance sheet assets held by their conduits that subsequently caused enormous problems for them when they had to bring those assets back onto their balance sheets. In other

words, regulatory arbitrage did play an important enabling role in the subprime crisis as we have already acknowledged. However, that it was the search for yield that played the more crucial driving role in the subprime crisis becomes clear when we consider (a) that it was only the complete breakdown in trust in the money markets that forced the banks to bring their conduits' assets back onto their balance sheets; (b) that it was only because there was too much ABCP collateralised by CDOs that caused the breakdown in trust to be so complete; and (c) that it was only because of the use of CDOs as extra collateral that there could have been an expansion of ABCP in the amounts needed by yield seeking investors.

6. Conclusion

The chief conclusion of this paper is that the accelerated rate of ABCP production between 2004 and 2007 was a development that served to compound the very same pressures that gave rise to it in the first place. On the one hand there was the acute problem of a shortage of safe long term assets in the US: to overcome the problem, the US banking system expanded the supplies of structured financial securities to the point where the threat of domestic inflationary pressures spilling out of the US housing market lead to short term interest rates being lifted above the long term rates. On the other hand the rise in short term rates lead to an equally acute problem of a shortage of safe short term assets in the US: given not only the shortfall in financial and corporate commercial paper relative to investor demand but also the shortfall of good quality loan collateral conventionally used in multi-seller and single-seller ABCP programmes, many institutions and most notably European commercial banks took the opportunity to expand the supply of ABCP using ABSs and CDOs as collateral. Thus it was that the external pressure on the US banking system to step up the rate of supply of ABSs and cash CDOs between 2004 and 2007 was doubly immense in that it came from two directions: not only from the hedge funds and other institutions on the buy side of the long term securities markets but also from the European commercial banks and other institutions on the sell side of the short term commercial paper market. To cope with this pressure of demand for yield, the US domestic mortgage market had to be expanded far beyond its normal parameters. Ultimately, it was because this expansion went far too far that caused the subprime crisis.

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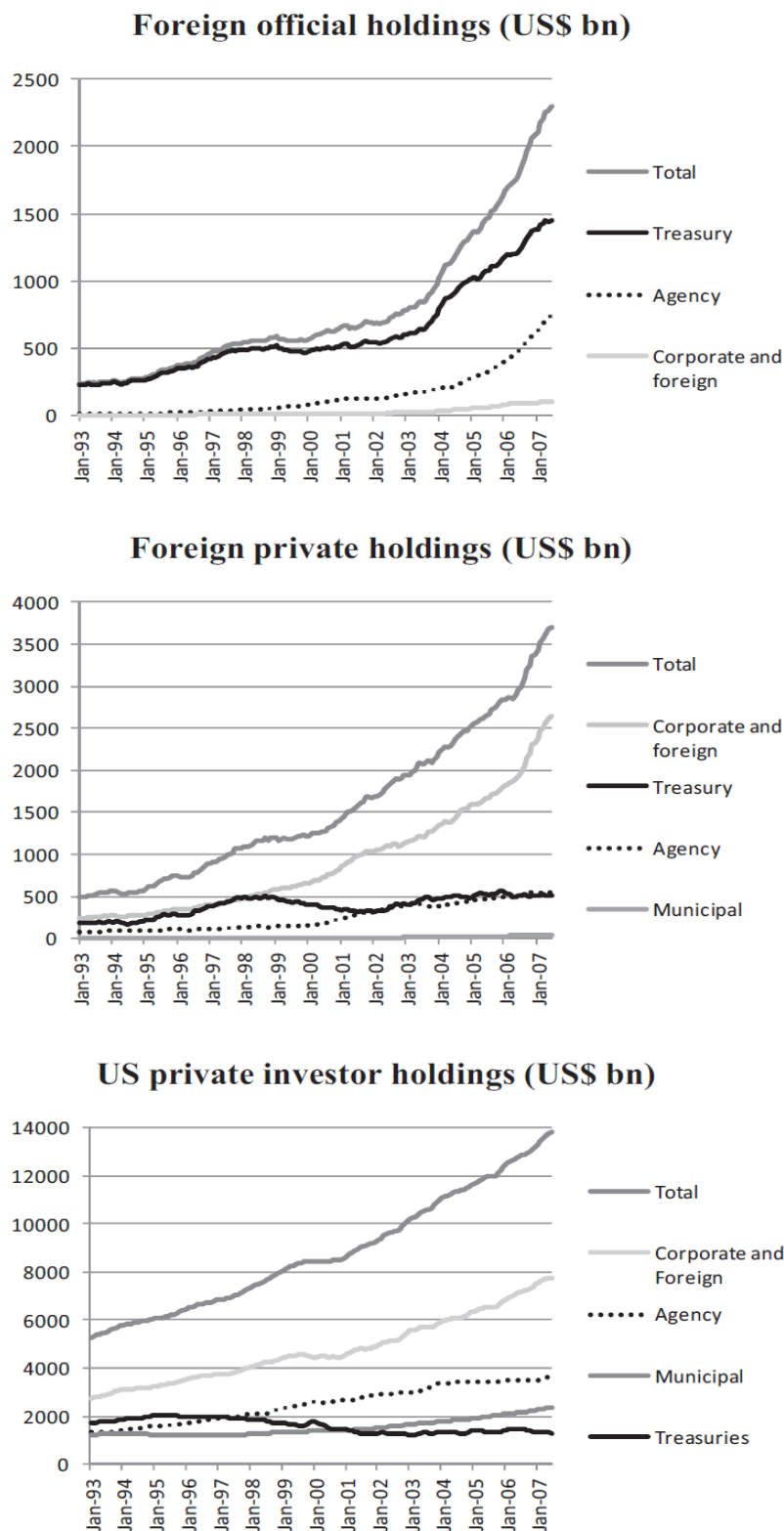
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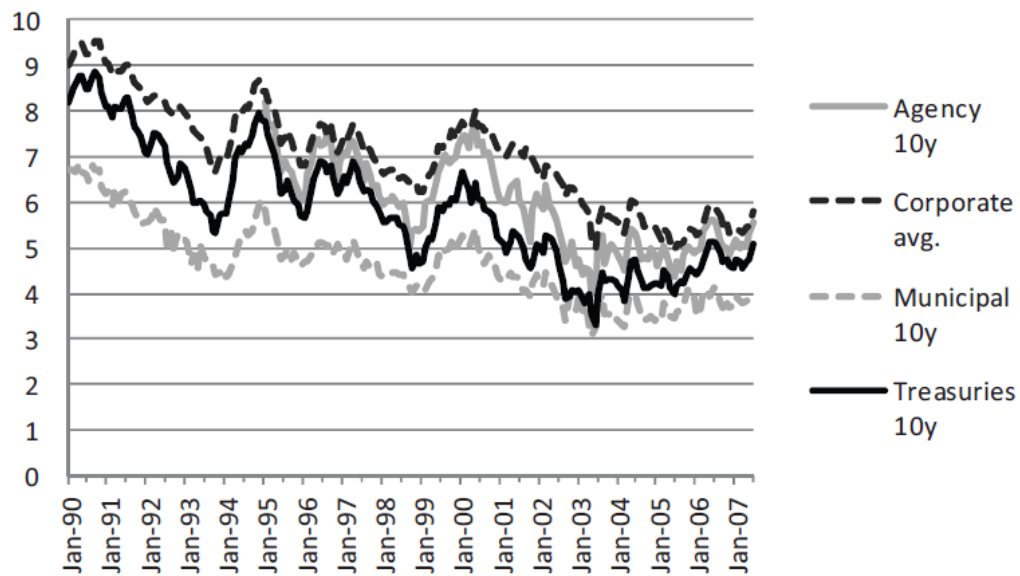
APPENDIX

Figure 1A



Source: Goda et.al (2013)

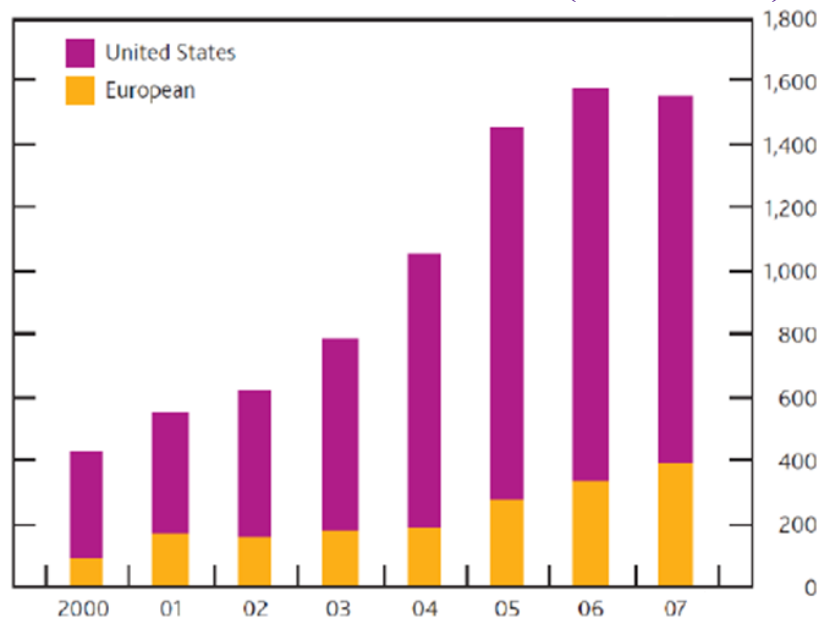
Figure2A



Source: Goda et.al (2013)

Figure 3A

Asset-backed securities issuance (US \$Billions)



Source: Bank of England (2007a)

Figure 4A

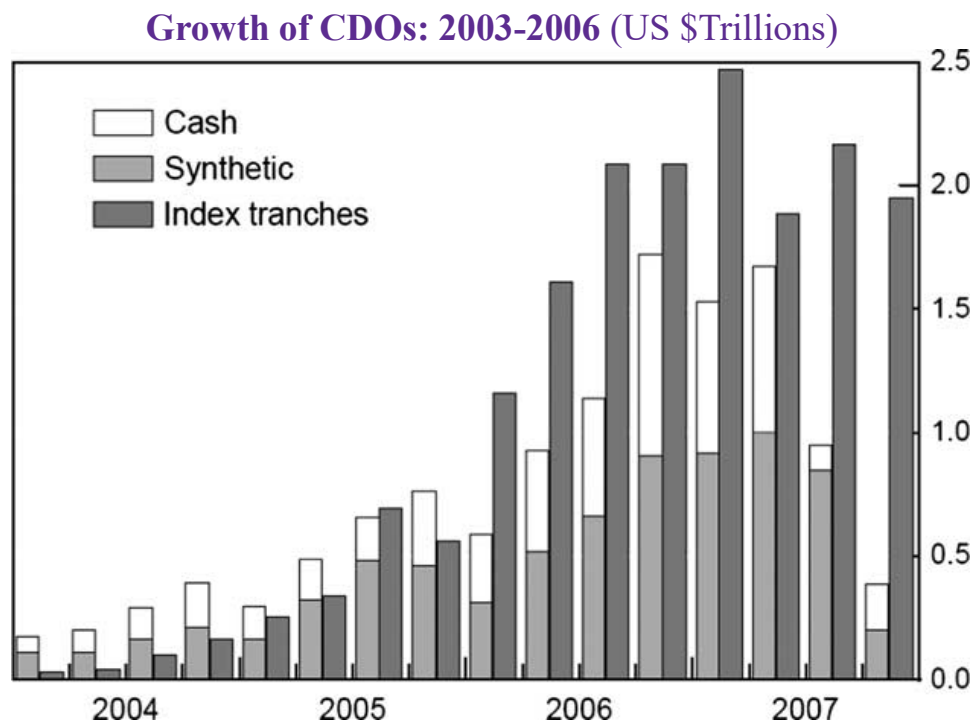
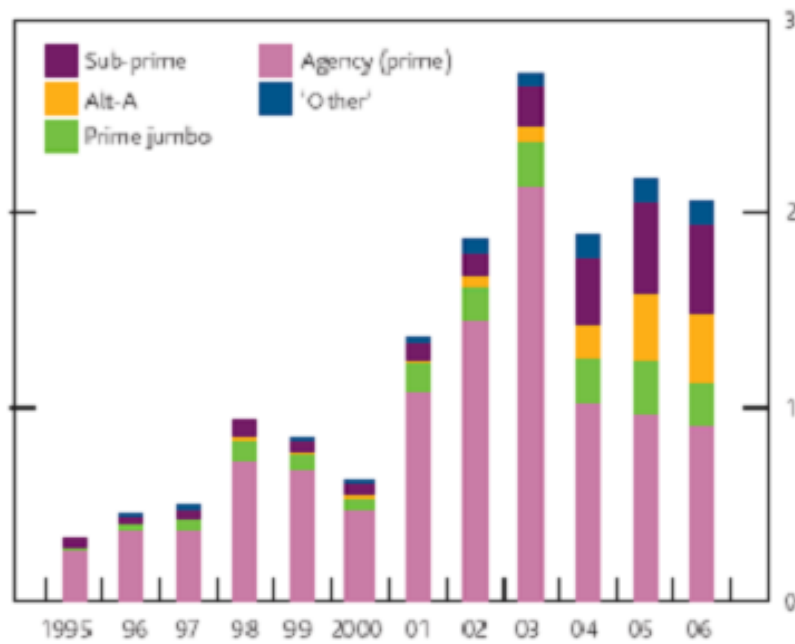


Figure 5A

US Residential Mortgage-Backed Securities Issuance



Source: Bank of England (2007b)