



City Research Online

City, University of London Institutional Repository

Citation: Lysandrou, P. and Shabani, M. (2018). The explosive growth of the ABCP market between 2004 and 2007: A "search for yield" story. *Journal of Post Keynesian Economics*, 41(4), pp. 526-546. doi: 10.1080/01603477.2018.1494504

This is the accepted version of the paper.

This version of the publication may differ from the final published version.

Permanent repository link: <https://openaccess.city.ac.uk/id/eprint/24675/>

Link to published version: <http://dx.doi.org/10.1080/01603477.2018.1494504>

Copyright and reuse: City Research Online aims to make research outputs of City, University of London available to a wider audience. Copyright and Moral Rights remain with the author(s) and/or copyright holders. URLs from City Research Online may be freely distributed and linked to.

City Research Online:

<http://openaccess.city.ac.uk/>

publications@city.ac.uk

The Explosive Growth of the ABCP Market between 2004 and 2007:

A ‘Search for Yield’ Story

Photis Lysandrou and Mimoza Shabani

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 there is now some acknowledgment that the search for yield was the major driver of ABS and CDO growth in the US, the same is not true of the US 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 US ABCP growth between 2004 and 2007. To back up this argument, the paper points to four variables that were closely correlated with this growth: the federal funds rate; US MMMF asset holdings; the change in the geographical breakdown of the institutions supplying ABCP; and, finally, the change in the programme breakdown of the ABCP market.

JEL Classification: G20; G21

Keywords: asset backed commercial paper; search for yield

Introduction

To understand the financial crisis one must above all understand the reasons why the shadow banking system had in the preceding period 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 some acknowledgment that the major driving force behind this growth was the search for yield on the part of institutional investors (Cabellero,2010; Lysandrou, 2009, Goda et.al, 2013, Goda and Lysandrou,2014). By contrast, there is no such acknowledgment 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. 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 pertain to the demand side of the ABCP market, was the close correlation between the rise in ABCP quantities and the rise in the federal funds rate and the correlation between ABCP growth and the rise in the asset holdings of the US money market mutual funds (MMMFs). The other two developments, which pertain to the supply side of the ABCP market, concern the change in the geographical breakdown of the institutions supplying ABCP and the change in the programme breakdown of ABCP volume: 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 that took over this role; 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.

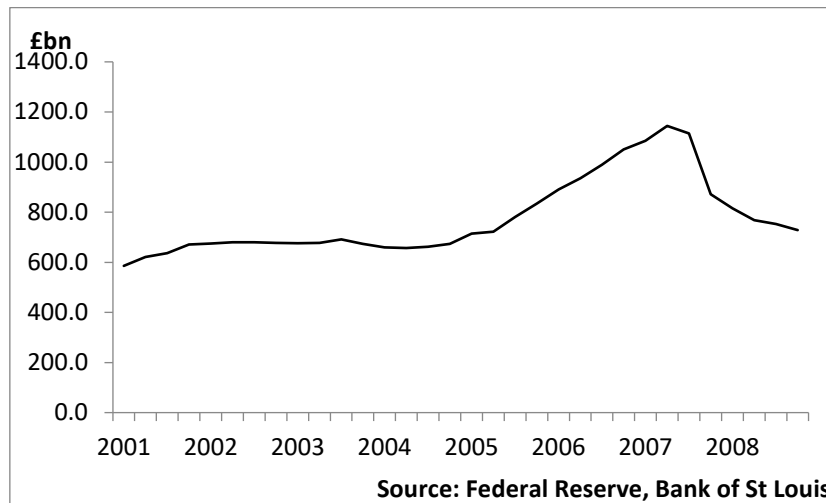
The structure of the paper is as follows. Section two discusses the reasons why yield considerations are not seen as having been key to the pre-crisis growth of the ABCP market. Section three explains how the search for yield pressure had built up in the long term US debt markets. Sections four and five explain how this same pressure spilled over into the US ABCP market. Section six provides a short summary and conclusion.

2. Current views on the pre-crisis growth of the ABCP market.

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 was also striking about the expansion of the ABCP market over the period prior to the outbreak of the financial crisis was the highly uneven rate of that expansion. As can be seen in figure 1 profiling US dollar-denominated asset-backed commercial paper, while the ABCP growth rate had been fairly steady over the years before 2002, that rate flattened between 2002 and 2004 and then rose sharply 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
US ABCP outstanding volume



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-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 over a ten year period before 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 across which institutional cash pools could be spread 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 caused primarily by the increases in foreign central banks' holdings of these securities for exchange rate management purposes) institutional

investors 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 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 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 was 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 CDs: 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 CDs 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 investor search for yield. Before elaborating on this point, we must look, first, at the reason why the search for yield pressure had built up in all of the major the US bond markets and, second, at the reasons why this development has been, with some few exceptions, overlooked by economists.

3. The search for yield pressure in the US bond markets in the pre-crisis era.

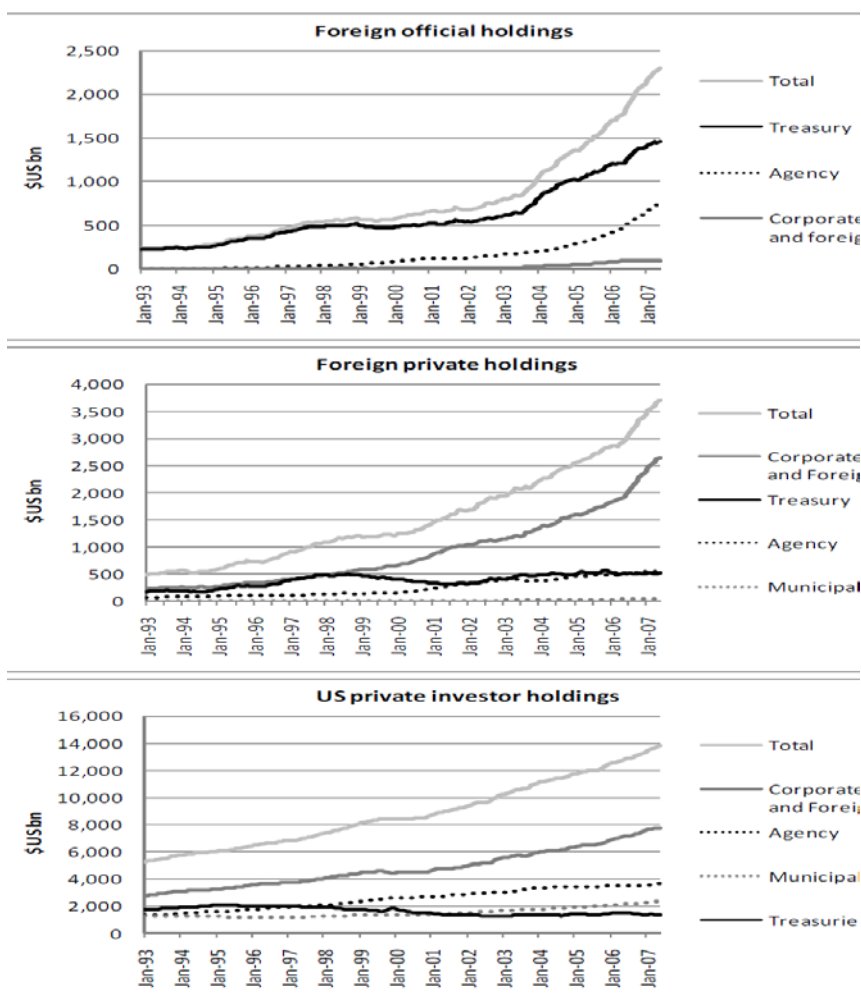
Bonds perform two important functions in the contemporary era: on the one side, they serve as a type of financing instrument and, on the other side, they serve as a type of investable. The financing function is the only one that matters for the governments, banks and corporations issuing bonds, for which reason they are only concerned with the 'flow' dimension of these securities: they raise funds through the issuance of bonds on the promise to repay the funds at some future date and in the meantime they use the funds for investment or other expenditure purposes. By contrast, it is the second function of bonds that is of crucial importance to insurance companies, pension funds and other large institutional investors who now dominate the buy side of the capital markets. For this reason they need to be concerned as much with the 'stock' or quantity dimension of bonds as much as with their flow dimension: they give sums of money when purchasing bonds in the expectation of being repaid at some future date, but in the meantime they need to use these bonds as value containers into which clients' monies can be poured and from which monies can be extracted to repay clients¹.

As bonds have no intrinsic value, it follows that they can only fulfil their value storage function for investors when their prices are maintained at a stable level over time. Thus if an excess demand for bonds as stores of value emerges, the solution to the problem cannot be through a price adjustment process as this would undermine their value storage property and would thus be self-defeating but must instead be through a quantity adjustment process: more

¹ For further discussion of the two fold nature and function of bonds and other financial securities see Lysandrou (2013; 2016).

bonds need to be supplied to soak up the excess demand thereby keeping their prices and yields stable and thus their value storage property secure. However, if for whatever reason the rate of supply of government and corporate bonds cannot keep up with the rate of investor demand for them, then it must fall to the banks and their off-balance sheet vehicles to create the extra volumes of debt securities to bridge the gap². That it was precisely this kind of situation which prevailed in the US in the immediate pre-crisis era would appear to be supported by the following facts: a sharp increase in foreign and domestic demand for US treasury, municipal and corporate bonds from about end-2001, see figure 2; a corresponding decline in the yields on all of these US debt securities after 2001, see figure 3; a steep increase in the rates of supply of ABS and CDOs from about 2003, see figures 4 and 5.

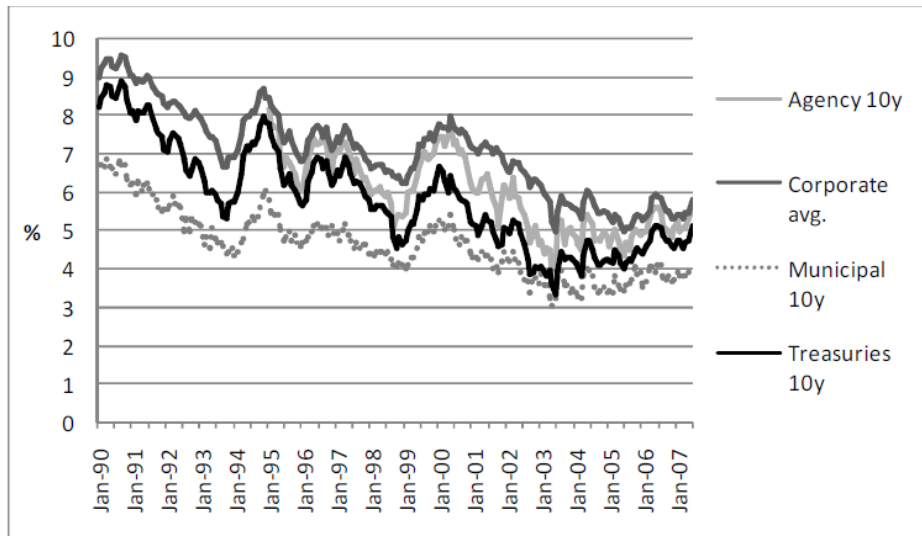
Figure 2



Source: Goda et.al. (2013)

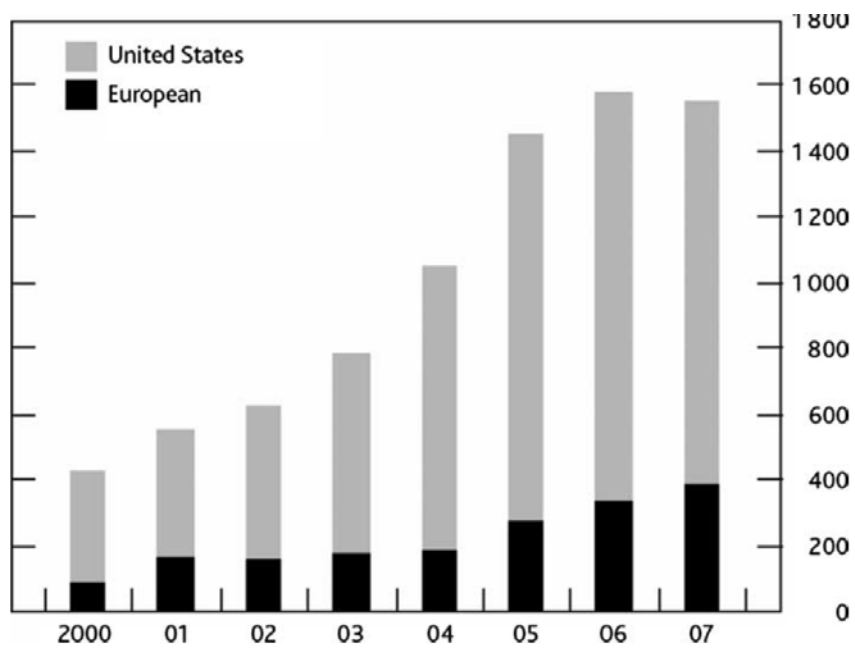
² For further discussion of the security production function of the shadow banking system see Lysandrou and Nesvetailova (2015)

Figure 3
US bond yields 1990-2007



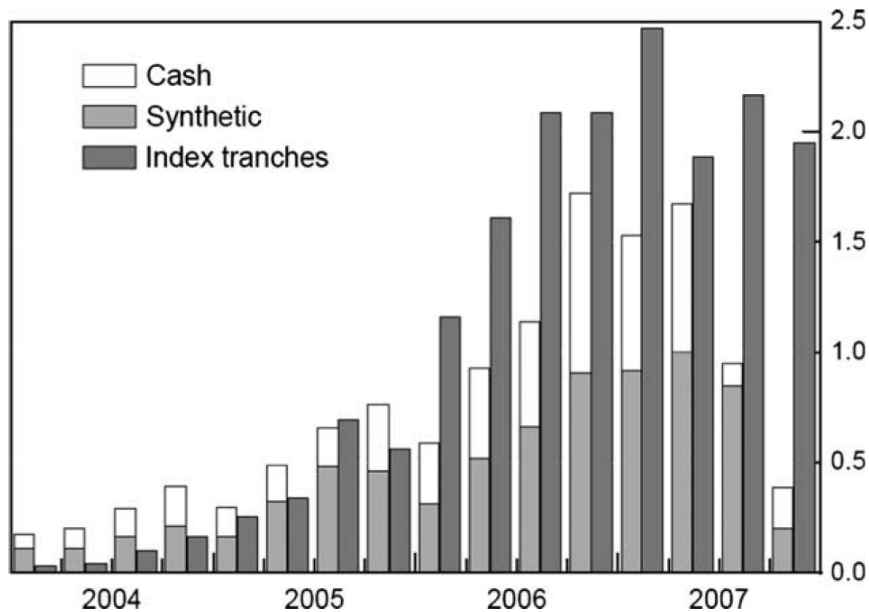
Source: Goda et.al. (2013)

Figure 4
Issuance of asset backed securities, 2007-2007



Source: Bank of England (2007)

Figure 5
Issuance of CDOS, mid-2003 to mid-2007



Source: Borio (2008)

We have noted that some mainstream economists, most notably Riccardo Caballero at MIT, pointed to a global excess demand for safe stores of value as having been a major driving force behind the pre-crisis growth of structured financial securities. However, this remains very much a minority position because the central assumptions of dynamic stochastic general equilibrium (DSGE) models, which are now the major macroeconomic models used for policy guidance purposes, simply do not allow for the emergence of an excess demand for bonds as stores of value. Alongside firms, the only other representative type of agents in DSGE models are households. As households do not market asset portfolios to the public as do pension funds and other institutional investors, they have no reason to treat securities as portable value containers in which clients' monies are stored, and thus no reason to view securities differently from the way that they are viewed by firms: just as firms borrow funds for investment purposes on the promise to repay the funds at some point in the future, households lend funds in the expectation of being repaid those funds with an added return that can be used to finance future consumption. The upshot is that as there are no agents who are concerned with the quantitative, value storage dimension of bonds and who thus need bond prices to be stable so as to safeguard this quantitative dimension, DSGE models see prices as performing the same equilibrating role in the securities markets as they do in the product markets. If, for example, households seek better returns from securities than are

available on their bank deposits their prices will go up and yields go down thus encouraging firms to issue more securities to finance investment. Conversely, to take another example, if firms issue more securities for investment purposes than are currently demanded, their prices will have to fall and yields rise so as entice the required extra household demand for securities. As excess demands for securities can never be more than a temporary phenomenon due to the equilibrating role of prices, it follows that the demand side of the securities markets can never be a source of pressure on the banking sector to create extra quantities of asset-backed securities to compensate for any shortfall in the supplies of debt securities issued by corporations. What of course then follows from viewing the financial crisis from this standpoint is that it was the various failures on the part of the banks and on the part of other institutions connected to them that were chiefly to blame for the growth of the toxic securities that triggered the crisis.

Heterodox accounts of the financial crisis differ radically from those of the mainstream in that where the latter see agency and institutional failures as having arisen out of gaps in an otherwise sound macroeconomic policy framework, the former see these failures as the direct product of the neo-liberal orientation of the contemporary policy framework. This said, there is one issue regarding the crisis on which there is a correspondence of position: this is that heterodox accounts similarly do not give causal significance in the crisis to an excess demand for securities because the assumptions of heterodox theory similarly do not allow for the emergence of such an excess demand problem³. Consider, by way of example, post-Keynesian stock-flow models, now generally considered to be the most advanced and comprehensive type of heterodox macroeconomic model. Although these models take the aggregate sector rather than the rational choice maximising agent as their basic unit of analysis, they nevertheless collapse the institutional asset management industry into the household sector rather than separate it out as a sector in its own right⁴. As households have no reason to view financial securities differently from the way that they are viewed by corporate issuers, it follows that it is only the capacity of securities as financing instruments

³ For a fuller critique of post-Keynesian stock-flow models along these lines see Lysandrou (2014)

⁴ Although some post-Keynesian stock-flow models include a separate 'rentier' sector (see e.g. van Treeck (2009) they also only highlight the financing function of securities. Rentiers differ from households in that they draw their incomes from rental profits rather than from wages, and they differ from corporations in that they invest less in long term productive activities than in short term speculative ventures. However, as rentiers only operate in their own individual interests, unlike institutional asset managers who market asset portfolios to the public, they too have no reason to view securities differently to the way that they are by viewed by their corporate or government issuers.

that is of importance in these models. Securities may serve as stocks from which funds flow at the start of a given period and to which they return at the end of that period, but in between these two points in time securities are not thought to serve as portable investables, assets whose value storage property is as important throughout the trading period as it is at the beginning and end of that period. As a consequence of the omission of an institutional investor perspective on securities, post-Keynesian macro models end up depicting the financial markets as the one group of markets that operate to an equilibrating, price adjustment rule rather than to a quantity adjustment rule. Thus to quote Godley and Lavioe: “with trivial exceptions, there are no equilibria (or disequilibria) outside financial markets” (2006, p.2); “market clearing through prices does not usually occur except in financial markets” (2012, p.18)). Now if the bond markets, along with those for other financial securities, always clear automatically through price adjustments, it must follow, when applying this perspective to the pre-crisis growth of the US ABS and CDO markets in particular, that that growth could not have possibly been powered by an excess investor demand for bonds spilling over from the US government, corporate and municipal bond markets. Rather, the central impetus behind the banking system’s creation of extra quantities of ABSs and CDOs must have derived from the various failures within the system itself.

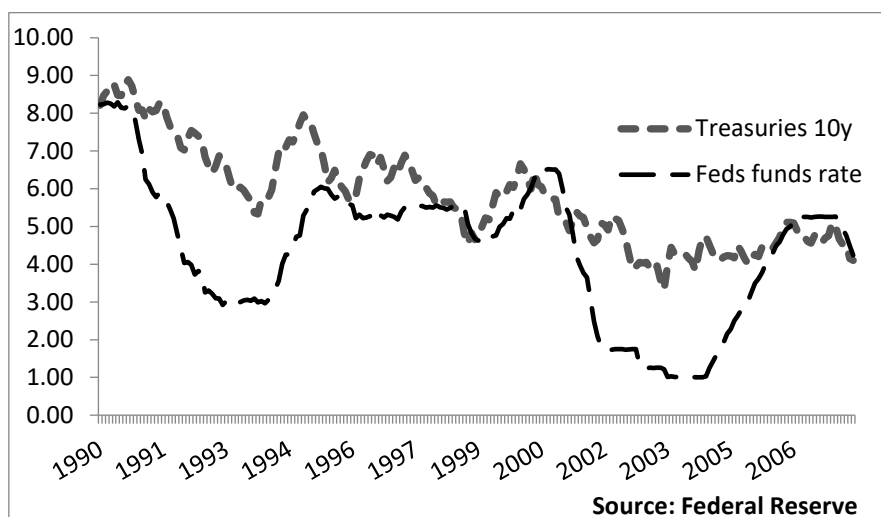
While we consider heterodox explanations of the financial crisis to be generally superior to those of the mainstream, we also consider these explanations to be incomplete. If failures on the supply side of the ABS and CDO markets were sufficient to explain their pre-crisis growth, we should have expected that growth to have registered a trend rate of increase over a far longer stretch of time than was actually the case. The fact that well over a half of the US ABS and CDO stocks outstanding in mid-2007 had been created in the previous three years, combined with the fact that the steep increase in these stocks coincided exactly with the steep increase in foreign and domestic investor demand for yield bearing securities, would indicate the crucial importance of demand pull pressures in driving pre-crisis ABS and CDO growth. The same caveat applies to the US ABCP market. The fact that over a half of the \$1.2 trillion worth of ABCP outstanding in mid-2007 had been created in the previous three years give strong indication that the bulk of these short term securities had been created to accommodate the excess demand for yield spilling over from the long term debt markets. The next section begins to flesh out the details of this argument.

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

The rapid expansion in 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. What was already unusual is that while the policy rate fell by 5.5% between 2001 and 2004 the yield on 10-year Treasuries fell by only 3.57%, from 6.77% to 3.2%; even more unusual, however, was 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% (see figure 6) 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 made it inevitable that institutional investors would look to the commercial paper market as a supplementary means of satisfying their need for yield.

Figure 6

US long and short term interest rates, 1990-2007

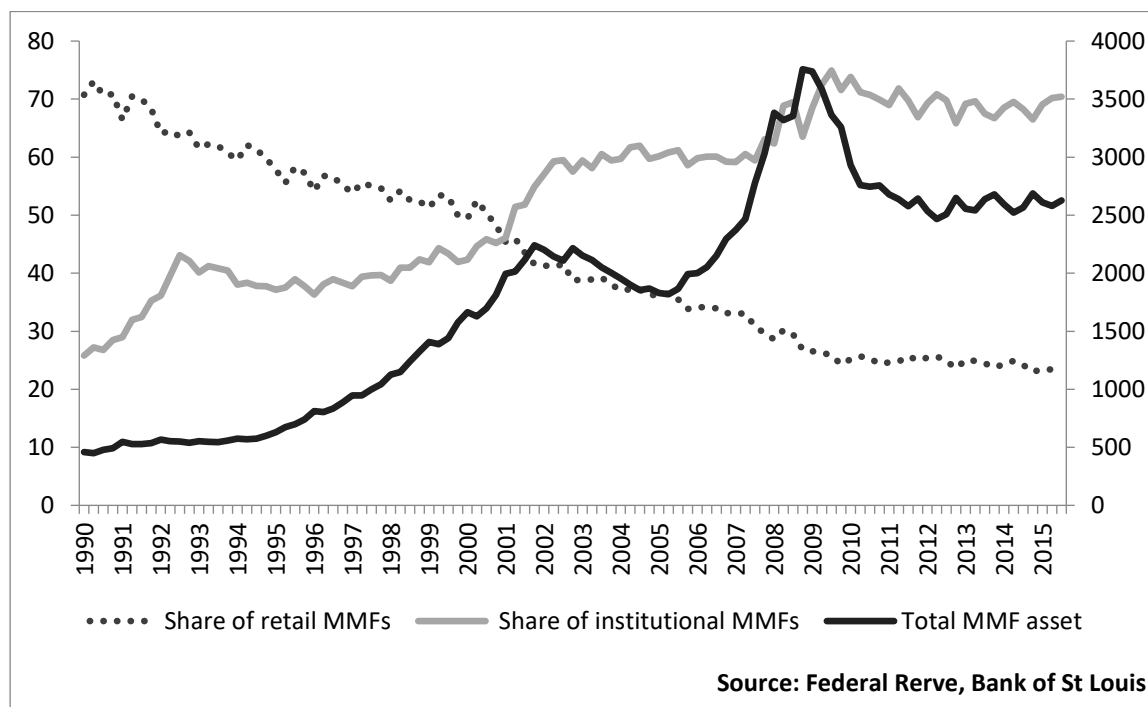


The US market for short term commercial paper basically comprises three segments: those for financial commercial paper, non-financial commercial paper and asset-backed commercial paper. The ABCP segment is the youngest of the three, having only been established in the 1980's. It also remained the smallest 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). What is interesting is that there was absolutely no relation between the federal funds rate between and the rate of US ABCP growth up to about 2002: that growth continued at an even rate regardless of the sharp up and down movements in the federal funds rate. However, the situation changed radically from 2002 onwards: the ABCP supply rate stays flat with the fall in the federal funds rate between 2002 and 2004 and subsequently rises in line with the rise in the federal funds rate between 2004 and 2007. This development gives the first indication that it was the strength of investor demand for yield that was the chief cause of the sudden acceleration in the rate of ABCP supply. The second, and even more convincing, indication that this was the case is given by the data on the US money market mutual funds, the major intermediary vehicles through which institutional investor demand for yield 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 7.

Figure 7

**Retail and Institutional MMMF Assets in USD bn (right scale)
Share in total assets in % (left scale)**

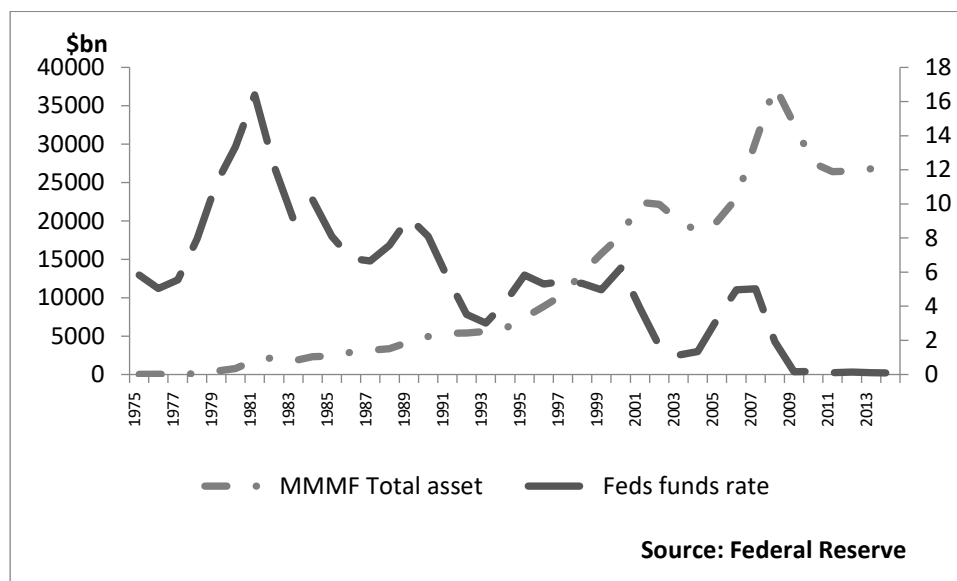


‘Retail MMMFs’, which cater to small household investors, were the predominant investor type up to the late 1990s, but after that date it is ‘institutional MMMs’, which cater to large investors such as corporations, pension funds and insurance companies, that become the predominant type. The major reason for the popularity of MMMFs with institutional investors is that, with the continuing growth in the volumes of cash held by these 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 7, 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.

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 8. 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 8, 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.

Figure 8

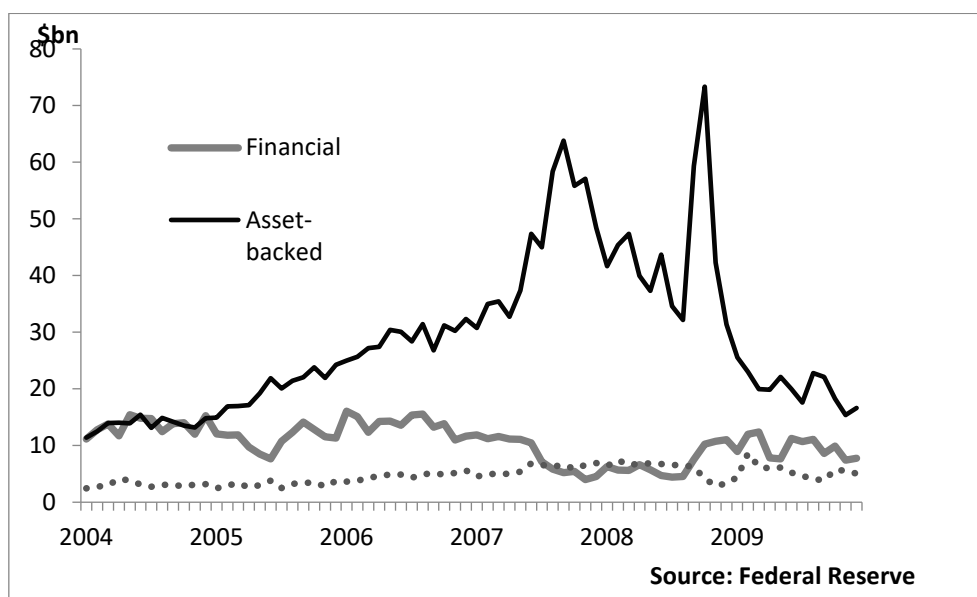
MMMF assets (left scale); Feds fund rate (right scale)



With the above points in mind, we can begin to understand what 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. Although MMMFs increased their overall holdings of commercial paper in the immediate pre-crisis period, it is clear from figure 9 showing total commercial paper issuance 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 bank and non-bank 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.

Figure 9

Commercial Paper Issuances- January 2004-December 2009 (monthly averages)



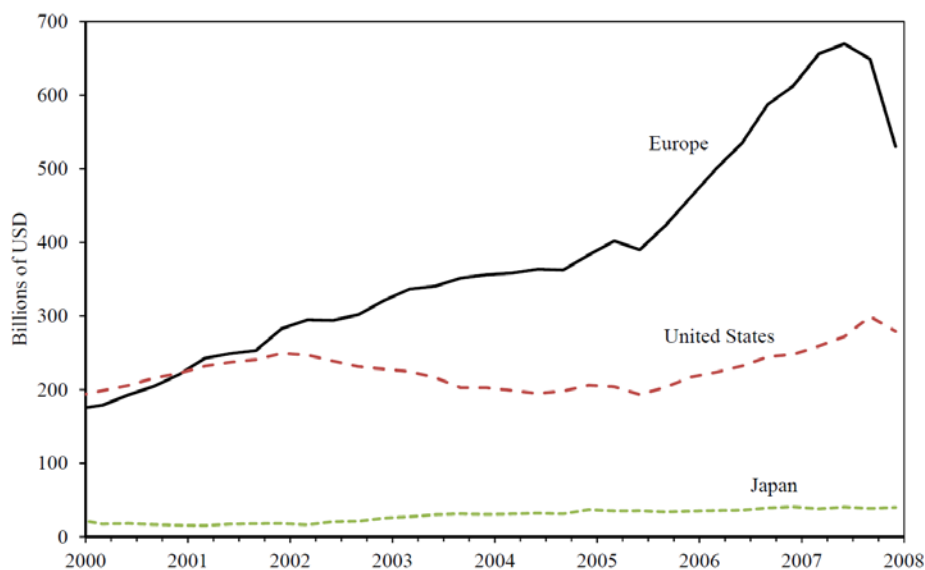
To summarise, the rapid growth of the US ABS and CDO markets in the pre-crisis era and the equally rapid growth of the US ABCP market in the same era are not two different stories so much as two sides of the same story concerning the reach for yield. This said, there is one important feature that distinguishes the two sides of the story, namely, that pertaining to the geographical origin of the shadow bank entities that mass produced the yield bearing securities. While the special purpose entities (SPEs) and the structural investment vehicles (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-side 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 from mid-2004 through to mid-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)

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 (Goda et.al, 2013). Aside from the absence of any tradition in securitisation, the major 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 essentially boils down to the 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 legal 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 more 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 mid-2004, the European banks were well able to join with their US counterparts in accommodating this expansion.

A further clue pointing to the importance of 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, see figure 11. 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-2004 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. The problem that arose, of course, is that in purchasing ABSs and cash CDOs to use as collateral in ABCP issuance, the US and European bank sponsored conduits only served to further aggravate the already acute supply shortages of these products.

Figure 11

ABCP Market by Program Type
Moody'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%

ABCP Market by Program Type
Moody'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.

6. Summary and conclusion

This paper has argued that the search for yield was the major driving force behind the explosive growth of the US ABCP market between 2004 and 2007. This argument by no means contradicts 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 this period. What it does call into question is the much stronger argument that profit seeking regulatory arbitrage on the part of the banks remained the primary driving force behind ABCP supply right up to the outbreak of the subprime crisis in the summer of 2007. To put this argument is to beg a number of pressing questions. 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 only rose substantially after June 2004 and not before this date?

The only plausible 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 institutional 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 institutional MMMFs from redirecting their demand for short term securities away from other types of commercial paper and towards ABCP. It was only when short term rates rose relative to the long term rates, a development which the opposing effects of stimulating MMMF demand for short term paper while at the same time constraining the rate of supply of corporate commercial paper issuance, that the MMMFs were forced to turn to the bank owned conduits to make good the shortfall in supply though increased ABCP issuance. In short, the pre-crisis explosive growth of the US ABCP market makes sense only if the pressures of investor demand for yield, channelled through the MMMFs, are given causal significance.

References

- Acharya, Viral V. and Schnabl, P (2010), Do global banks spread global imbalances? The case of ABCP during the financial crisis of 2007–09, *IMF Economic Review* 58, 37–73.
- Ahern, J (2007), ABC's of ABCP, Societe Generale
- Arteta, C, Carey, M, Correa, R and Kotter, J (2013) Revenge of the Steamroller: ABCP as a Window on Risk Choices, Board of Governors of the Federal Reserve System, *International Finance Discussion Papers*, Number 1076
- Bank of England (2007), Financial Stability Report, October
- Borio, C (2008), The financial turmoil of 2007 -?: a preliminary assessment and some policy considerations, BIS Working Papers No 251, March
- Caballero, R, J (2010). "The "Other" Imbalance and the Financial Crisis." NBER Working Paper 15636, National Bureau of Economic Research, Cambridge, Massachusetts, Washington
- Covitz, D, Liang, N and Suarez, G (2012), The evolution of a financial crisis: collapse of the asset-backed commercial paper market, *Journal of Finance*,
- Deutsche Bank, (2015), Money Market funds – an economic perspective, February
- Goda, T, Lysandrou, P and Stewart, C. (2013). "The Contribution of U.S. Bond Demand to the U.S. Bond Yield Conundrum of 2004 to 2007: An Empirical Investigation." *Journal of International Financial Markets, Institutions and Money* 27: 113–36.

Goda, T and Lysandrou, P (2014), “The Contribution of Wealth Concentration to the Subprime Crisis: A Quantitative Estimation.” *Cambridge Journal of Economics* 38 (2): 301–27

Godley, W and Lavoie, M (2006), *Prolegomena to Realistic Monetary Macroeconomics: A Theory of Intelligible Sequences*, The Levy Economics Institute, Working paper No.441

Godley, W and Lavoie, M (2012), *Monetary Economics* (2nd.ed), Palgrave

Kacperczyk, M and Schnabl, P (2010), When safe proved risky: Commercial paper during the financial crisis of 2007–2009, *Journal of Economic Perspectives* 24, 29–50.

Lysandrou, P (2009). “The Root Cause of the Financial Crisis: A Demand-Side View.” Financial Times Economists Forum, March 24, <http://blogs.ft.com/economistsforum/2009/03/the-root-cause-of-the-financial-crisis-a-demand-side-view>

Lysandrou, P (2013), Debt intolerance and the 90% debt threshold: two impossibility theorems, *Economy and Society*, 42, issue 4, 521-542

Lysandrou, P (2014), Post-Keynesian stock-flow models after the subprime crisis: the need for micro-foundations, *European Journal of Economics and Economic Policy: Intervention*, 11, issue 1, 113-126

Lysandrou, P and Nesvetailova, A (2015), The role played by the shadow banking system in the subprime crisis: a disaggregated view, *Review of International Political Economy*,

Lysandrou, P (2016), The colonisation of the future: An alternative view of financialisation and its portents, *Journal of Post-Keynesian Economics*, 39, issue 4, 444-472

Pozsar, Z (2011). “Institutional Cash Pools and the Triffin Dilemma of the U.S. Banking System.” IMF Working Paper 11/190, International Monetary Fund, Washington

Schwarcz, S. (2012) Regulating shadow banking, Boston University Review of Banking and Financial Law

Treeck, T. van (2009), A Synthetic, stock-flow consistent macroeconomic model of financialisation, *Cambridge Journal of Economics*, 33, No. 3, 467-493