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This Time Was Different: The Global Safe Asset Shortage and Shadow Banking in Socio-Historical Perspective

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The This Time Was Different: The Global Safe Asset Shortage and Shadow Banking in Socio-Historical Perspective

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Abstract

Safe assets and shadow banking are two closely linked phenomena in contemporary finance. The link is loan securitisation: at a time of a global safe asset shortage, it falls on the shadow banking system to help make good that shortage by manufacturing extra quantities of asset backed securities. When these quantities cannot keep up with volume of safe asset demand, the shadow banking system comes under pressure to manufacture the type of complex structured securities that can potentially cause a financial crisis. That potentiality became reality with the great financial crisis of 2007-8. If a further financial crisis of this scale is to be averted, the regulation of the shadow banking system should be informed by an understanding of the contemporary socioeconomic circumstances that continue to cause a global safe asset shortage. This paper attempts to contribute to such an understanding.

Key words: safe asset; shadow banking; global safe asset shortage; securitisation; great financial crisis

1. Introduction

Safe assets and shadow banking are two closely linked phenomena in contemporary finance. The link is loan securitisation: at a time of a global safe asset shortage, it falls on the shadow banking system to help make good that shortage by manufacturing extra quantities of asset backed securities. When these quantities cannot keep up with volume of safe asset demand, the shadow banking system comes under pressure to manufacture the type of complex structured securities that can potentially cause a financial crisis. That potentiality became reality with the great financial crisis of 2007-8. If a further financial crisis of this scale is to be averted, the regulation of the shadow banking system should be informed by an understanding of the contemporary socioeconomic circumstances that continue to cause a global safe asset shortage. This paper attempts to contribute to such an understanding.

The structure of the paper is as follows. Section two theorises the role of bonds in their role as safe assets. Section three looks at the combination of socio-economic factors that are the cause of the ongoing global safe asset shortage problem. Section four explains the importance

of shadow banking's role as auxiliary supplier of safe assets and the policy implications of that role. Section five explains why policy errors in regard to shadow banking are ultimately due to the under-theorisation of bonds as safe assets. Section six explains why regularity policy must take account of the possibility that, while the global financial crisis of 2007-8 was the first of its kind in that only now has the safe asset shortage problem become global in scale, it may not be the last. Section seven concludes.

2. The theorisation of bonds as safe assets

A safe asset, put simply, is any entity that is expected to hold a quantity of value over time. Safe assets come in many forms, but as there are also many types of investors with different motives for demanding safe assets, safe asset shortages have followed a historically recurrent pattern. The current global safe asset shortage would appear to fit in with this pattern, but what sets it apart is its *double singularity*. On the one side, today's safe asset shortage is without historical precedent in that, in contrast to all previous local or regional safe asset shortages¹, it is the first to be truly global in scale for reasons that will be explained later. On the other side, what is highly distinctive about the current scale of global safe asset demand is that it is heavily concentrated on just one particular type of safe asset, namely bonds, tradeable debt securities. It is symptomatic of this global demand for bonds that the growth rate of world bond supplies has in recent decades far outstripped the growth rate of world GDP (appendix, figure 1A). Thus where the nominal value of global bond volumes in 1990 was more or less on a par with nominal world GDP for that year (\$21 trillion versus \$22 trillion), by 2000 they were one and a half times nominal world GDP (\$48 trillion versus \$33 trillion) and by 2010 they were almost twice nominal world GDP (\$118 trillion versus \$64trillion). By contrast, the growth rates of the other two major components of the world's financial stocks, bank deposits and equities, have continued to remain more or less on a par with that of world GDP. Clearly, bonds possess certain important characteristics that render them highly desirable to investors. Of these, three in particular stand out.

The first concerns safety. Bonds, in common with other financial instruments, have two dimensions: a 'flow' (i.e. safety) dimension – the regularity with which cash is returned to

¹ See e.g. Gorton (2017) for a review of safe asset shortages in history

investors - and a 'stock' (i.e. asset) dimension – the ability to hold a quantity of value. The two dimensions are interdependent: as bonds, in common with other financial instruments, have no intrinsic value, it follows that their value storage capacity depends entirely on an assurance that cash will be returned. That the two dimensions are also distinct, however, becomes clear when we distinguish between the needs of the economic actors occupying opposite positions in the capital markets. The corporations and governments issuing securities need only view them from a flow perspective: cash is raised at one date through the sale of securities with an obligation to repay the cash with a premium at a later date and in the meantime the cash is used to finance various investment expenditures. By contrast, the large institutional and wealthy individual investors that now dominate the buy side of the capital markets need to view securities from both a flow and a stock perspective: cash is paid out with the purchase of securities on the expectation that cash will be repaid at some future date but in the meantime the securities are used as stores of value. As stated, the value storage capacity of securities is determined by the assurance and regulatory with which cash is returned. From this standpoint, it follows that not all classes of securities possess the same level of safety as investable assets. Thus bonds are generally held to be safer than equities in that they pay interest by law as opposed to paying dividends on discretion, a fact that possibly helps to explain why global bond stocks have risen at a much faster rate than have global equity stocks over the past four decades². Furthermore, a major reason behind government bonds' growing percentage share of global securities stocks is that these bonds are generally held to be safer than corporate bonds because the interests on the former are backed by the power of taxation whereas the interest on the latter come out of profits that vary considerably across corporations over the business cycle³.

Another distinguishing characteristic of bonds is their tradability. The literature on safe assets tends to blur the distinction between liquidity and tradability but they are in fact different.

² Noting the growing disparity between global bond volumes and global equity volumes, Haldane (2014) observed that one of the negative consequences of this 'de-equitization' phenomenon is its inhibiting effect on productive investments given that the risks on these investments cannot be sufficiently diversified through equity issuance. From asset managers' standpoint, however, de-equitisation is to a certain extent understandable in that bonds are on balance better suited to their various portfolio needs than are equities for the reasons to be given below.

³ As Gorton argues (2018); see also Dang et.al. (2013) and Holstrom (2015)), the fundamental reason why government bonds represent the archetypal safe asset is that they are 'information insensitive': as buyers of these bonds know that they are backed by the power of taxation, they have no need to explore what is already common knowledge and hence need not fear adverse selection.

Where liquidity denotes a one-off act of conversion i.e. the ease with which an asset can be converted into cash with minimal impact on its price, tradability denotes a continuous process of circulation i.e. the ability to pass an asset around from financial agent to another. Bank deposits are liquid but, as fixed credit relations between known counterparties, these debt instruments are not tradable. Bonds, by contrast, are tradable because they represent the compression of credit relations into stand-alone portable forms. This property of tradability is of the utmost importance to large institutional investors because while they have different motives for frequent bond trading, what they all have in common is the need for such trading. Pension funds and insurance companies, for example, need to repeatedly buy and sell bonds to keep their bond portfolios to a benchmark index or to some other specified investment target while at the same accepting fresh inflows of clients' monies or returning monies to clients; banks that frequently lend to or borrow from each other need to sell and repurchase bonds in their repo transactions; governments operating a target exchange rate policy for their national currencies need to build up or drawn down their reserves accordingly, which necessitates in turn frequent bond transactions.

A further distinguishing characteristic of bonds concerns the size of their value storage capacities. Large investors by definition need assets that can hold large amounts of value and bonds fit this requirement perfectly because they can combine it with the other requirements of safety and tradability. Bank deposits are safe but only up to the deposit guarantee of \$100,000. Given that each individual bond is typically priced at \$10,000, it only requires a relatively small number of bonds to store a relatively large amount of value. On the other side of the safe asset spectrum, land and real estate can also hold large amounts of value, but their drawback is that they have low liquidity and are not easily tradable.

In sum, it is bonds' unique ability to combine safety, liquidity, tradability with large value storage capacity that makes them a highly desirable type of safe asset in the eyes of large investors. This desirability has, as we say, helped to encourage the recent growth of global supplies at a rate in excess of that of world GDP. However, significant as it has been, the deviation of global bond volumes from world GDP is not without limit given that the interests on bonds must be sourced out of incomes that ultimately depend on the level of economic activity. It is this economic limit, taken in conjunction with a host of other socio-institutional factors, which explain why the rate of growth of global bond supplies can never

be high enough to match the rate of growth of global investor demand for bonds for use as safe assets

3.The socio-economic causes of the global safe asset shortage.

In elaborating on the causes of the safe asset shortage, we begin by looking at some of the major investor groups behind the increasing rate of safe asset demand. By far the largest of these groups are the institutional asset managers, namely, the insurance companies and pension and mutual funds. Once a small cottage industry catering for the wealthy, asset management has in many countries become a mass industry catering for the retirement and other welfare needs of substantial sections of the local population⁴. A key driver behind this development is the impact of ongoing demographic change on government finances: faced with rising social costs due to the combination of population growth and population ageing, governments are increasingly turning away from universal forms of social service provision towards more selective forms that concentrate provision for the poorer and more vulnerable sections of the population. To cater for the increasing numbers of mid-income households who are being forced to make their own retirement and savings arrangements, asset managers need to acquire increasing amounts of investable assets in which clients' monies can be stored and from which monies can be extracted to repay clients. While equities continue to form a significant proportion of institutional asset holdings (particularly in the case of mutual funds whose brief requires them to prioritise yield maximisation subject to a given level of risk), it is bonds that will continue to account for the major proportion of these holdings not only because of their greater safety as stores of value but also because their finite duration make them particularly suitable assets for matching liabilities. At a time when people are on average living much longer after retirement due to the advances in medical science and health care, duration matching will continue to rise in importance and, in consequence, so will the institutional investor demand for bonds⁵.

⁴ See Davis and Steil (2001); Grahl and Lysandrou (2006); Haldane (2014)

⁵ Noting the growing disparity between global bond volumes and global equity volumes, Haldane (2014) observed that one of the negative consequences of this 'de-equitization' phenomenon is its inhibiting effect on productive investments given that the risks on these investments cannot be sufficiently diversified through equity issuance. From asset managers' standpoint, however, de-equitisation is to a certain extent understandable in that bonds are on balance better suited to their various portfolio needs than are equities for the reasons given above.

The next most important group of investors in the bond markets are the large commercial banks. While important suppliers of financial bonds, banks are also major holders of government and corporate bonds for reasons that essentially come down to the management and control of risk. In the first place, there are the internationally agreed Basle rules regarding the risk weighting of different types of assets for capital adequacy purposes. To keep to these rules, banks need to hold substantial quantities of zero-risk weighted government bonds and high quality corporate bonds. In the second place, there is the increase in the demand for safe assets for use in inter-bank borrowing and lending transactions. While the volumes of these and other short term money market transactions continue to grow exponentially in line with the growth of the long term global capital markets, the unsecured component of these transactions continues to decline. The complete breakdown in trust both between banks themselves and between banks and other non-bank financial institutions caused by the financial crisis of 2007-8, and the unlikelihood of any recovery of that trust in the post-crisis era of continuing uncertainty and weak global economic growth, mean that repos will continue to increase in importance as the dominant type of money market credit transactions⁶. This in turn will mean a continuing rise in the demand for bonds, and particularly government bonds, for use as collateral in these transactions.

A third major group of large investors in bonds are the world's high net worth individuals (HNWIs). A key outcome of the twinned processes of globalisation, the integration of virtually all of the world's nation states into the global market economy, and financialisation, the growing domination of the world's financial markets over the world's product markets, has been the enormous concentration of wealth in the hands of a vanishingly small fraction of the world's population. At the time of the financial crisis in 2007, the world's 10 million HNWIs held approximately \$40 trillion worth of assets⁷. By 2015 the world's then 15 million or so HNWIs had accumulated about \$59 trillion worth of assets, 34% of which (roughly \$21 trillion) was held by just 145,000 individuals. What has been equally striking about this concentration of private wealth is the degree to which the world's super rich now mimic institutional asset managers in managing their wealth. Thus, while certain proportions of their wealth are held in the forms of cash (for liquidity purposes) and real estate (for high return purposes), the more significant proportion is held in the form of securities, notably equities but also bonds. Of the \$59 trillion worth of assets held by the world's HNWIs in 2015, about

⁶ See BIS (2017)

⁷ Capgemini (2011)

24% of this was held in equities and 18% in bonds⁸. Totalling about \$10.3 trillion, HNWI's bond holdings in 2015 would have accounted for about 12% of global world bond demand in that year, a figure on a par with that registered by any of the institutional investor groups taken separately.

A fourth important group of investors in the global securities markets are the central banks of those emerging market economies that operate an external exchange rate policy in addition to an internal monetary policy. On current estimates, there are some 90 countries that take the US dollar as the reference currency for their own currencies, while some further 27 countries take the euro as the reference rate⁹. For these countries to succeed in keeping their currencies' rates within the targeted range, they must hold reserves of dollar or euro denominated-government securities in substantial quantities: government securities because these are not only the most safe but also the most liquid types of assets, and substantial quantities because this is now the precondition for successfully warding off any speculative attacks on currencies. If on one side, the world's institutional investors have welcomed the growth of securities stocks because it represents a growth in the supply of safe stores of value, the flip side is that the same value storage capacity of securities taken in combination with their growth in volume provides speculative vehicles such as hedge funds with huge financial fire power when targeting particular national currencies that are perceived to be vulnerable. The destructive effects of that firepower were demonstrated in the 1992 EMS crisis and then demonstrated again five years later in the 1997 Asian crisis.

A fifth major group of large investors are the Sovereign Wealth Funds (SWFs). As defined by the IMF- sponsored International Working Group of Sovereign Wealth Funds when it was established in 2008 to study the impact of these government investment vehicles on the global economy: "Sovereign Wealth Funds are special purpose public investment funds ... that are owned or controlled by the government, and hold, manage or administer assets primarily for long term macroeconomic and financial investments. The funds are commonly established out of official foreign currency operation, the proceeds of privatisations, fiscal surpluses and/or receipts resulting from commodity exports. The funds employ a set of investment strategies which include investments in foreign financial assets" (IWG-SWF, 2008, p.3). There are currently some 79 SWFs, the majority of which are operated by

⁸ Capgemini (2018)

⁹ Karlsenbrunner and Lysandrou (2017)

governments located in emerging market economies, with some \$7.3 trillion worth of assets under management¹⁰. In many of these cases, there are no hard boundaries separating the central bank's foreign currency reserves from the government's wealth fund, which makes it possible for funds to be shifted from currency reserves into the wealth fund to generate extra yield, while also making possible a reverse flow in the event that extra reserves are required to keep the national currency to a particular exchange rate target.

The strong global demand for bonds as safe stores of value, by forcing up bond prices, have created highly propitious borrowing conditions for both national governments and large corporations. However, these conditions are by no means being evenly exploited across the globe. On the contrary, the US is by far the largest beneficiary as attested by its lion's share of global bonds supplies (43% in 2017 as compared with the EU's 27% share and the 12% share of the world's emerging market economies (EMEs))¹¹. The persistent rise in the volumes of US government and corporate debt has led to repeated predictions that the point will be reached where foreign investors (who now hold nearly a half of all US treasuries and a substantial proportion of US corporate bonds¹²) will lose trust in the US' repayment abilities and exit the US debt market en masse¹³. However, these predictions have also repeatedly come to nothing for the simple reason that they do not consider what has been termed the *safe asset aggregation problem*¹⁴. When bonds are only viewed as debt instruments there is no such problem because what is true at the individual level is also true at the collective level: just as any one group of foreign investors can abandon the US when its debt burden is considered to be unsustainable, so can all foreign investors do the same. By contrast, this equivalence principle no longer holds when bonds are also viewed as assets with a value storage function: any one group of foreign investors can at any time abandon US bonds but the same exit option is not open to all foreign investors taken in the aggregate because there is simply nowhere else for them to go.

This aggregation problem raises the question as to why the non-US contribution to global bond volumes continues to remain so small as to perpetuate the problem. In the case of the world's EME's, many of these are simply not able to support any substantial domestic bond

¹⁰ Buteica and Huidamac Petrescu (2017).

¹¹ SIFMA (2017)

¹² US Treasury Department (2018).

¹³ See Karlténbrunner and Lysandrou (2017) for a critical overview of the many predictions of a foreign flight from dollar securities and thus an end to dollar supremacy as an international currency.

¹⁴ See Lysandrou (2013); (2019).

markets. However, in the several other instances where there is potential for bond market expansion, much of this potential remains largely unrealised. One explanation for this state of affairs is that the policymakers in these countries continue to promote bank-based forms of finance because these forms fit more easily into plans for generating rapid economic development. Another explanation is that the kind of legal, institutional and governance infrastructures that are necessary for the maintenance of deep and liquid bond markets are either too difficult to build due to a lack of experience and expertise (as, for example, in the case of Russia that is yet to recover from its 70-year communist heritage¹⁵) or too inconvenient to develop due to political considerations (as in the case of China that still persists with its centralised one-party system and consequent restriction of democracy)¹⁶. By contrast, the relative underdevelopment of the bond markets in the advanced market economies of continental Europe and Japan has less to do with political considerations or weak governance institutions than with the weight of historical tradition and the strength of ideological dogma.

Recall the basic distinction between a bank loan as a fixed relation between the creditor and debtor counterparties and a bond in which the creditor-debtor relation is compressed into the form of a tradable entity. This distinction has a crucial bearing on the degree to which borrowing corporations are exposed to market pressures: those that rely more heavily on bond issuance are directly exposed to these pressures while those that rely more heavily on bank loans are to a certain extent shielded from those pressures. This difference in turn has an important bearing on how corporations rank their various investment objectives, and the interests of their various stakeholders, in order of priority. Thus US corporations, whose preferred form of debt financing is through bond issuance, tend to make short term profit maximisation their overriding priority because they know that this attracts outside investors in sufficiently large numbers as to push up the market price of their bonds and thus lowering the yields that must be returned to investors. By contrast, one of the main reasons why bank loans continue to be the preferred form of debt for the corporations of continental Europe and Japan¹⁷ is that this relational form of finance gives them greater scope both for taking a

¹⁵ See e.g. Lainela and Ponomarenko (2012)

¹⁶ For further discussion of this point see Karltenbrunner and Lysandrou (2017)

¹⁷ Where 80% of US corporate debt financing consists of bonds, with 20% raised from bank loans, the corresponding bond and bank loan ratios for EU based corporations are respectively 25% and 75%, while the corresponding ratios for Japanese corporations are 20% and 80%. SIFMA, US Capital Markets Desk, (2017, p.8)

longer-term view of investment planning and for balancing out the different interests of their various stakeholders.

Now recall the distinction between bonds and equities, which is particularly relevant in the case of governments. Where corporations can issue a mixture of these securities – equities to avoid taking on too much risk and so avoid the threat of debt-default and bonds to prevent too much dispersion of ownership control – governments can only issue bonds in any direct sense (government involvement in the equity markets is typically through partnerships with corporations). Historically, government bond issuance was typically treated as a temporary measure only to be resorted to in times of emergency or to finance a particular project, a fact reflected in the relatively low government expenditure to GDP ratios that persisted well into the 20th century¹⁸. In the more recent period, bond issuance has come to be accepted as a necessary and permanent feature of government finance in view of the persistent gap between government tax revenues and government expenditures. This said, there continue to be very different views as to how much government bond issuance is acceptable. The US government takes a very lax view because it understands that its bonds serve not only as a type of debt but also as a type of safe asset that is much in demand by foreign public and private investors. Other governments take a more restrictive view regarding the volume of bonds that they issue because they persist in disregarding investor interests and only view bonds as forms of debt. No national government exemplifies this restrictive position more than does that of Germany. At a time when investor demand for the German Bund is exceptionally strong because it is considered to be the safest asset given that it is backed by the power of the government of Europe's strongest economy, the German government flatly refuses to increase its rate of supply of Bunds. On the contrary, in June 2009, that is, just when the eurozone crisis was erupting, the German government passed its Debt Brake law into its constitution restricting the government debt to GDP ratio to 60%¹⁹.

To summarise, the global safe asset shortage problem looks set to be an increasingly acute problem. Ongoing population growth and population ageing will mean growing institutional investor demand for bonds as safe investable assets; growing economic uncertainty will mean

¹⁸ See Tanzi and Schuknecht (2000)

¹⁹ The German government was also the principal driving force behind the EU-wide adoption of a Fiscal Compact in 2012 that committed EU members (only the UK and the Czech Republic had opted out) to a government debt to GDP ratio of 60%. See Grahl and Lysandrou (2017) for further discussion.

growing bank demand for bonds for use as collateral in inter-bank and money market transactions and growing government demand for bonds for use as currency reserves; finally, growing income and wealth inequality and growing SWF portfolio needs will mean growing demand for bonds for use as wealth containers. In short, the combination of demographic change, economic uncertainty and rising inequality will ensure that investor demand for bonds for use as safe assets will continue to grow at a monotonically increasing rate. It logically follows that if there is to be no safe asset shortage problem, global bond supply must also grow at the same monotonically increasing rate. As things presently stand, this is an impossibility. The contradiction is that the same debt nature of bonds that makes them attractive to investors as safe assets is also that nature that places formidable constraints, ranging from the economic to the political and from the institutional to the ideological, on the rate of global bond supply. One way to get round this contradiction and close the safe asset demand-supply gap is by adding to the world's stocks of ordinary debt securities, government and corporate bonds, asset backed securities, securities backed by bank loans. This is where shadow banking enters the picture.

4. Shadow banking as auxiliary safe asset supplier

The central function of the shadow banking system is loan securitisation. This function can also be viewed from two contrasting perspectives. From a flow perspective, securitisation simply represents a particular variant of credit intermediation: where banks always remain the final lender of cash to borrowers in the case of non-securitised bank loans, it is outside investors who become the final lenders of cash when loans are securitised. Add to this observation the differences in the regulatory environments in which the two banking sectors traditionally operated and it is easy to see that the reason why the term 'shadow banking' has become widely endorsed is that it succinctly captures the principle of inverse parallelism: where the regular banks carry out their credit intermediation activities on-balance sheet and under strict regulation the shadow banks carry out essentially the same activities off-balance sheet and outside of any such regulation²⁰. By contrast, securitisation viewed from a stock perspective represents a credit intermediation activity whose outcomes divide the two

²⁰ The FSB defines shadow banking as "credit intermediation involving entities and activities (fully or partially) outside the regular banking system" (FSB, 2017, p1).

banking sectors in a more fundamental sense: where the regular banks extend loans, it is their shadow bank vehicles that alone transform these loans into products that are purchased by institutional investors for value storage purposes²¹.

Shadow banking, thus broadly viewed, originated in the US for reasons that come down to a combination of two historical traditions, the one pertaining to federal government involvement in the housing sector and the other pertaining to a readiness to embrace financial innovation. In 1938, as part of its New Deal programme, the Roosevelt administration established the Federal National Mortgage Association (Fannie Mae) with the task of extending home ownership to low income families. Over the succeeding four decades Fannie Mae's principal method of executing this task was by creating a liquid secondary mortgage market: local banks could extend more housing loans than was otherwise possible by being able to lay off the risk on these loans through purchasing federal insured mortgages. The change in direction came in the 1980s when Fannie Mae and the other government sponsored enterprises (GSEs) switched to mortgage loan securitisation as the principle means of financing their housing support activities²². As this was also the period when the US asset management industry was undergoing rapid growth, the GSEs could expand the scale of home ownership even further by tapping into the institutional investor demand for bonds as safe assets. Although US treasury bonds continued to represent the archetypal safe asset for the US insurance companies and pension funds, agency bonds were accepted as having similar if not identical safety attributes because of their government backed guarantees. Finally, the 1990s marked a further important stage in the development of the US asset backed securities (ABS) market in that this was the decade when the US commercial banking sector's involvement in this market served to significantly expand not only its scale but also its scope: where agency bonds were exclusively bonds backed by residential mortgage loans,

²¹ To bring out the stock as much as the flow dimensions of the shadow banking system, Lysandrou and Nesvetailova present the following definition of the system: 'the shadow banking system is a system of unregulated off-bank balance sheet credit intermediation and maturity and liquidity transformation activities conducted by bank owned or sponsored entities in the capital and money market domains for the primary purpose of expanding the rate of production of yield bearing debt securities required by the global investor community'. (2015, p.4) For further discussion of this point see Nesvetailova (2018).

²² In 1970, the federal government created the Federal Home Loan Mortgage Corporation, now commonly known as Freddie Mac, to compete with Fannie Mae and so ensure a more efficient secondary mortgage market. A year later Freddie Mac issued its first mortgage passthrough, which was essentially a mortgage-backed security but was at that time called a 'participation certificate'. Only from 1981, when Fannie Mae issued its first mortgage passthrough and called it a 'mortgage-backed security', did the latter term become established.

the asset backed securities created by the commercial banks' special purpose entities (SPEs) encompassed a far wider variety of loans that, alongside residential mortgage loans, included commercial mortgage loans, credit card loans, auto loans, student loans and small business loans.

It is this expansion in the scale and scope of loan securitisation that puts shadow banking in a position to resolve the global safe asset shortage problem described above. The crux of the matter is that if there are constraints on the amounts of debt that the world's large economic actors such as governments and corporations are able or willing to carry at any one moment in time, these constraints can be circumvented by bringing into play the accumulating amounts of debt carried by small economic actors such as households and small businesses. Where stagnant wage growth coupled with aspirations for home ownership, or for better education or for better living standards in general ensure a steady rate of household demand for bank loans, the increasing complexity of the business environment ensures an equally steady rate of loan demand from the small business sector. Given that increasing household and business indebtedness looks set to be a permanent phenomenon the world over (appendix, figure 2A), so will there be a permanent abundance of loan material that can be converted into securities. To argue this is by no means to suggest that there should be rising indebtedness so as to guarantee an abundance of the raw material needed for securitisation. Rather, it is to argue that if one set of socio-economic circumstances inevitably gives rise to a persistent global safe asset shortage, so can another set of socio-economic circumstances give shadow banking the potential to make good that shortage.

While true in theory, the reality is that there have been, and continue to be, constraints on that potential. The chief constraint prior to the financial crisis was the slow global uptake of loan securitisation. Many countries simply lacked the requisite financial and legal infrastructure to engage in securitisation, while the reluctance to do so in those countries that did have this infrastructure essentially stemmed from the same historically conditioned traditions and attitudes that continue to hold back the development of their corporate bond markets.

Whatever the explanation, the fact is that of the \$11 trillion worth of asset backed securities (ABSs) outstanding in mid-2007, the highest point of ABS expansion before the outbreak of the subprime crisis, the US accounted for approximately 85% of this amount while the UK and certain other West European countries accounted for most of the other 15% (appendix, figure 3A). The main constraint following the crisis has been the subjection of the US and

European shadow banking systems to tight regulation. Although the asset backed securities created by these systems played no direct role in the crisis, they were indirectly implicated by virtue of the fact that it was only by mixing these securities together with subprime loan backed securities that the collateralised debt obligations (CDOs), which triggered the crisis, could have been created. Thus, it would seem to follow that to prevent any repeat supply expansion of the type of complex securities that can cause a financial crisis, it is necessary to restrict the creation of even the most ordinary asset backed securities. Going by this logic, the financial authorities have introduced new consolidation rules for off-balance sheet entities that require banks to bring a large proportion of these entities' assets onto their balance sheets where they are subject to prudential standards. These initiatives have predictably resulted in a steep decline in the issuance of private label residential mortgage backed and other credit loan backed securities (appendix, figures 4A and 5A). In its 2017 report on shadow banking²³, the Financial Stability Board (FSB) noted the drop in the rate of issuance of all classes of securitised loans caused by the new consolidation rules and concluded that : “Aspects of shadow banking considered to have contributed to the financial crisis have declined significantly and generally no longer pose financial stability risks” (FSB, 2017, p.1).

There is no question that to prevent the shadow banks from posing “financial stability risks”, off-balance sheet vehicles such as structured investment vehicles (SIVs) that are responsible for the creation of the more complex and opaque type of structured finance products should be heavily regulated. What is in question is whether this same conclusion holds in the face of a blanket approach to shadow banking regulation that broadens its remit to include all off-balance sheet vehicles, SPEs alongside SIVs, and all off-balance sheet instruments, ABSs alongside CDOs. The FSB may be convinced that such regulation is required to prevent another financial crisis, but this conviction rests on an explanation of the last financial crisis that is deeply problematic. This explanation essentially consists of two components, (i) the *regulatory arbitrage* component: as off-balance sheet shadow bank entities were not subject to the same capital adequacy rules as were the regular banks, the latter had powerful incentives to profit from loan securitisation; and (ii) the *undervaluation of risk* component: when reaching the limits to the rate at which conforming loans could be provided, the US and European banking systems circumvented these limits by accelerating the rate at which non-conforming loans were given so as to continue to profit from regulatory arbitrage regardless

²³ “Assessment of shadow banking activities, risk and the adequacy of post-crisis policy tools to address financial stability concerns”, FSB, 3rd July, 2017

of the risks involved. The cardinal problem with this explanation of the subprime crisis, which quickly became the standard one²⁴, concerns the particular timing of the events building up to the crisis. Between early 2004 and mid-2007 the ABS market more than doubled in size, from \$5.2 trillion to \$11 trillion (appendix, figure 3A), while the size of the CDO market grew twelvefold, from \$0.25 trillion to \$3 trillion over the same three-year time span (appendix, figure 6A). Now why that particular time span? Why did the sudden and explosive growth of both the ABS and CDO markets not occur in any earlier three year span, say, 1992-1995, or 1995-1998, or 1998-2001? Given that the US and European banking sectors had in those earlier periods all the same opportunities and incentives, and all the same technical competencies, to accelerate the rate of loan securitisation through their shadow bank vehicles, why did they wait until 2004 before doing so?

The only plausible answer to this question is one that brings the global safe asset shortage problem as described above more centrally into the story of the financial crisis. This problem first burst into the open in the early 2000s as attested by the sudden and extremely sharp rise in foreign financial inflows into all of the major US bond markets in this period (appendix, figure 7A). The inflows from both foreign public and foreign private investors were so heavy that not only was it impossible for the US government and corporate sectors to keep up with the rate of demand for their bonds but also difficult for the federal government sponsored and shadow banking sectors to keep up with the rate of demand for conforming asset backed securities, that is, for securities backed by loans given to households and businesses that met conventional lending criteria. To get round this difficulty, the US commercial banks began to expand the rate at which non-conforming borrowers were brought into the housing mortgage market. Thus, where prime mortgage loans dominated the annual issuance of all mortgage loans up to 2003, from 2004 to mid-2007 it was non-conforming mortgage loans, including subprime loans, which became the dominant component of annual issuance (appendix, figure 8A). In this sense, the shadow banks certainly overstepped the mark in creating CDOs in

²⁴ The following two quotations by individuals with very different backgrounds indicate the extent to which the ‘undervaluation of risk’ explanation of the crisis quickly became standard. The first is from Jean Claude Trichet, former President of the European Central Bank: “The root cause of the crisis was the widespread undervaluation of risk. This included an under-pricing of the unit of risk and an undervaluation of the quantity of risk that financial operators took upon themselves” (Trichet, Financial Times, November 12th, 2008). The second quotation is from Jan Kregel, a leading Post-Keynesian economist: “The crisis has simply revealed the systemic inadequacy of the evaluation of credit, or, what is the same thing, the undervaluation and mispricing of risk”. (Kregel, 2008, p. 21)

sufficiently large volumes as to threaten the very survival of the whole financial system. But if they did so it was principally in order to accommodate the heavy pressure of foreign and domestic investor demand for US safe assets spilling over from the US bond and ABS markets. This argument is by no means to ignore the role played in the CDO production process by behavioural and regulatory failures within the financial sector. Rather, it is to assign them an enabling rather than causal role, the latter being played by the external pressures of safe asset demand. As the MIT based economist, Ricardo Caballero aptly put it, the main importance of “the often emphasised regulatory and corporate governance weaknesses, misguided homeownership policies, and unscrupulous lenders” lay in “determining the minimum resistance path for the safe-assets imbalance to release its energy” (Caballero, 2010, p.3).

The major policy implication that follows from the above narrative is that there should be a more measured approach to regulating the shadow banking system. Having temporarily dipped in the immediate aftermath of the financial crisis, the volume of global safe asset demand has again resumed its upward growth path. Now if the rate of that demand not only exceeds the rates of issuance of government and corporate bonds and agency bonds but also the rate of issuance of private label asset backed securities, then it follows that that excess demand must again find vent in a market for the more complex structured finance securities. In the run up to the financial crisis of 2007, those securities were CDOs. Today, they are collateralised loan obligations (CLOs) where corporate junk bonds, rather than subprime mortgage backed bonds, are a major part of the collateral. In recent years, the size of the global leverage loan market, of which CLOs form a significant part, has risen at such a fast rate²⁵ as to give rise to concerns that another financial crisis similar to the subprime crisis is imminent²⁶. The financial regulatory authorities, although aware of the concerns, have nevertheless given repeated assurances that the growth of the CLO market will not cause another crisis because of the new regulatory initiatives related to securitisation introduced

²⁵ Leveraged loans are loans taken out to be invested in risky assets, whereas CLOs issue their own securities to finance their investments in risky securities. According to the Bank of England’s Financial Stability Report of November, 2018, global leveraged loan issuance registered such strong growth from 2015 that by 2017 it had reached pre-crisis levels. The report went to observe that: “A key driver of growth in the leveraged lending market has been increased securitisation activity through collateralised loan obligations (CLOs)” and that “around 45% of leverage loans that are typically distributed to non-bank institutional investors are held through CLOs” (FSR, 2018, p.44).

²⁶ The alarms were first raised in the summer of 2017 (e.g. “The sequel to the global financial crisis is here”, FT, July 31st, 2017) but have since then been periodically repeated.

after the last crisis²⁷. The contradiction is that many of these regulatory initiatives that are supposed to prevent another financial crisis are also precisely those that are helping to ensure that another financial crisis does actually happen. The logic is remorseless: the global safe assets imbalance has to release its energy somewhere, and if that somewhere is not in the ordinary ABS segment of the shadow banking system because of regulatory constraints, then it has to be in the complex and potentially toxic structured security segment of the system.

In view of this contradiction, one has to ask why it is that the financial regulatory authorities do not take seriously the global safe asset shortage problem when formulating policy towards the shadow banking system. As it cannot be the case that they are unaware of this problem, given that it has been flagged up by several economists, there has to be a reason why they choose to ignore it. That reason, we shall now argue, is the under-theorisation of bonds in their role as safe assets.

5. The under-theorisation of bonds as safe assets

All the problems surrounding current discussions of bonds as safe assets reduce to a failure to make sufficient distinction between the flow dimension of safety – the consistency with which interest payments are made – and the stock dimension of assets – the ability to hold a quantity of value. As argued, these two dimensions are interdependent, but interdependence should not be taken to the point of nullifying their difference as is usually done. To take an example, consider Caballero et.al’s recent paper on the safe asset shortage conundrum. Near the beginning of this paper, the authors give what they call a “pragmatic and narrow definition” of a safe asset, according to which it is “a simple debt instrument that is expected to preserve its value during adverse systemic events” (Caballero et.al., 2017, p.1). This may be a ‘narrow’ definition but it is also too long in that the last section concerning adverse systemic events is not essential to the definition of debt instruments as assets that are expected to preserve their value over a set period. In the case of bonds, it may well be that during abnormal times of heightened uncertainty a larger proportion of institutionally managed funds will be channelled into the safety of these instruments, but even during

²⁷ Thus Ben Broadbent, the deputy governor of the Bank of England, recently stated that “while there are parallels between the pre-financial crisis subprime mortgage boom in the US and the rapid growth of leveraged loans made to highly indebted companies, the system is now better able to withstand any disruption from the market” (FT, January 23rd, 2019)

normal times a significant proportion of institutional funds will continue to be allocated to bonds because of their purpose fit suitability to a particular financial management function. To return to an example already given above, insurance companies and pension funds who have known amounts of liabilities falling due at known intervals in the future need to hold equivalent amounts of bonds with equivalent values to match those liabilities. The need for bonds for duration matching purposes in this instance has little to do with the general state of the economic environment. At all events, the fact that Caballero et.al. consider it necessary to stretch the definition of a safe asset to include reference to economic adversity indicates the extent to which the asset side of the definition is collapsed into the safety side.

There are two underlying explanations for this theoretical collapse. The first is that no distinction is made between the categories ‘liquidity’ and ‘tradability’ Consider this statement by Caballero et.al.: “ stores of value come in many forms: cash, bank deposits, US government Treasury bills, and also corporate bonds, stocks, repurchase agreements, derivatives, or real assets such as real estate, land, gold and others...All stores of value are not created equal. They differ in their degree of liquidity – the ease with which they can be traded – and in their sensitivity to various risk factors” (ibid. p.29). In this statement, safe assets are listed in a continuum where differences are only of degree, as in regard to liquidity and sensitivity to risk factors. However, if we strip out from this continuum the two main types of debt instrument that serve a value storage role, namely bank deposits and bonds, we find that there is here as much a difference of kind as one of degree: bonds are tradable whereas bank deposits are not. This qualitative difference has a crucial bearing on the stock-flow dimensions of these two debt instruments. As bank deposits represent fixed debt relations between known counterparties that cannot in themselves be traded away from those relations, there is no need for any distinction to be made between their quantitative value storage properties and their safety properties. By contrast, this distinction is absolutely significant in the case of bonds, debt instruments that constitute quantities of value compressed into stand-alone tradable forms and that are amongst the most frequent objects of exchange for institutional investors. These investors may have different motives for bond trading, but in the majority of these cases the relative safety with which interest payments are paid on bonds is important less as a source of revenue in its own right than as a means of holding firm their prices - their nominally denoted amounts of stored value - as they are passed from one financial institution to another. The crux of the matter is that the quantitative side of bonds has to be uppermost in institutional investors’ minds when trading them

precisely because they are all tied to a quantitatively constrained financial target of one type or other: thus, pension funds and insurance companies need determinate amounts of bonds containing determinate quantities of value to meet portfolio requirements; banks need determinate amounts of bonds containing determinate quantities of value to meet collateral or other risk control requirements; again, governments operating an exchange rate policy need determinate amounts of bonds containing determinate quantities of value to meet reserve requirements.

The second, and more fundamental, underlying explanation for the failure to adequately separate out the stock dimension of bonds from their flow dimension is the failure to separate out small household savers from other groups of large economic actors who invest in bonds. Let us once again return to Caballero et.al. who opened their 2017 paper on the “safe assets shortage conundrum” with the following passage: “Economic actors need stores of value. Households save for retirement, for a rainy day, or to transmit wealth to their offspring. Corporations need to hold cash. Financial institutions need collateral. Central banks and sovereign wealth funds need to hold foreign assets” (ibid.p.1). The cardinal error here is to list household investors alongside institutional investors. Households may well “save for retirement, for a rainy day, or to transmit wealth to their offspring” as Caballero et.al. state, but there is nothing in any of these savings motives that requires households to hold at all times a substantial proportion of their savings in the form of bonds. For them, holding bonds is a matter of choice rather than of functional necessity: if the interests on bonds compare favourably with the interests on bank deposits then they will invest in bonds, but if the reverse happens and the returns on bonds compare unfavourably with the interests on bank deposits, then there is nothing stopping households from channelling all of their savings into these deposits. As households do not market portfolios to the public, or enter into collateralised borrowing and lending transactions with other households, or maintain bond reserves for currency rate purposes, they have no cause to treat the stock dimension of bonds, their ability to contain specified quantities of value even when being continually traded away from the initial conditions of issuance, as something distinct from their flow dimension. For households, the value storage capacity of bonds always remains a secondary feature indistinguishable from, because always subsumed under, their yield capacity.

The problem that arises out of the failure to separate out household investors from the other large investors that today dominate the buy side of the bond markets is that it wrecks the argument that the global safe asset shortage was a major cause of the financial crisis of 2007-

8. At the heart of the matter here is the fact that the sudden and steep rise in the supplies of ABSs and CDOs between 2004 and 2007 was accompanied by a fall in their yield spreads over US treasuries (appendix, figure 9A). Now this unusual development is consonant with an explanation of investor demand for ABSs and CDO's that highlights the quantitative dimension of that demand: as there were simply not enough supplies of US government and corporate bonds in which the world's institutional investors and other large investors could park their funds, they had to turn to the agency and private label ABSs, and then also to the CDOs, as additional means of parking their funds. The yields on these securities may have fallen due to the pressure of global investor demand for investable assets, but what was important for the large investors buying them was less their income generating capacity than their value storage capacity: as long as the financial institutions issuing ABSs and CDOs did not go bankrupt and continued to pay the minimum rate of return necessary to maintaining the tangibility of these securities' prices, hence guaranteeing the respective sizes of their value storage capacities, then, as we say, that was what in the end was important.

By contrast, the observed fall in the ABS and CDO yield spreads over US treasuries in the run up to the crisis is not consonant with an explanation that conflates household demand for bonds as safe assets with the demand from large investors and thus conflates the value storage dimension of bonds with their yield dimension. From this standpoint it follows that, if investor demand for yield bearing securities had been the primary driving force behind the steep pre-crisis growth of the ABS and CDO markets, one should have expected to see the yield spreads on these securities rise in line with investor demand for extra risk premiums to be factored into these yields. The fact that the reverse happened and yield spreads on these securities fell would appear to show that investor demand pull pressures for these securities played no major causal role in their volume growth between 2004 and mid-2007 and hence played no major causal role in the ensuing financial crisis. This was precisely the conclusion drawn by Claudio Borio, the chief economist of the Bank for International Settlements (BIS). After assessing the global safe-asset shortage explanation of the financial crisis as provided by Ricardo Caballero and others, Borio found that the evidence for this explanation "is not convincing" because in his view "strong demand for safe assets in the run-up to the Great Financial Crisis should have led to a widening, not a narrowing, of the spread between safe and risky assets. Associating this demand for safe assets with a search for yield is misleading, since higher demand for safety points to higher, not lower, risk aversion or risk perceptions" (Borio, 2014, p.15)

As chief economist of the BIS, Borio is familiar with the current vintage of macroeconomic models used for policy purposes -the dynamic stochastic general equilibrium (DSGE) models – in which the representative agent is the rational, forward looking individual. It is in large part because those putting an excess safe asset demand explanation of the financial crisis can only do so by stepping outside of the DSGE framework centred on the rational agent that this explanation commands relatively little support. At the heart of the matter here is that there is no separate class of agents, such as institutional investors, in DSGE models who are primarily concerned with the quantitative, value storage dimension of securities and who thus need securities prices to be stable so as to safeguard this quantitative dimension. As a consequence, these 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 then securities prices will go up and yields go down thus encouraging firms to issue more securities to finance investment: in short, demand creates its own supply. 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: in short, supply creates its own demand. 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 sustained external 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 of 2007-8 through this particular lens is that all of the major reasons that induced the banking sector to create the amounts of asset backed securities on the scale that it did must have come entirely from within that sector.

It is presumably because Borio stays within the DSGE framework, and proceeds from the view that rational agents would never accept risky securities without demanding compensating risk premiums, that he rejects the safe asset demand explanation of the subprime crisis. At all events, what is clear is that Borio does not see financial agents as exhibiting the same degree of rationality as other agents. It would appear that their privileged position within the financial system makes bankers and their immediate associates prone to temptations that lead them to act irrationally, thereby rendering the system fragile and vulnerable to disruption and possible breakdown. Thus, when Borio identifies the “Achilles heel” of the international financial system to be its “excess financial elasticity”, he traces this

failing to the “powerful feedback mechanisms” that link together two key limitations in financial agents’ behaviour: one concerning their perceptions of value and risk, which “are loosely anchored and highly procyclical” and the other concerning their incentives, which “are inadequate to restrain risk-taking sufficiently during booms” (ibid. p3). From these ingredients, Borio produced his own version of a financial instability hypothesis that is not unlike that developed by Hyman Minsky on the heterodox wing of the economics profession²⁸. To quote: “ As perceptions of risk decline, asset values surge and incentives to take on risk grow, so financing constraints become looser: external funding becomes cheaper and more ample (funding liquidity), and selling assets becomes easier and less expensive (market liquidity). Consequently, as the financial boom proceeds, it feeds on itself, sowing the seeds of its subsequent demise” (ibid. pp3-4)

The conclusion that follows from applying this instability hypothesis to the 2007-8 financial crisis is that its main lesson was that financial regulators failed to learn the lessons of previous financial crises and thus failed to tighten regulation of the international financial system sufficiently enough to counter its tendencies towards excess elasticity. The same conclusion was reached by Mark Carney in a recent speech commemorating the tenth anniversary of the financial crisis. His central proposition was that the main lessons of the crisis were to reinforce “some core financial truths”, or, to take the inverse proposition, to dispel “three lies of finance” the first of which “is the four most expensive words in the English language: ‘This Time is Different’” (Carney, 2018,p.2). In expanding on these propositions, Carney’s line of argument followed an essentially Minskyan logic²⁹: just as in the case of all previous financial crises it was a sustained pre-crisis period of macroeconomic stability and rising asset prices that caused complacency among individuals and institutions, so was this also true in the case of the subprime crisis in that the pre-crisis years of the ‘Great Moderation’ - a period marked by a highly unusual combination of strong growth, low unemployment and low inflation - also led to general complacency. What was particularly problematic in this latter case, and what gave added urgency to the key lesson to be learnt, was that the complacency generated by the Great Moderation infected not just individuals and institutions in the private sector but also the regulatory authorities. To quote Carney: “A deep-seated faith in markets lay beneath the new thinking of the Great Moderation. Captured

²⁸ Minsky (1977;1982;1986).

²⁹ Indeed, Carney acknowledged the debt to Minsky when he said that, following the financial crisis, “Minsky became mainstream”.

by the myth that finance can be regulate and correct itself spontaneously, authorities retreated from their and regulatory and supervisory responsibilities” (ibid.p3).

As both Governor of the Bank of England and Chair of the Financial Stability Board, Carney brought great authority to the assertion that the subprime crisis was no different in its essentials from previous financial crises. However, it was an authority that in our view was misplaced in that the assertion only holds true if abstraction is made from the global safe asset shortage problem. Once that problem is taken into consideration it becomes clear that the great financial crisis of 2007-8 was indeed the first crisis of its kind as will now be explained.

6. This time was different

As stated at the outset of this paper, what is entirely new, because without historical precedent, is the geographical scale of the safe asset shortage³⁰. There have long been safe asset shortages on a local or regional basis, but only at the start of the 21st century did there emerge a *global* safe asset shortage problem because it was only by that time – following the collapse of colonialism in the mid-20th century and the subsequent collapse of communism at the end of the century – that virtually all of the world’s 200 or so nation states had become integrated into the global market economy. This development served to boost the geographical proliferation of several of the major groups of large investors listed above, including: institutional asset managers (while the management industry began to expand rapidly in the US and West Europe in the 1970s and 1980s, its subsequent global expansion dates from the late 1990s and early 2000s)³¹; High Net Worth Individuals (just as striking as the rise in the amounts of wealth concentrated in the hands of HNWI in the years leading up to the financial crisis was the increased percentage share of HNWI from outside of the US and Europe - from 15% in 1995, the percentage share of total wealth held by the rest of the world HNWI had risen to 38% by 2000 and to 45% by 2007³²; appendix, figure 11A); Sovereign Wealth Funds (SWFs date from the 1950s, but the great majority of the 79 or so SWFs currently in operation were only established in the early 2000s (appendix, figure 12A(a)); central banks in their exchange rate management role (while the global volumes of

³⁰ This point about the historically unprecedented nature of the global safe asset shortage problem is made in Lysandrou (2019)

³¹ See Davis and Steil (2000) and Haldane (2014).

³² Capgemini (2000) and (2008)

foreign exchange reserves held by central banks remained steady up to the mid-1990s, these volumes began to explode in size from that point on (appendix, figure 13A)).

Given the rapid accumulation of funds held by the world's governments and large private investors, much of which had been stored in bonds – assets that best combine large value storage capacity with safety, liquidity and tradability – and given that the US in the early 2000s was by far the world's leading supplier of bonds, it was inevitable that that period would begin to see a massive influx of foreign public and private funds into all of the US debt securities markets: first into the market for 'ground-floor' securities, government and corporate bonds (bonds backed by the interests from tax revenues or profits); then into the market for 'first floor' securities, asset backed securities (securities backed by bank loans); and then into the market for 'second floor' securities, structured finance securities (securities backed by securities backed by bank loans)³³. This influx put such enormous pressure on the US financial sector, and on its shadow banking component in particular, as to force it to outstep the limits at which it could safely manufacture the extra quantities of investable assets needed by the world's large investors. Thus, when the sector came close to collapse in 2007-8, it was not because it was 'fragile' and prone to endogenously generated vulnerabilities but because it was required to carry a burden that was simply beyond its capability. To use an analogy, the US financial sector came close to collapse in the same way that the world's strongest man, capable of lifting 575 kilos and who in no way could be considered to be fragile, would come close to collapse if required to lift an extra 25 kilos.

What happened over a decade ago is in danger of happening again today because the US financial sector is again coming under pressure to supply extra quantities of safe assets to accommodate the excess foreign safe asset demand spilling over from the US government

³³ Indeed, the US shadow banking system came under such safe asset demand pressure that it was forced to manufacture even higher-floor debt securities, CDOs squared and CDOs cubed. CDOs were sold whole or in separate tranches, and as investor demand was concentrated on the upper AAA tranche, leaving many of the mezzanine and equity tranches unsold, the latter would be re-packaged as collateral for CDOs squared, while the same process would be repeated in the case of CDOs cubed. An even more significant development in the 2004 to mid-2007 period was the phenomenal rise of 'synthetic' CDOs, artificial CDOs created through the use of derivatives (credit default swaps) that took 'cash' CDOs as their underlying reference entities. Where cash CDOs took months to create, synthetic CDOs took only a few days (Ellen Clarke (2008)). Thus, when the rate of foreign and US investor demand for US debt securities continued to significantly outstrip the rate at which all of the materially grounded US debt securities could be supplied, it was the synthetic CDOs that had to be relied upon to help bridge the gap. These securities barely existed up to end-2003, but (as can be seen in appendix, figure 6A) by mid-2007 they comprised two thirds of the total \$3 trillion worth of CDOs then outstanding.

and US corporate bonds markets. In the past decade global assets under institutional management have nearly doubled in size (from about \$50 trillion in 2008 these sums had grown to \$88.5 trillion by 2017³⁴, (appendix, figure 10A)); as have the foreign exchange reserves held by central banks (from approximately \$6 trillion in 2007, total reserve holdings averaged \$11.5 trillion in 2017; (appendix, figure 13A); as also have SWF assets (from about \$4 trillion in 2008, these totalled over \$7 trillion by 2016; (appendix, figure 21A (b)) and as also have HNWI assets (from \$40 trillion in 2007, these had risen to over \$70 trillion by 2017³⁵). Although the non-US contribution to global securities stocks has risen over the past decade, this contribution continues to fall far short of the corresponding volume of non-US demand for securities for use as safe assets, with the result that the US has had to fill the gap (appendix, figure 14A(a)). Thus, where foreign holdings of US securities averaged \$9trillion between 2007 and 2009 by 2017 the figure had risen to more than \$18 trillion.³⁶ By comparison, US holdings of foreign securities averaged \$5 trillion between 2007 and 2009 while by 2017 that figure had risen to about \$11trillion (appendix, figure 12A (b)). Although both the US government and US corporate sectors have been ready to meet the increase in foreign investor demand for US debt securities, the sheer weight of that demand requires the US federal government sponsored and shadow banking sectors to help accommodate that demand through mortgage loan securitisations and through other loan type securitisations. This point brings us right back to our previous argument regarding policy towards the US shadow banking sector in particular, namely, that if the latter is prevented by regulatory constraints from being able to fully accommodate the excess investor demand for US safe assets through its production of ordinary and transparent asset backed securities, then it will find ways of making up the shortfall through its production of the more complex and opaque structured finance securities such as CLOs.

³⁴ McKinsey, (2018)

³⁵ Capgemini (2018)

³⁶. What is noteworthy is that despite the persistent substantial gap between foreign holdings of US securities and US holdings of foreign securities, foreign investors earn on aggregate less income on their US securities than do US investors on their foreign securities (see e.g. Forbes (2010)). Part of the reason for this disparity is that equity securities constitute a larger proportion of US holdings of foreign securities as compared with debt securities while the converse is the case as concerns foreign holdings of US securities. However, the major reason for the disparity in earnings is that yields on US treasury and corporate bonds continue to be significantly lower than yields on foreign government and corporate bonds. This observation gives some support to our contention that while yield considerations are important to the world's large investors, what is in the end more important to them are value storage considerations, the reliability with which US bonds can hold specified quantities of value over specified spans of time.

The upshot of the foregoing analysis is that financial regulation aimed at preventing a financial crisis of the scale of the 2007-8 crisis should not be exclusively or even primarily based on a backward-looking perspective that attempts to draw lessons from previous financial crises. These lessons will have relatively little to offer because the type of pressure currently bearing down on the contemporary global financial system, and especially on its US component, is without historical precedent. Rather, financial regulation should be primarily based on a forward-looking perspective that starts from the recognition that the global safe asset shortage that first reared its head in the early 2000s as a genuinely global problem will continue to persist as a global problem for the foreseeable future. There may come a time when countries outside of the US adopt such economic policies as will reduce the volumes of surplus funds that need housing in bonds, or when these countries develop their own domestic bond markets on scales that eliminate the necessity for dependence on the US bond markets. However, unless and until such a time comes, the regulation of the US shadow banking system should be sufficiently relaxed as to allow it to produce enough asset backed securities as can soak up the pressures of global safe asset demand spilling over from the US government and corporate markets.

7. Conclusion

The great financial crisis of 2007-8 has not disturbed the widely held view that the financial system is a socio-economic organism that functions today in the same way that it has functioned in the past and that is subject to the same internally generated vulnerabilities today as it has been subjected to in the past. This viewpoint explains why the great financial crisis is not generally seen to be one that was essentially different from previous financial crises. The reality is that the great financial crisis was the first of its kind because the financial system is now under huge external pressure that is without historical precedent. The source of that pressure is the global safe asset shortage. Having first appeared as a global problem at the start of the 21st century, this safe asset shortage looks set to continue for the foreseeable future, which means that the financial system will continue to come under pressure to help make good that shortage. What this in turn means is that, if another financial crisis on the scale of the last one is to be avoided, policies towards the financial system and towards its shadow banking component in particular should be informed by an understanding of the new

global socio-economic circumstances that have created, and continue to perpetuate, the global safe asset shortage problem. This paper has sought to contribute to such an understanding.

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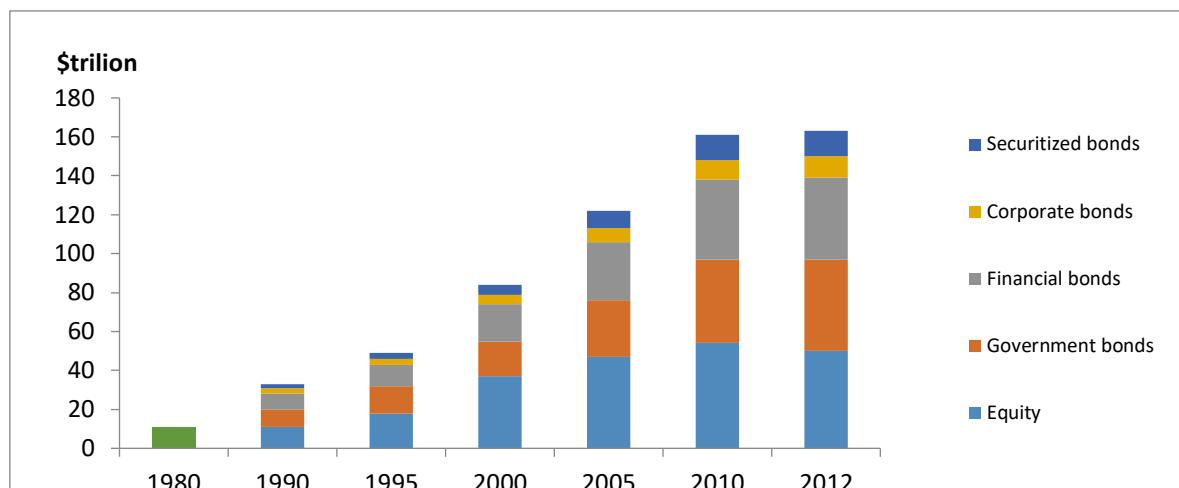
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Appendix

Figure 1A

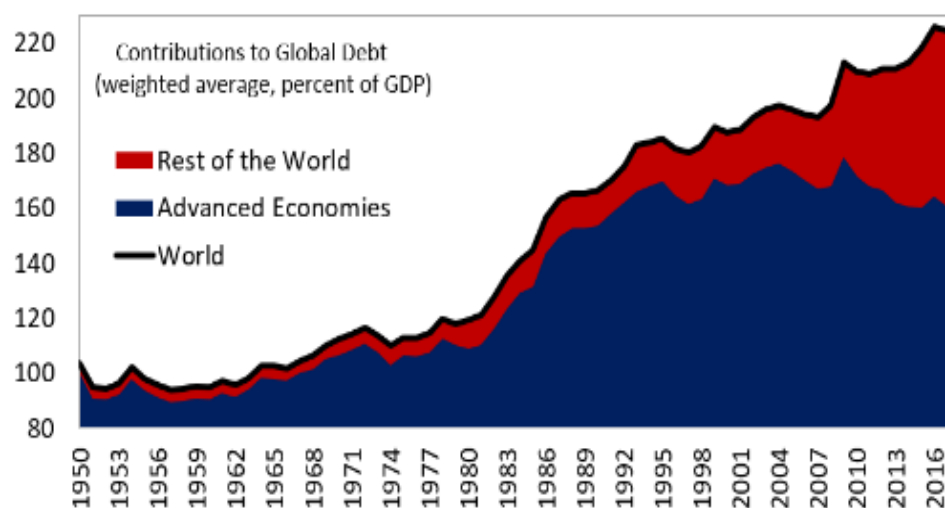
Financial Deepening of the Global Economy



	1980	1990		1995	2000	2005	2010	2012
World Deposits	9	23		26	35	42	57	62
World GDP	11	22		30	33	46	64	72

Source: Karlténbrunner and Lysandrou (2017)

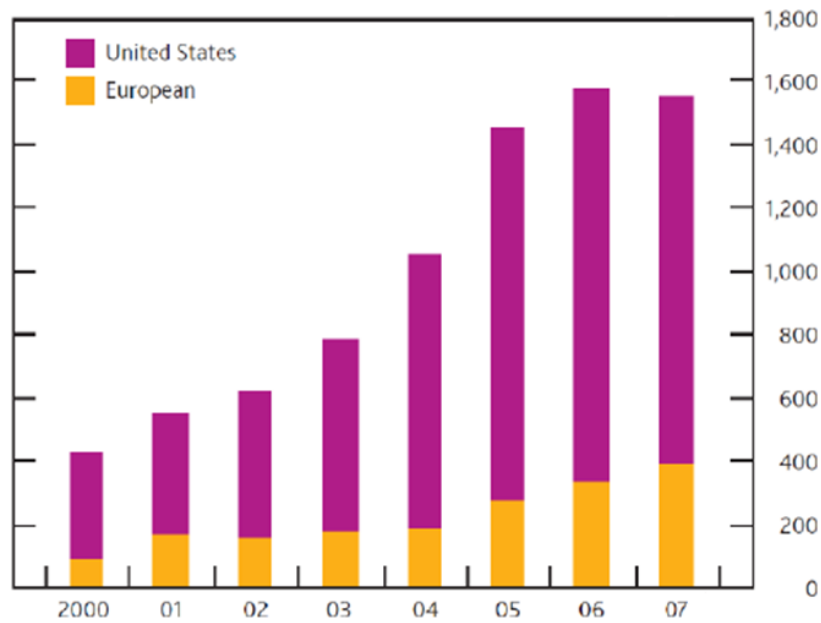
Figure 2A



Source: IMF (2018)

Figure 3A

Pre-Crisis Global ABS Issuance



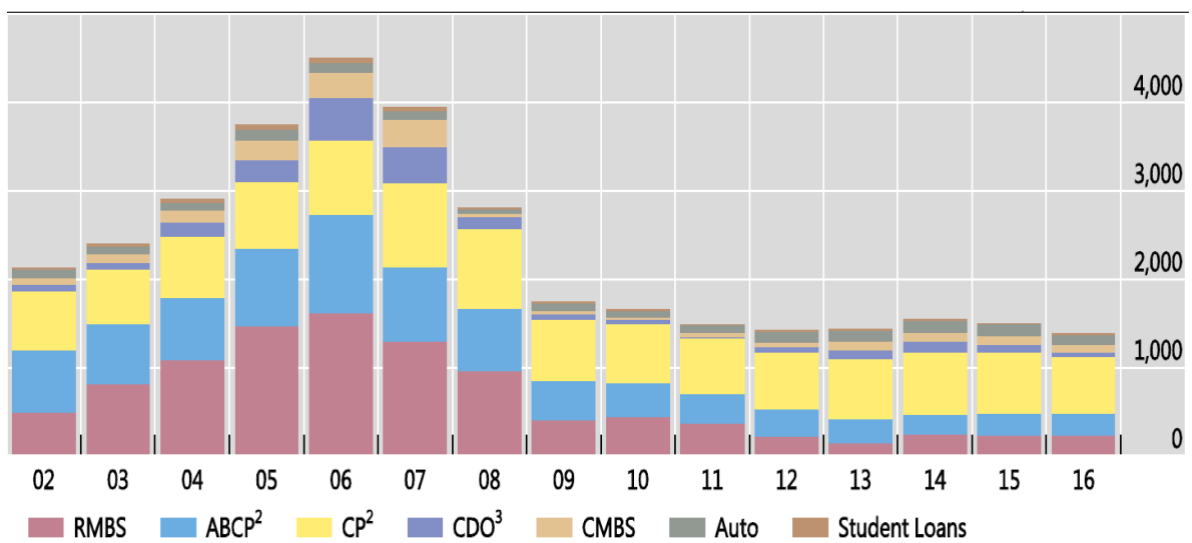
Source: Bank of England (2007)

Figure 4A

US and European structured finance¹

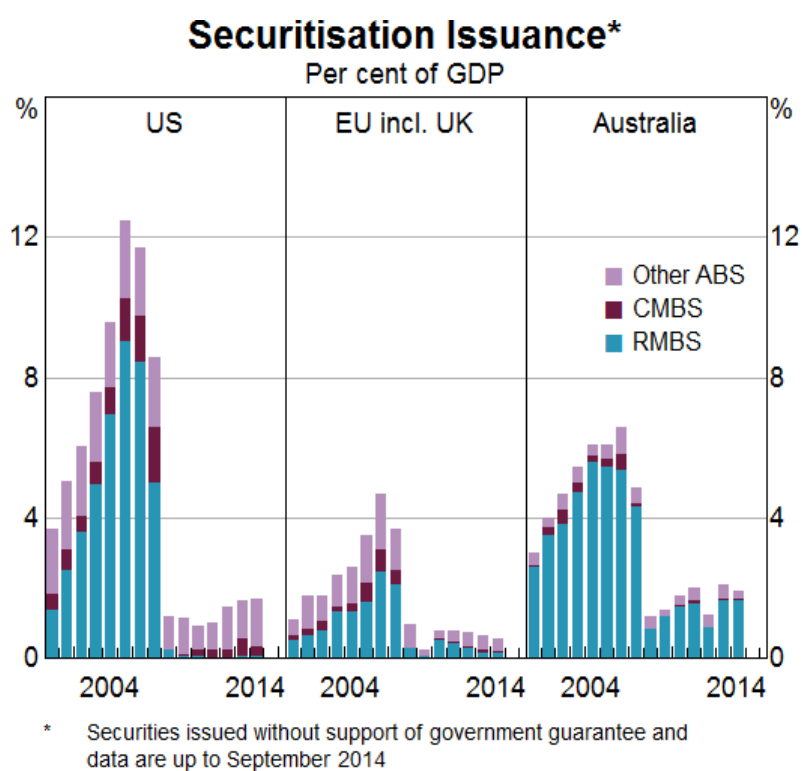
In billions of US dollars

Graph 1



Source: FSB (2017)

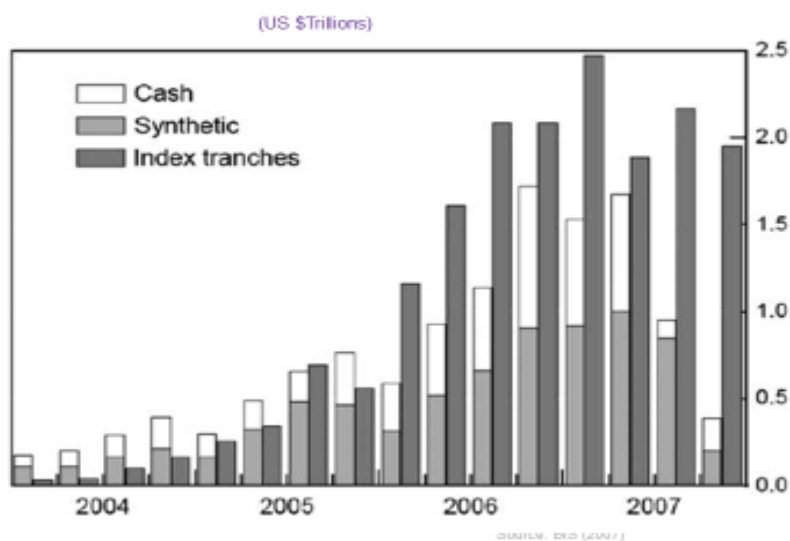
Figure 5A



Source: Aylmer (2014)

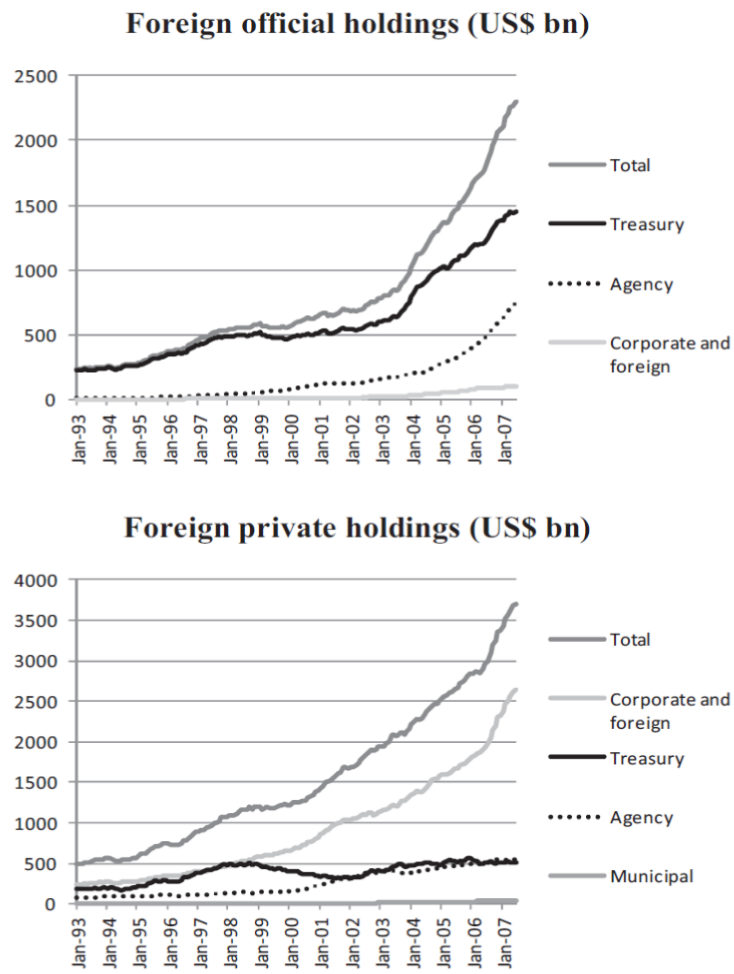
Figure 6A

Growth of CDOs: 2003-2006



Source: Borio (2008)

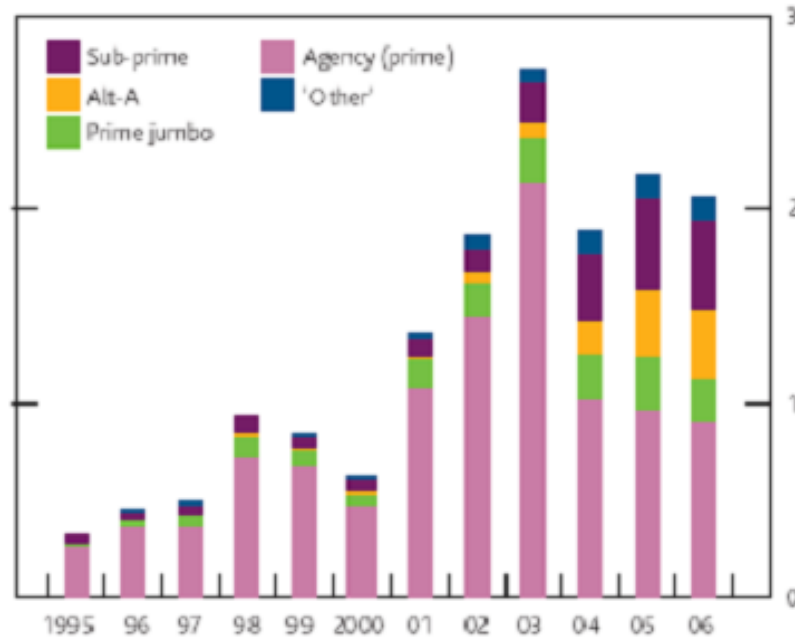
Figure 7A



Source: Goda and Lysandrou (2104)

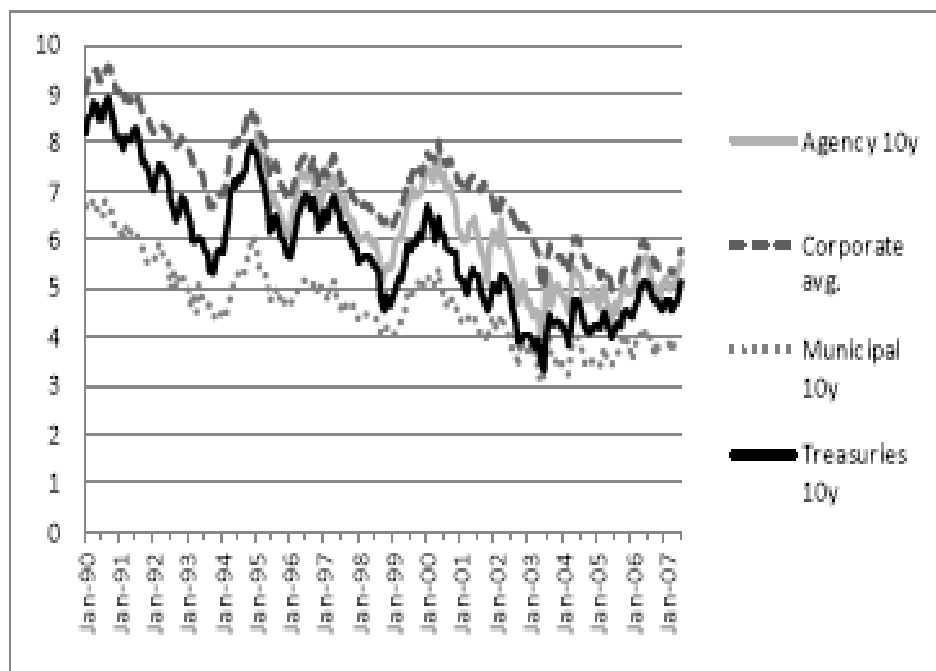
Figure 8A

US Mortgage Loan Issuance 1995-2006



Source: Bank of England (2007)

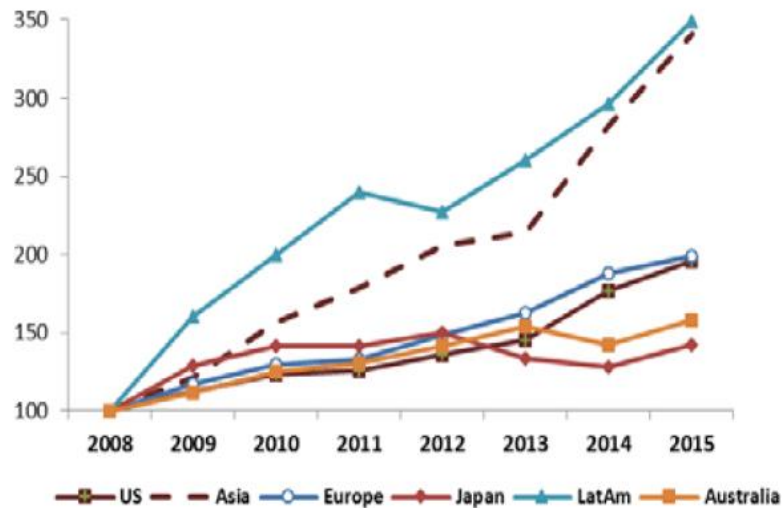
Figure 9A



Source: Goda and Lysandrou (2014)

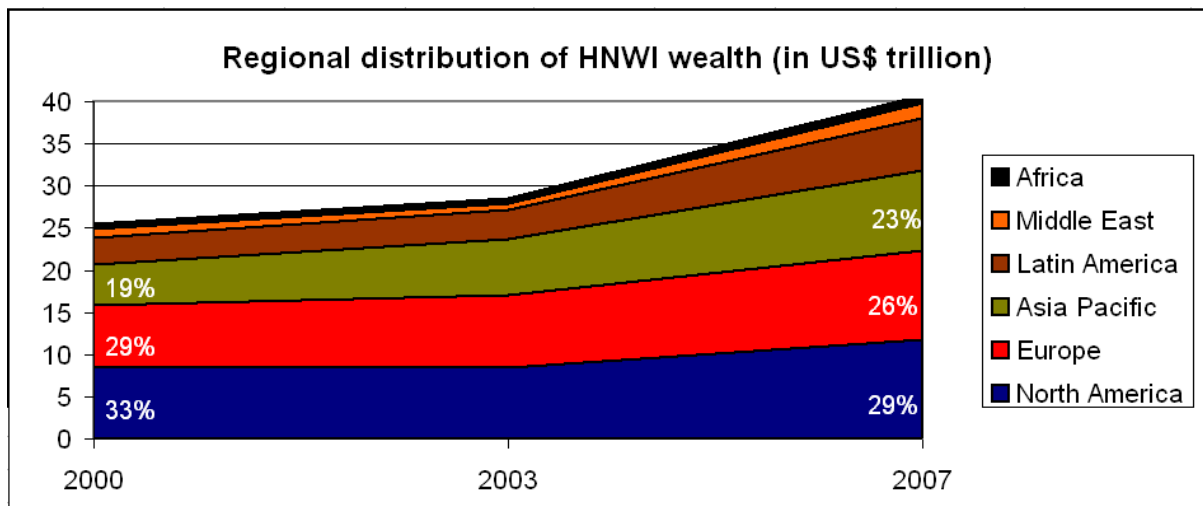
Figure 10A

Global AuM: Growth Index



Source: European Fund and Asset Management Association (2017)

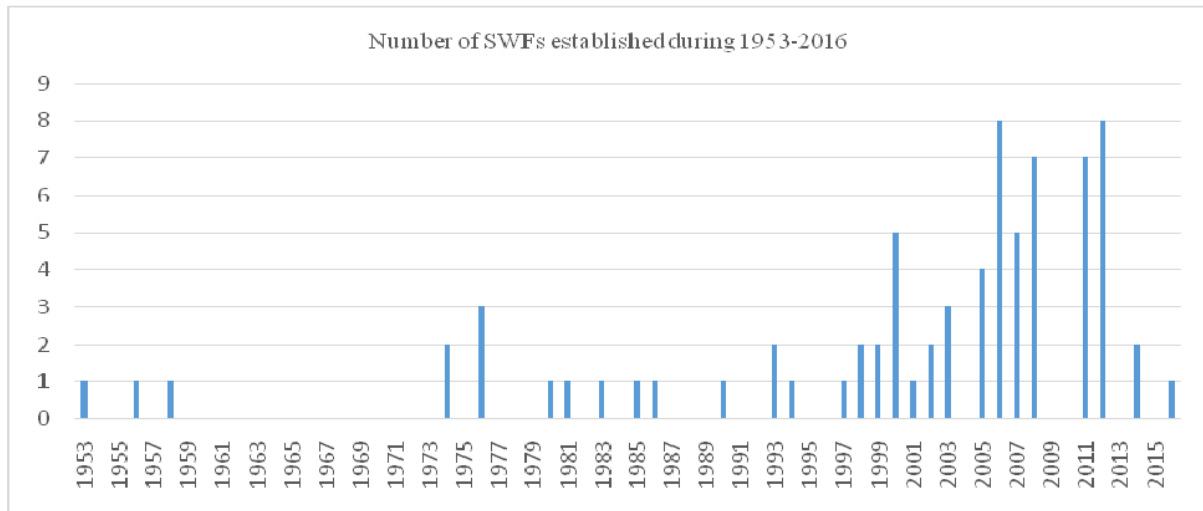
Figure 11A



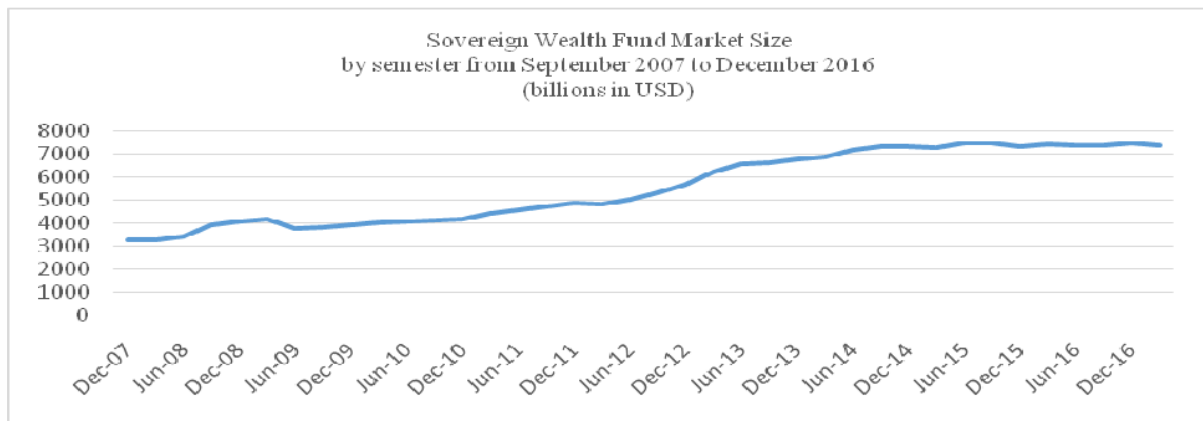
Source: Capgemini (2009)

Figure 12A

(a)



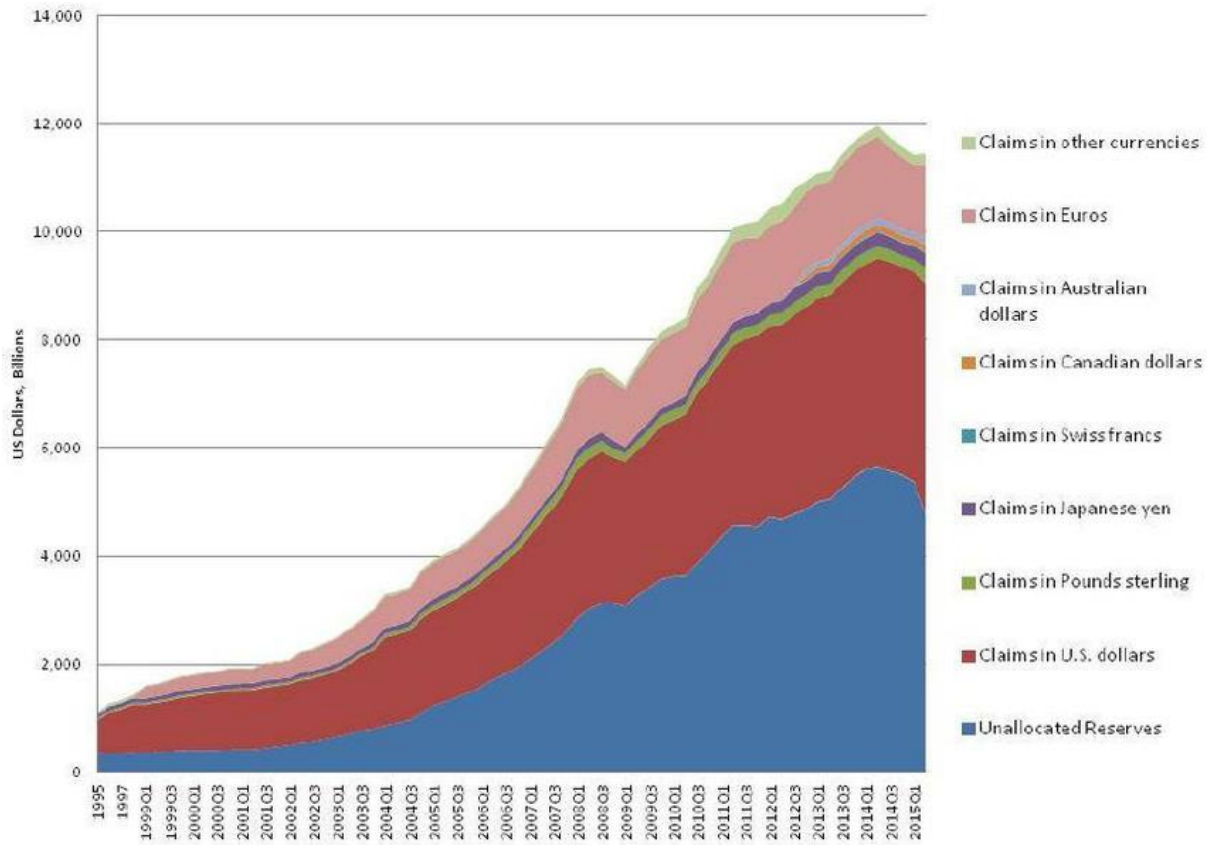
(b)



Source: Buteica and Huidumac Petrescu (2017)

Figure 13A

Growth of Global Currency Reserves



Source: IMF (2017)

Figure 14A

(a)

Foreign Holdings of U.S. Securities
(\$ Billions)

	Stocks	Corporate Bonds	Treasury	Agency Debentures and MBS	Total
2003	1696.2	1,345.2	1,513.5	661.1	5,216.0
2004	1952.2	1,610.6	1,813.6	861.7	6,238.0
2005	2117.8	1,803.8	1,984.4	1,006.1	6,912.1
2006	2558.4	2,353.3	2,126.2	1,258.2	8,296.2
2007	2954.0	2,775.0	2,376.4	1,576.8	9,682.3
2008	1929.9	2,383.9	3,253.0	1,402.2	8,968.9
2009	2657.4	2,483.5	3,670.6	1,150.0	9,961.5
2010	3213.5	2,523.1	4,458.8	1,095.8	11,291.2
2011	3397.2	2,491.0	5,004.4	1,078.2	11,970.8
2012	3953.0	2,617.6	5,571.5	1,001.2	13,143.2
2013	5205.4	2,732.9	5,792.6	883.8	14,614.7
2014	5920.6	2,928.0	6,157.7	899.6	15,905.9
2015	5500.9	3,083.3	6,146.2	916.5	15,647.0
2016	5768.4	3,430.5	6,006.3	987.9	16,193.1
2017	7079.7	3,908.8	6,306.5	1,007.3	18,302.2

(b)

U.S. Holdings of Foreign Securities
(\$ Billions)

	Stocks	Bonds	Total
2003	2,079.4	746.5	2,825.9
2004	2,560.4	808.6	3,369.0
2005	3,317.7	824.8	4,142.5
2006	4,329.0	1,024.3	5,353.2
2007	5,248.0	1,425.7	6,673.7
2008	2,748.4	1,091.2	3,839.6
2009	3,995.3	1,447.8	5,443.0
2010	4,900.2	1,677.6	6,577.9
2011	4,501.4	1,913.6	6,415.0
2012	5,321.9	2,193.1	7,515.0
2013	6,472.9	2,242.5	8,715.4
2014	6,770.6	2,481.3	9,252.0
2015	6,756.2	2,308.6	9,064.7
2016	6,997.0	2,452.2	9,449.2
2017	8,979.8	2,798.3	11,778.1

Source: US Fact Book (2018)

