

What is so special about European Shadow banking?

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Abstract: The 2007 financial crisis revealed the existence of a completely parallel funding system outside of regular banking, the so-called shadow banking system (SBS). Researchers have focused on the American SBS, but the European SBS has received little attention. Yet different features specific to continental Europe make it difficult to just copy and apply the analysis of the US SBS to a reality that is different on the old continent. In this paper we argue that the European SBS is not merely a by-product of the American SBS but rather has unique roots that have led to a distinct type of SBS. In particular, the European SBS occurs partly within the banks themselves. Indeed, the European SBS exists within the framework of a different variety of capitalism than that of the US. Finally the US and European SBS are strongly interconnected, playing a major role in the spread of the crisis.

Key words: Shadow banking, banks

JEL classifications: G21, G23, G24

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1. Introduction

The 2007 financial crisis revealed the existence of a completely parallel funding system outside of regular banking, the so-called shadow banking system (SBS). This subject has become a central field of academic research with numerous studies seeking to evaluate its size, describe the entities involved, assess its role, and possibly regulate it. However, most of these studies focus on the US due to a lack of data in Europe. Recently, some studies have started to emerge concerning European shadow banking, even though European financial circles still often question its existence. In their eyes it is only an epiphenomenon of American shadow banking. It's true that the shadow banking system first emerged in the US before spreading to Europe. However, different features specific to continental Europe make it difficult to just copy and apply the analysis of the US SBS to the European situation. There are different definitions of the SBS. This variety of definitions results from the difficulty of defining precisely what activities and entities constitute the SBS. Accordingly, it is not surprising that the estimated size of European shadow banking varies considerably.

The Financial Stability Board (FSB, April 2011) gives two definitions, one broad, the other narrow, of the SBS:

- *The broad definition:* “credit intermediation involving entities and activities outside the regular banking system.”
- *The narrow definition:* “a system of credit intermediation that involves entities and activities outside the regular banking system, and raises (1) systemic risk concerns, in particular by maturity/liquidity transformation, leverage and flawed credit risk transfer, and/or (2) regulatory arbitrage concerns.”

On the other hand, the European Economic and Social Committee (EESC, 2012) underlined [that] “there are many ways in which shadow banks replicate traditional banks, and some shadow banks *are part* of traditional banks.”

This EESC definition (2012) reflects the fact that shadow banking occurs both outside and partially within the banking system. We find this definition particularly useful in understanding the European SBS, as it is closely linked to the universal banking model, which is dominant in Europe.

In the United States, flow of funds data makes it easier to identify shadow banking activities, whereas in the euro area, “other financial intermediaries” (OFI) is a category of fund flows covering financial institutions that are not banks, central banks, public financial institutions, insurance companies, or pension funds. It covers most of the agents engaged in shadow banking. However, the OFI category excludes intermediaries like money market mutual funds (MMMFs), which are included in other sectors, but engage in activities that can be considered as shadow banking. More research still needs to be done in order to draw a clearer picture. Whether insurance companies are in some cases to be included in the SBS remains debatable. The 2015 FSB report gives an assessment of shadow banking across the major financial systems based on economic functions (or activities). Its approach is based on the classification of non-bank financial entities into five economic functions,¹ each of which involves non-bank credit intermediation that may raise shadow banking risks (e.g. maturity/liquidity transformation and leverage).

Harutyunyan, Massara, Ugazio, Amidzic, and Walto (IMF, 2015) present an alternative

¹ The following is the list of the five economic functions: 1) management of collective investment vehicles with features that make them susceptible to runs, 2) loan provision that is dependent on short-term funding, 3) intermediation of market activities that is dependent on short-term funding or on secured funding of client assets, 4) facilitation of credit creation, 5) securitization-based credit intermediation and funding of financial entities.

approach, which includes both banks and non-bank financial institutions as potential issuers of SBS-like liabilities. Based on expanding the noncore liabilities concept (Shin and Shin, 2010), they include all noncore liabilities of both banks and nonbank financial institutions to account for shadow banking activities. According to this approach, shadow banking is any intermediation that can be characterized as nontraditional from the point of view of the funding source. The non-equity funding of financial intermediation is divided into core (traditional) and noncore (nontraditional) liabilities. Core liabilities include bank deposits mainly from nonfinancial corporations and households, while noncore liabilities include all the remaining funding sources, particularly market funding.

Aside from the question of how to define shadow banking, numerous studies have attempted to estimate the size of the shadow-banking sector. However, the size varies significantly from one estimate to another. The Financial Stability Board (FSB) considers that the **global** shadow banking system, measured by “other financial intermediaries” (see definition above), grew rapidly before the crisis from \$26 trillion in 2002 to \$62 trillion in 2007 to \$75 trillion in 2013 (FSB, 2014).

Also, according to the FSB, the SBS of the Euro area was roughly equivalent to the US SBS, and the European SBS (basically, the Euro area plus the UK) was significantly larger than that of the United States, as shown in Table 1. These three areas represent 80 % of the total shadow banking system assets and 53% of the assets of the world banking system.

Table 1

<i>SBS global size in 2013:</i>	<i>\$75 trillion</i>
of which US:	\$25 trillion
Euro area:	\$25 trillion
UK:	\$9 trillion

Source: FSB, 2014

However, if we adopt the economic functions approach of the very same FSB, global assets of financial entities classified as shadow banking in 26 jurisdictions reached \$36 trillion 2014.

Table 2

	Size in 2014 (\$ trillion)	Growth in 2014 (year-over-year, percent)	Average annual growth 2011-2014 percent
Banks	135	6.4	5.6
OFIGs	68	9.0	6.3
Shadow Banking	36	10.1	6.3

Source: FSB, 2015.

The point is, as Turner (2012) explained, “measures of ‘the size of the shadow banking’ system are not only varied but also not all that useful – because it is the nature of a complex, interconnected system that any measures of its size depend crucially on the counting system used.” Estimates of SBS size vary considerably according to which institutions are included or not. However, whichever definition is adopted, it is vital to better understand the importance of the SBS in order to identify and assess the sources of financial stability risks that may rise from it.

Our purpose in this paper is to assert that, however measured, European shadow banking as such exists and is not merely an epiphenomenon subsidiary to US shadow banking. It has its own distinctive features. In section 2, we recall the distinctive features of continental European banks and their regulatory situations in the second half of the twentieth century, which were different from those of US banks. Reforms were implemented in the 1980s, which led to extensive financial deregulation. We proceed to discuss how the financialization of universal banks gave rise to “market-based banking,” which corresponded to a new form of financial intermediation (section 3). This may help us understand the differences and

similarities between the shadow banking systems in the US and Europe (section 4). We also focus on financial intermediaries other than banks and run a principal component analysis in order to try to capture their specific character and role according to countries in Europe (section 5). However, given the worldwide nature of shadow banking activity as well as the high level of interconnections between its worldwide components and within the traditional banking system, it is not possible to focus only on Europe. Understanding interconnections in the shadow banking system is as important as understanding the conditions in which it emerged (section 6). Finally, European shadow banking has been “hybridized” by certain innovations borrowed from US finance (such as securitization), grafted onto an already receptive model. The theory of financial intermediation provides a useful analytical framework. Within this perspective, we aim to demonstrate that the shadow banking system may be viewed as the latest stage in the evolution of financial intermediation resulting from financial deregulation and from financial innovations such as securitization (section 7).

2. Universal banking: a distinctive feature of continental European capitalism

In the US, for the second quarter of 2011, the size of the shadow banking system constituted 53% of the total banking and shadow banking system. In contrast to the US, banks continue to be the main financial intermediaries in the euro area, where they intermediate more than three times the assets intermediated by shadow banks. That is why the overall size of the shadow banking was “only” 28% of the total in the euro area. In other words, continental Europe continues to be financed by banks which, through their universality, integrate market intermediation as well as securitized intermediation or securitized banking (Gorton et Metrick, 2011).

Universal banks operate extensive networks of branches, provide many different services, and hold different claims on firms (including equity and debt). They typically offer credit and

deposit operations, as well as all form of securities transactions (issuance, brokerage and securities deposits). Universal banks have been operating for a long time in several European countries. They played a major role in Germany during the industrial revolution from 1870 to 1914 (Calomiris, 1995). According to Calomiris, German industrial firms enjoyed lower financial costs than the United States because of universal banks. Universal banking was also considered one of the key factors of the reconstruction and the rise of industry in the Federal Republic of Germany after World-War II (Buschgen, 1979).

French banking history is different. Bank specialization was a key characteristic of the French banking system during the post war period. The French Banking Act of 1945 introduced a strict separation - in the US Glass-Steagall style – between two types of banks: business banks which can have shares in industrial corporations, but cannot collect deposits, and deposit banks which may collect deposits from the population, but are not allowed to have shares in industrial corporations. But the subsequent Banking Act of 1984 paved the way for universal banking, thereby mirroring the German universal bank model. The Banking Act of 1984 imposed a new framework on all “credit institutions”, which represented the first stage in the liberalization of the French banking system. This act abolished the legal distinctions between business banks and deposit banks. Since then, universal banking has been the dominant model in France.

There are different models of universal banking in Europe (Epstein et al., 2009). The British banking system also has universal banks, but the proportion of investment banking operations relative to retail banking is much greater than in continental Europe. This may be explained by the strong connections of British banks with the City.

Another characteristic of British banks, but also of French and Spanish banks, is the development of their activities at the international level, much more so than most US banks. This penetration into the international market was a normal response to increasing

competition. But it is not a new phenomenon. The desire to expand banking activities abroad goes back a long way. In the case of the UK, France and Spain, the internationalization of banking activity is linked to their history as colonial powers. Another factor favouring the expansion of banks abroad more recently was the process of European integration, a process which is in full development today. The creation of the euro currency in 1999 led to an acceleration of mergers among banks in the euro zone.

Finally, the organization of national banking systems in Europe differs from one country to another regarding the role of government. The importance of public actors' involvement is a common feature of "coordinated" capitalisms (using the theory of the "variety of capitalisms") in continental Europe. Germany has a long-standing history of public involvement in its banking sector. Three particular institutions deserve mention here. They are the *Sparkassen* (savings banks), postal savings institutions, and the German development bank called the *Kreditanstalt für Wiederaufbau* (KfW), or Bank for Reconstruction. These institutions comprise a substantial share of the German financial system and they perform a wide range of financial services with a particular focus on building personal wealth and small business financing.

In the past century (from the 1930s up to the early 1990s), the Italian banking industry was substantially managed by the state or by local public bodies. But after 1990 (due to the so-called Amato law), the banking sector was entirely "privatized" within a few years. The "privatization" took place parallel with an equally fast process of concentration, inspired, when not directly managed, by the Italian Central Bank (Banca d'Italia) whose objective was to promote a system of large private banks in the form of limited companies. In addition, while the activity of the traditional commercial banks was limited mainly to providing short-term commercial credit to firms prior to 1990, the Amato law allowed Italian banks to operate as "universal" banks.

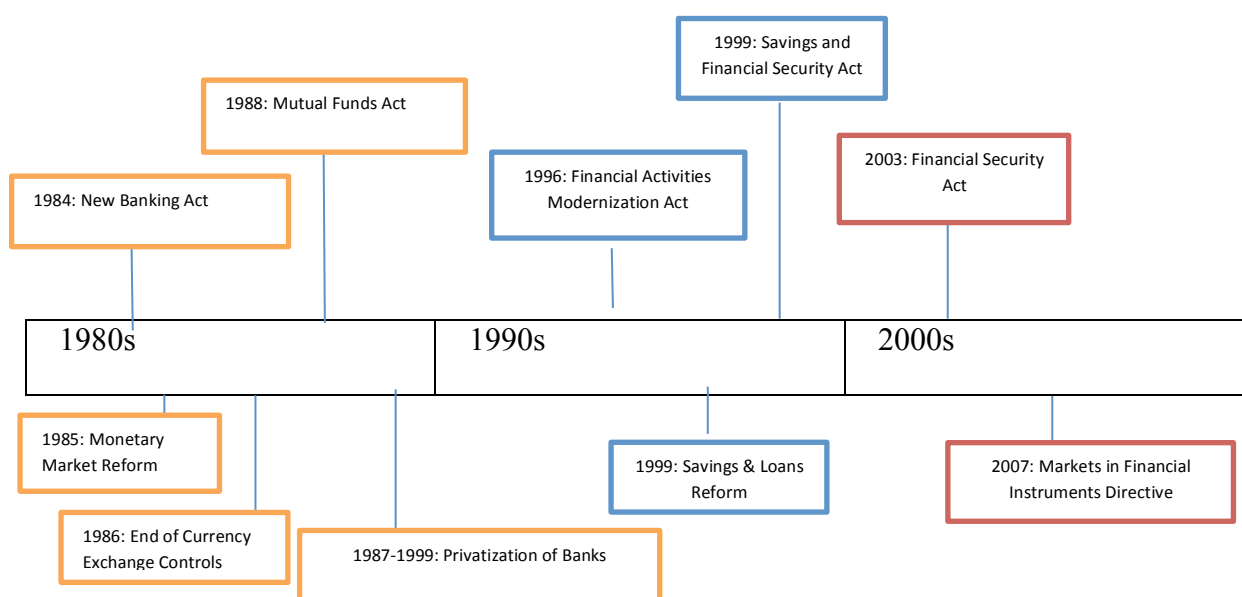
As was the case with all the "advanced" economies, the 1930s crisis led the French government to strengthen its institutional framework and increase the state's role in financial and macroeconomic governance. These early post-war reforms were subsequently extended during the period of the socialist government in the early 1980s, when the role of the state in financial ownership, and regulation was expanded considerably. However, in the mid-1980s, the state's role in finance was rapidly reduced due to deregulation and privatization.

3. Financialization and the move to “market-based banking” in Europe (UK, France, Germany) in the 1980s following the neoliberal reforms¹

In all the European Union countries, comprehensive neoliberal reforms were implemented in the 1980s, leading to extensive financial deregulation. This evolution culminated in 1990 with the creation of the common market of financial and banking services in the European Union, following the passage of the Single European Act in 1987.

In the case of France, what is striking above all during the period 1980-2000 is the speed with which deregulation was carried out. In the mid-1980s, the French system was still strictly regulated, but a mere few years later it was completely deregulated. Two other differences with the US deserve to be noted: the French government itself was the motor force behind the transformations and the banks themselves became the most active market players. The deregulation policies took the following steps in France:

Figure 1
Deregulation Timeline in France

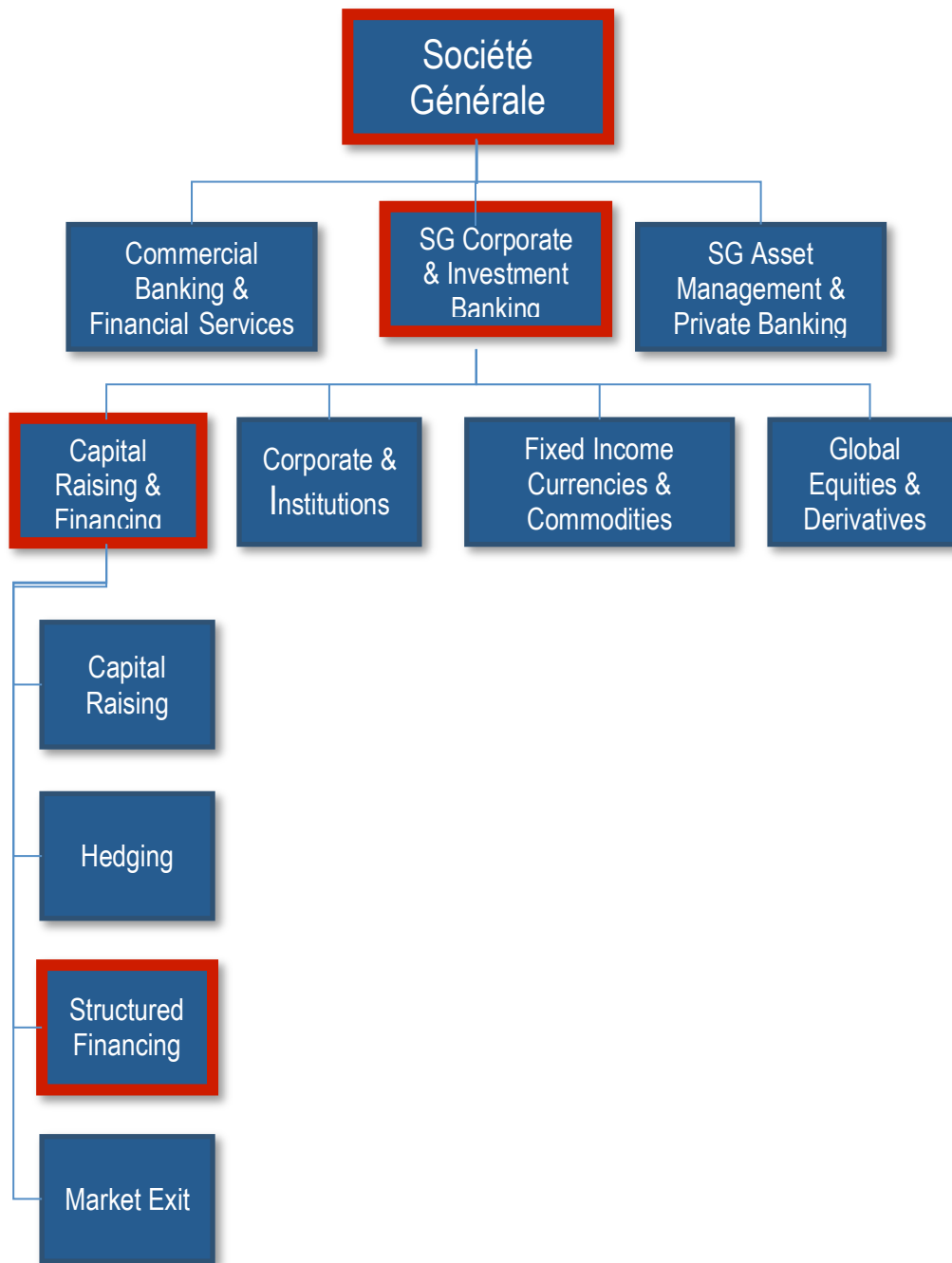


Source: E. Jeffers (2013)

As a result of financial deregulation, banking systems underwent financialization in the 1980s and the 1990s. This process accelerated in the 2000s until 2008. The financialization of universal banks involved a wide range of activities, from increasing retail activities internationally to derivative trading and investment in complex securities. It also included increasing use of market-based sources of borrowing to finance the asset side of the banks' balance sheets. On the asset side, banks added a new "market portfolio" to their "traditional credit portfolio". The structure of universal banks changed with the growing importance of investment banking relative to retail banking.

The French bank Société Générale, very active in financial markets, provides a good illustration of the impact of financialization on bank structures: besides retail banking ("*banque de détail*"), investment banking and asset management have also become major pillars of the bank's activity and revenues as illustrated by the following chart:

Figure 2:



Source: Société Générale

It is common in continental Europe and particularly in France for bankers and the banking industry to favourably compare the universal banking model to the “Glass Steagall banking model” or the separation between retail banking and investment banking, whether in “normal” times (enhanced profits) or during crises (being able to rely on large deposits constituting

solid protection against the drying up of liquidity on financial markets). The argument is that universal banking offers diversification and therefore more protection, especially during crisis times.

However, the reality during the crisis demonstrated the dangers of the way in which the universal banking model operates. First, in terms of the activities and risks this model takes on and its greater exposure to derivative trading; secondly, concerning regulatory arbitrage and the development of shadow banking, and finally in that these banks are invariably global systemically important financial institutions (G-SIFIs), representing systemic risk.

The extra degree of risk taken on by this type of model is shown by the leading role French banks have been playing in certain types of derivatives trading over the last two decades. Two of the largest French banks, Société Générale and BNP-Paribas, have large corporate and investment banking operations, especially in fixed income currency and commodities (32 and 26 percent of investment banking (IB) revenues respectively for Société Générale and BNP-Paribas according to the IMF report, 2013) and equity derivatives (32 and 18 percent of Société General and BNP-IB revenues respectively, IMF report, 2013). For five years, from 2003-2007, Société Générale made greater profits from equity derivatives than any other bank in the world (Howarth, 2010). When the names of the recipients of collateral postings for credit default swaps from AIG (benefactors of US government support) were revealed, Société Générale headed the list, receiving \$11 billion or 22 per cent of the total. The French Calyon—the Crédit Agricole investment bank—received a further \$2.3 billion.

The financialization of universal banks gave rise to “market-based banking” which corresponds to a new form of financial intermediation we will call “market intermediation” and which can be characterized by:

- Profound changes in the structure of banks' balance sheets with a spectacular increase of securities both on the asset side and the liability side, as illustrated by the table 3 for French banks.
- New strategy among banks with respect to risk management: traditional banking is based on internalized risk management (risks remain within balance sheets), whereas market-based banking uses recent financial innovations (derivatives, securitization) to externalize risks, i.e. to transfer risks to market investors.

Table 3: Changes in banking balance sheets in France*

Assets (in %)	1980	2000	2010
Customer loans	84	41	38
Securities	5	45	37
Fixed assets	9	7	10
Others	2	7	15
Total Assets	100	100	100
Liabilities (in %)			
Interbank operation (net)	13	10	-
Customer deposits	73	26	34
Securities	6	48	42
Others	0	7	14
Shareholder equities and provisions	8	9	10
Total Liabilities	100	100	100

* AFB banks, excluding mutual and cooperative banks.

Source: The authors; Commission bancaire data.

The internal market of financial and banking services, which is at the core of European construction, played a major role in the rise of “market-based banking”. The European directive on investment services, issued in 1990, provided a legal framework for banks to provide investment services. This led to the recognition of the dual dimension of bank intermediation: traditional intermediation based on loans and deposits, and market-based intermediation (i.e. market intermediation), whereby banks borrow and lend through market instruments.

One of the conclusions of our analysis, which provides evidence for the growing role of “market-based banking”, is that the division of financial systems between bank-based and market-based systems put forward by Allen & Gale (2001) is problematic. In fact, in Europe, banks have become major players in financial markets. As the High-level Expert Group on reforming the structure of the EU banking sector chaired by Erkki Liikanen points out on page 17 of its report, in the “Changed nature of banking activities” paragraph: “In particular for the large institutions, the relative weight of banking activities has shifted from deposit taking, lending, securities underwriting, and trust services towards dealer and market-making activities, brokerage services, and own account trading. The corresponding banking sector expansion has been financed through short-term wholesale markets and off-balance sheet vehicles. The activity shift was accompanied by a sharp growth in ‘shadow banking’, a rise in complex derivatives, increased interconnectedness, lengthened intermediation chains, and increased leverage. In March 2012, loans to non-financial corporations and households only make up 28%, and deposits of non-MFIs make up 30% of the aggregate balance sheet of EU MFIs.”

4. Shadow banking system (SBS) in the US and in Europe: similarities and specificities

Like traditional banks, shadow banks intermediate credit. But unlike the traditional banks where intermediation occurs under “the same roof” (Pozsar and al., 2010), in the SBS this is done in different stages through a chain of non-banking intermediaries. These stages include a vertical slicing up of the credit intermediation process usually carried out by traditional banks. Financial flow can take place through banks (bank intermediation) and the advantages of such intermediation in terms of information, transaction costs, and risk mitigation are well known. But many financial flows do occur outside banks. These flows can go from small savers (households) to borrowers (corporations or government) via the financial markets (market intermediation) or non-bank credit intermediaries. Not all of them constitute shadow banking intermediation but they are labelled as such when they involve those distinctive features of banking – leverage and maturity transformation – that create distinctive risks.

One of the lessons of the global financial crisis was the interconnectedness between the shadow banking system and the traditional banking system, which can affect financial stability. However, the specific form of interconnectedness differs according to how the traditional banking system functions.

Securitization is smaller in volume in the euro area than in the United States. However, the euro area is not a homogenous group—witness the strength of shadow banking in a country like the Netherlands where non-financial banking institutions (NFBI) have the largest percentage of total assets (45%) compared to the US (35%), the euro area (30%), and the UK (25%) (FSB, 2012). In fact, euro area banks have increasingly been relying on funding from other financial institutions, including securitization vehicles. Although there is definitely a certain degree of heterogeneity among these countries, a strong interconnection exists between the European banking sector and shadow banking.

The report presented by the Basel Committee on Banking Supervision (2011) on the development of securitization shows that US and European issuance has evolved differently since 2008. After a strong increase until 2008, issuance (retained or placed) decreased sharply in Europe. In contrast, volumes in the US securitization markets fell sharply in 2007 and 2008, but increased slowly in 2009 and 2010. Overall issuance has continued in Europe and in the United States despite the crisis, though at lower levels and supported to a significant degree by public institutions. In Europe the ability to use securitized products as collateral for eurosystem or Bank of England credit operations has increased demand, whereas in the US, government-sponsored enterprise (GSE) securitization markets have played a leading role.

The majority of securitization transactions in the euro area have consisted of monetary financial institutions (MFI) loan securitizations, in particular those of household mortgage loans. These transactions result in the issuance of residential mortgage-backed securities (RMBSs). Other common types of securitization by MFIs involve commercial mortgage loans (commercial mortgage-backed securities or CMBSs) and consumer credit, e.g. auto loans or credit card debt (consumer ABSs).

Other types of transactions are also concerned, such as securitization of commercial paper (asset-backed commercial paper or ABCP), bonds, trade receivables of non-financial corporations, tax receivables of general government, and re-securitizations of already securitized assets.

The United Kingdom, the Netherlands, Spain, and Italy are the main issuers of securitized products in Europe. In addition to the issuance of assets for use as collateral, some evidence of market-based demand has emerged in Germany, the Netherlands, the United Kingdom, and also in Italy since 2010.

Concerning the various asset classes, residential mortgage-backed securities (RMBSs) represent by far the most prominent asset class except in Germany and Greece (ECB, 2011). Issuance in Europe remained very high between 2008 and 2010, ranging between 53% (2009) and 76% (2008) of total issuance. RMBSs are also the most important asset class in the US. But the situation is quite variable in Europe. In Italy, the origination of mortgages is mainly bank-branch driven, and origination through independent advisers and other direct channels form only a small share of the market.

The ABCP market has traditionally been more developed in the United States than in Europe, even if both markets have seen their outstanding volumes decrease: in the United States, volumes went from \$842 billion in January 2008 to \$396 billion in October 2010, and in Europe from €125 billion to €38 billion.

Some European banks currently target the US market and choose to issue mainly in US dollars. The Netherlands has become one of the main European markets for securitization.

French banks, unlike other European countries, did not employ securitization techniques for residential mortgages. Few RMBS deals have been priced in France in recent years. Of those that were priced, the majority were issued from the French Residential Asset Program which Calyon (Crédit Agricole Corporate and Investment Bank) leads. From 2004 to 2006, five transactions were issued, totalling €1.3 billion.

French mutual funds are established, managed, and distributed by big banks or insurance companies—they are captive (bank-controlled). Pre-existing customer relationships contribute to high inflows of funds managed by banks. This is possible because of the « universal » character of French banks, one consequence of which is to partially integrate the SBS into the traditional banking system.

Since securitization is a practice according to which an asset or a pool of cash flow-producing assets is converted into marketable securities, it often necessitates the use of entities—financial vehicle corporations (FVCs)—dedicated to holding the securitized assets and/or issuing the marketable securities. That is how FVC are engaged in securitization. Banks offer support to SPVs, and also directly invest in safe tranches of securitized debt.

FVCs may be set up for a single transaction acquiring specific assets from one originator, or they may acquire assets from various sources and/or buy new assets throughout the life of the FVC. Some vehicles of the latter type include ABCP conduits, structured investment vehicles (SIVs), and collateralized debt obligations (CDOs).

In Europe, MMMFs manage approximately €1 trillion in assets (Ansidei et al, 2012). France, Ireland and Luxembourg represent a total market share of over 90%. MMMFs are sources of risk for financial stability because they provide maturity transformation without being subject to the same prudential regulation or to the same supervision as banks. They have been identified as an important component of the SBS.

The three shadow banking activities that are economically most bank-like are credit intermediation involving maturity/liquidity transformation, leverage and finally credit money creation. Cetorelli and Peristiani (2012) show that “intermediation has moved off the banks’ balance sheets and into the shadows”. Indeed, one of the major dimensions of intermediation by shadow banks is money creation. Although most studies do not focus on it, it appears that money creation by the SBS has been quite important (Sunderam, 2013).

Shadow banking’s money creation is based on eschewing capital requirements by off-balance sheet accounting. Investment banks – which are the major actors of the SBS – have created ex-nihilo credit money worth hundreds of trillions of dollars by investing in structured products and derivatives without adequate capital backing. Derivative contracts, mainly of the

non-regulated over the counter kind, have been written with no backing on balance sheets, allowing derivative dealer banks to make unlimited unfunded bets, often tied to the SBS's structured products. Similarly, investment banks have issued structured assets without adequate capital backing. Lehman Brothers gave a good example of this practice before its fall. This investment bank issued about 4,000 securities, identified under the umbrella of 75 SPVs or trusts, without any backing on capital or collateral. Another example did not come from a bank, but rather AIG's Financial Services Corporation, which issued CDS with nothing to back them once called. In both cases, both Lehman Brothers and AIG were involved in pure money creation.

Prudential regulation does not limit investment banks' creation of credit – money based on derivatives and structured products. In principle, the discipline of the market is supposed to limit money creation, as the sale of structured financial products must be partially backed by collateral. However, this limit was largely abolished in the case of the SBS which permits collateral to re-used, or re-hypothecated in the industry's jargon. The IMF estimated (Singh 2011) that on the average, assets were re-hypothecated three times, meaning that shadow banks' capital cushion against losses can be very small. Since rehypothecated assets are held in the shadow off-balance sheet, other financial institutions can simultaneously hold the same asset. Not only are the capital buffers very thin, they may not exist at all. This means that there is almost no limit to money creation by the SBS since the leverage of bank capital may be very high, which was the case before the Great Crisis. By allowing off balance sheet accounting, monetary authorities gave the green light to money creation by the SBS.

5. Non banking financial institutions (NBFI)

In this part our goal is to understand the factors that contribute to the development and variety of institutions that are part of the SBS in different European countries. We include variables

that describe the functioning of the financial sectors and other variables related to the institutional environment in which these NBFIs operate. Our choice of variables is based on the different hypotheses put forward in the literature to explain the rise and development of shadow banking.

Our sample is made up of 30 European countries² over a period of 12 years.

We select two groups of variables: the first represents the environment in which non-bank financial intermediaries (NBFIs) and other financial intermediaries (OFIs) evolve. The second set of variables is related to the main aspects of shadow bank activities and behavior.

The first set is made up of the following variables:

- $MONEY = \frac{\text{Money and quasi-money}}{GDP}$
- $CREDIT = \frac{\text{Total bank credits to private sector}}{GDP}$
- $MCAP = \frac{\text{Market Cap}}{GDP}$
- *Regulation*
- *Intermediation*

The second set is made up of variables more specific to Non Bank Financial Intermediaries (NBFIs), excluding pension funds and insurance companies:

- $NBFI \text{ over } GDP = \frac{OFI \text{ Total Assets}}{GDP}$

² List of the countries included in our sample and the abbreviations used to identify them: Austria (AUT); Belgium (BEL); Bulgaria (BGR); Croatia (HRV); Cyprus (CYP); Czech Republic (CZE); Denmark; (DNK); Estonia (EST); Finland (FIN); France (FRA); Germany (DEU); Greece (GRC); Hungary (HUN); Iceland (ISL); Ireland (IRL); Italy (ITA); Latvia (LVA); Lithuania (LTU); Malta (MLT); Netherlands (NLD); Norway (NOR); Poland (POL); Portugal (PRT); Romania (ROM); Slovakia (SVK); Slovenia (SVN); Spain (ESP); Sweden (SWE); Switzerland (CHE); United Kingdom (GBR).

- $Maturity = \frac{OFI\ LT\ Liabilities}{OFI\ LT\ Assets}$

$$\frac{OFI\ LT\ Liabilities}{OFI\ LT\ Assets}$$

- $Derivatives = \frac{\text{derivatives absolute value}}{Total\ Assets}$

$$\frac{\text{derivatives absolute value}}{Total\ Assets}$$

Results:

Table 4

Date: 04/15/15 Time: 22:33

Sample: 1 – 324

Included observations: 257

Excluded observations: 67

Correlation of IFNB CREDIT MCAP MATURITY DERIVATIVES INTERMED REGULATION1 MONNAIE

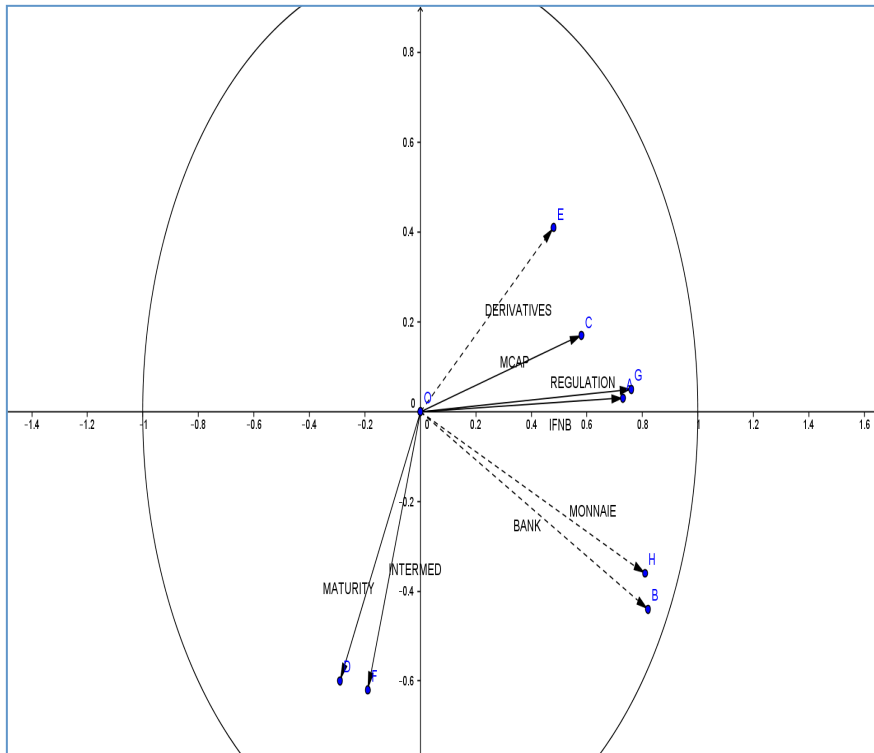
	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6	Comp 7	Comp 8
Eigenvalue	3.130228	1.274960	1.125395	0.877672	0.589627	0.499055	0.374330	0.128733
Variance Prop.	0.391278	0.159370	0.140674	0.109709	0.073703	0.062382	0.046791	0.016092
Cumulative Prop.	0.391278	0.550648	0.691323	0.801032	0.874735	0.937117	0.983908	1.000000
Eigenvectors:								
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6	Vector 7	Vector 8
IFNB	0.415109	0.027113	0.193403	0.306163	-0.081492	-0.767237	0.317040	0.000996
CREDIT	0.462626	-0.389218	0.093852	-0.005101	0.211110	0.259814	0.060487	-0.714089
MCAP	0.330418	0.150064	-0.410065	-0.492040	-0.503856	0.118049	0.435979	0.012813
MATURITY	-0.165974	-0.532443	0.437556	-0.455042	-0.430624	-0.228799	-0.229065	0.013484
DERIVATIVES	0.270524	0.363289	0.245704	-0.629001	0.529279	-0.151684	-0.159088	0.101843
INTERMED	-0.106345	-0.553063	-0.592882	-0.165628	0.417641	-0.301435	0.085478	0.176850
REGULATION	0.430482	0.044294	-0.355222	0.111921	-0.225285	-0.109204	-0.781106	0.034762
MONEY	0.455116	-0.319281	0.236888	0.146529	0.064569	0.389567	0.102647	0.668486

Table 4 summarizes the results of the principal component analysis of a sample of 30 European countries for the 2000-2011 period. It shows that the three first composite variables help explain 70% of the global variance of our sample. Put in another way, these three composite variables sum up the majority of the information contained in the initial explanatory variables. This provides us with a dimensionality reduction, very useful for visualizing and processing high dimensional datasets, while retaining as much of the variance in the dataset as possible, and not losing much information.

Tableau 5

	IFNB	CREDIT	MCAP	MATURITY	DERIVATIVES	INTERMED	REGULATION	CURRENCY
Y1	0.734430	0.818499	0.584591	-0.293649	0.478623	-0.188151	0.761628	0.805211
Y2	0.030614	-0.439482	0.169443	-0.601203	0.410205	-0.624486	0.050014	-0.360513
Y3	0.205170	0.099563	-0.435016	0.464180	0.260655	-0.628957	-0.376836	0.251302

Figure 3 shows the correlation of the different initial variables with the two first factors.



Interpretation:

As shown in Table 4 and Figure 3, the first component, represented by the horizontal axis, is highly correlated to the largest number of variables:

- The relative size of OFIs (IFNB)
- The relative size of the financial market (MCAP)
- Banking sector activity (BANK)
- Quality of the regulatory environment (REGULATION)
- Size of the derivatives in the OFI balance sheet (DERIVATIVES)
- Monetary supply (MONNAIE)

The more you go to the right of the figure, the larger the relative size of OFIs, the more developed the financial market, the more stable the regulatory environment, the more the

OFIs use derivatives, the larger the size of the banking sector, and the higher the level of liquidity in the economy.

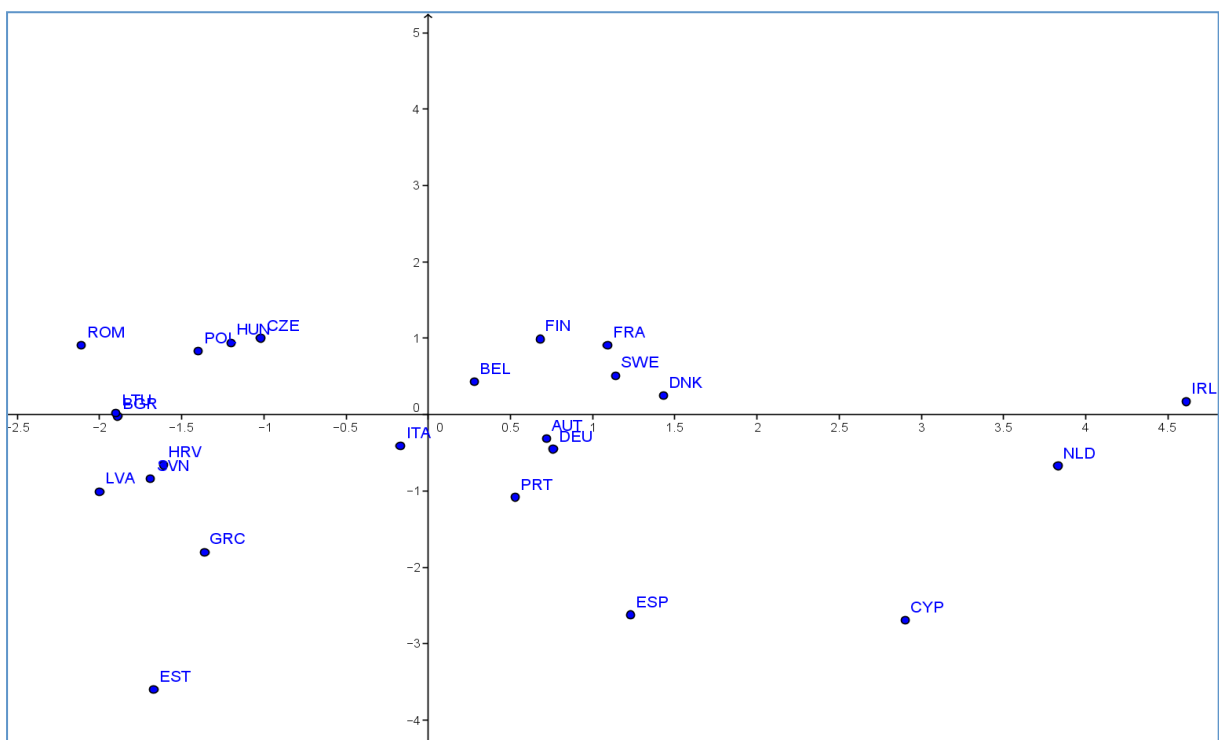
The second component, represented by the y-axis, is inversely correlated with:

- The size of market activities in the banks balance sheet (MATURITY)
- Maturity transformation by OFIs (INTERMED)

In the same way, by going from bottom to top, the weight of maturity transformation in the OFI balance sheets increases and market activities weigh heavier in the balance sheets of traditional banks.

Based on these results, we represent the different European countries in Figure 4 with component 1 on the x axis and component 2 on the y axis. From this figure, different clusters of countries emerge.

Figure 4: Mapping of the different European countries according to components 1 and 2



- A first group includes 9 Central and Oriental European countries (COE): Bulgaria, Croatia, Hungary, Latvia, Lithuania, Poland, Czech Republic, Romania, Slovenia.
- A second set is made up of the following 4 Continental European countries (CEC), which are Germany, Austria, Belgium and France.
- A third group represents Northern European countries (NEC): Denmark, Finland, and Sweden.
- The fourth group, in the bottom part of the figure, is made up of the following Europe Mediterranean Countries (EMC): Cyprus, Spain, Italy, and Portugal.
- UK, Netherlands and Ireland, highlighted because of the relatively large size of their shadow banking (Bakk-Simon et al. 2012).

Institutional similarities and differences among these European countries explain to a certain extent their position on the map. The characteristics of their financial system, the size of their banking systems, of their financial markets, the development of pension funds, the legal system, the environment, and the different institutions in each country, are all factors that have differently shaped a variety of financial intermediaries. Institutional complementarities suggest that countries with certain type of institutions will develop complementary institutions and will respond differently to certain evolutions through a continuous process of adaptation. We think this explains the variety of situations we find in the European shadow banking system.

6. The interconnection between the two SBSs at the heart of the international crisis

Many reasons have been put forward to explain the crucial role of the shadow banking system in the financial crisis. The rapid growth of the SBS, the interconnection between the SBS and the TBS, the role played by the US SBS in Europe and the European banks in the US are

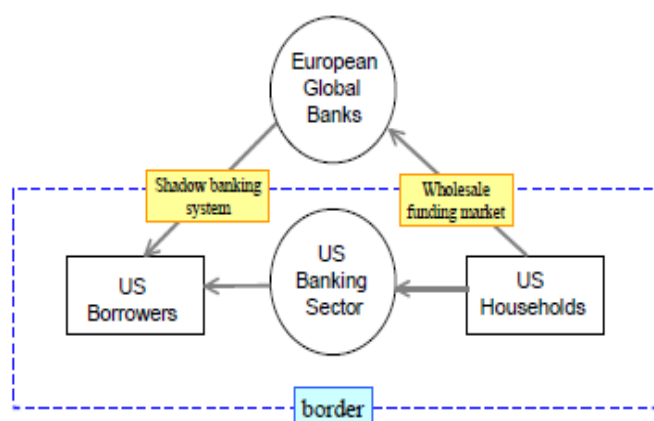
among the different mechanisms advanced to explain what led the international financial system to the verge of total collapse. While all these reasons played a role, the relative importance of each remains an open question needing to be further investigated in order to adopt better regulations. Monetary policy has affected shadow banking in more than one way. First, the US dollar has played a major role in the rise of shadow banking. It is the international currency and a reserve currency and therefore is in great demand. This flows from the current account imbalance, with current account surpluses ending up as a claim against some category of equity or credit elsewhere in the world. For a variety of historical reasons, the United States has very developed non-bank asset management, in contrast to countries with more bank-based systems. Investors and asset managers in other countries have used the US SBS to meet their needs. In addition, when interest rates are low, a steeper yield curve that increases the payoff for maturity transformation and risk-taking can lead to a rapid expansion of shadow banking, potentially leading to financial fragility (Adrian and Shin, 2010; De Nicolò and others, 2010; Singh and Stella, 2012). For this reason, shadow banking is a concern in monetary policymaking.

As noted before, there are differences between the SBS in the US and in Europe. However, these differences did not insulate the European banking system from shadow banking losses and risks. One of the reasons for this was that the European banking system was involved in the shadow bank intermediation of credit flow from US savers to US borrowers. The second reason was that European banks were large receivers of short-term dollar funding from US money market funds. MMMFs funded banks as well as ABCP conduits. Other segments of shadow banking provided funding to the regulated banks. The third reason is that banks sponsored ABCP conduits and SIVs. The liabilities of these financial vehicles, which were set up outside bank balance sheets, may actually have been guaranteed in some form by the originator banks, thus creating an additional link. The fourth reason is that London is a major

center for the trading and risk management of structured credit and derivatives relating to securitized credit extension to US borrowers. Major European banks such as UBS, Deutsche bank, BNP, RBS, and Barclays were involved just as much as Citigroup, Goldman Sachs, or Morgan Stanley in the complex intra-financial links of the SBS, both via their London and New York operations. The fifth reason is the fact that large European banks, such as the German Landesbanken, played a major role as buyers of US structured credit. European banks used securitized assets to attract repo funding, raise funds more cheaply, and boost their returns. Both US and European banks hold a good portion of AAA tranches of securitized assets (at least a third of total issuance in 2006, according to Greenlaw et al., 2008). Finally, sovereign bonds account for two thirds of the EU-originated collateral used in repo transactions. The role of these markets became evident with the sharpness of the euro area crisis.

The global crisis has revealed the strong interconnection and links of short-term secured funding markets—such as repo or prime broker finance—with money market mutual funds, banks, investment bank broker dealers, hedge funds, and asset managers all seeking to earn bigger returns through security lending around the world. As shown by Shin (2011), European global banks have been very active in the US financial system, taking advantage of the easy credit conditions up to 2007. A large portion of the operations of European banks in the United States took place within the SBS. US subsidiaries and branches of European banks were raising wholesale funding through money market funds. They lent massively to US market-based financial intermediaries involved in the securitization of loans. In doing so, European banks influenced credit conditions in the United States. They contributed to the crisis and to its international extension.

Figure 5:



European global banks add intermediation capacity for connecting US savers and borrowers

Source: Shin (2011)

MMMFs are known to have provided sizeable funding to European banks. At the end of July 2011, the US MMMFs had 47% of their managed assets invested in short-term European banking paper (of which 14% was from the French banks alone). The ties of hedge funds as well as money market funds to all the major banks have been documented². Thus when the crisis broke out in 2007, both US and European banks quickly found themselves at the centre of the storm. In Europe, where banks usually back monetary funds, the banks were forced to give guarantees (whether implicit or explicit) concerning the underlying assets. In any case, monetary funds indirectly benefited from the exceptional liquidity measures taken by central banks. These funds' share in spreading the crisis is indisputable (Shin, 2012, Artus et al. 2008). The numerous shadow banking protagonists played an important role in spreading the crisis to both US and European banks.

As an example, in order to minimize their funding costs, French banks borrowed from the US wholesale market and then, on the asset side, invested in US mortgage backed securities and structured products. Between June and November 2011, worried about being overexposed to the euro zone, US money market funds withdrew most of their financing—\$140 billion—

from French banks. As a result of the money market fund withdrawal, share prices of major European banks plunged.

Table 6

Changes in share prices between July 1-Sept 31, 2011	%
Société générale	- 52.9
Crédit agricole	- 51.6
Unicredit	- 47.8
BNP Paribas	- 44.9
RBS	- 40.8
Commerzbank	- 39.7
Barclays	- 39.2
Intesa Sanpaolo	- 37.8
Deutsche Bank	- 37.0

Source: Bloomberg

Moreover, the nature of the funding given to French banks by US money market funds has changed. Up to 80% of funding in the second semester of 2012 was in the form of repos, two to three times more than a year earlier. This dollar liquidity crisis had major consequences in terms of intermediation. French banks had to cut down on their dollar-consuming businesses. At the end of the first quarter of 2012, statistics from the Bank of International Settlement suggest that French bank dollar-denominated assets dropped to \$1.13 trillion, \$248 billion less than a year earlier. However, by early 2013 US money market funds had returned, with

France representing their largest single country exposure in Europe. The question of more stable sources of funding for French banks remains unresolved.

7. Shadow Banking System, latest stage of financial intermediation?

Initially, shadow banking seemed to originate in the US, where the development of non-bank credit intermediation was most advanced, and many of the events that marked the developing crisis related to non-bank institutions and markets. Today, however, two-thirds of shadow banking occurs outside the U.S., in the Euro area, the UK, and emerging markets.

Shadow banking did not begin in 2007 or in the 2000s. As seen in the first part of this paper, it finds its roots in the deregulation which took place in the beginning of the eighties to respond to major changes in the seventies (floating exchange rates, inflation, interest rate volatility, Euromarkets, etc.) affecting their rate of return and profits.

Our view is that financialization gave rise to shadow banking. The SBS should not be seen as something parallel to and separate from the core banking system, but instead deeply intertwined with it. According to the original banking system in place and the path followed, financialization assumed different forms but contributed through reciprocal borrowing to the rise of shadow banking in the US and in continental Europe. In the US, because of the Glass Steagall Act, shadow banking first developed outside banks, yet with strong connections to them. Regulation Q prohibited banks and S&Ls from offering a rate higher than 6% on deposits, meaning banks could not compete with Merrill Lynch, Fidelity, Vanguard, and other NBFI. These firms created money market mutual funds (MMMF) and in 1977, Merrill Lynch introduced cash management accounts (CMA), which made it possible for customers to write checks. But these accounts were not protected by FDIC deposit insurance. Banks argued their problems came from the Glass Steagall Act, which was finally repealed in 1999. By the mid-1990s, shadow banking was booming. In terms of total assets, it surpassed traditional banking

for a brief time after 2000 and again between 2004 and 2007. In 2011 it appears to have once again passed traditional banking, although figures are subject to caution.

This phenomenon was not at all primarily limited to the Anglo-Saxon world. For example, the process of deregulation, too, affected France, even if it sometimes took on other forms due to the initial context and the respective roles of banks and financial markets in the economy.

Deregulation had at least three major consequences there: (1) it increased competition between financial institutions, both among banks themselves and between bank and non-banking financial institutions; (2) it led to the restructuring of the banking industry, the purpose of which was to attain a critical mass or to have a presence in the various business lines (banking, investment, insurance), and (3) it furthered the development of the universal bank model to the detriment of specialized banks. Because of these changes, banks played an increasing role in market activities, and banks and capital markets became more closely interrelated. The financialization of French universal banks led to “market-based banking,” corresponding to a new form of financial intermediation – i.e. market intermediation— that already contained the seeds of shadow banking within the perimeter of the banks.

Table 7: **Traditional banking vs. market-based banking & securitized banking**³

Traditional banking	Market-based banking	Securitized banking
<p>Reserves</p> <p>Minimum levels set by regulators</p> <p>Shortfalls can be borrowed from central banks</p>	<p>Whole sale funding of liquidity</p> <p>Growing reliance on interbank and wholesale funding of liquidity from non-bank actors</p>	<p>Haircuts</p> <p>Minimum levels set by counterparties</p> <p>No borrowing from central bank</p>
<p>Deposit insurance</p> <p>Guaranteed by the government</p>	<p>Depositor protection</p> <p>By new debt instruments close to stocks (subordinated debt)</p>	<p>Collateral</p> <p>Cash, treasury securities, loans, or securitized bonds</p>
<p>Interest rates on deposits</p> <p>Can be raised to attract deposits when reserves are low</p>	<p>Interest on short-term bonds</p> <p>Issuance of certificate of deposits when reserves are low</p>	<p>Repo rates</p> <p>Can be raised to attract counterparties when reserves are low</p>
<p>Loans held on balance-sheet</p>	<p>Risks transferred to markets</p> <p>Risk management using derivatives (CDS) and securitization to externalize risks => increase in off-balance sheet</p>	<p>Loans securitized</p> <p>Some securitized bonds may be kept on balance-sheet and used as collateral</p>

Source: Gorton & Metrick (2010) and the authors

Market-based banking can be viewed as an intermediate stage between traditional banking (originate to hold) and securitized banking (originate to distribute). In the market-based

banking business model, banks are relying on the market-based financial system for their borrowing, lending, and risk management activity.

Non-bank financial intermediation has **continued to grow in 2012** (FSB, 2013). Data from the ECB shows that financial assets of “other financial intermediaries” (OFIs) actually increased by \$5 trillion in 2012, reaching \$71.2 trillion. Reform measures and regulatory requirements (Basel 3) are leading to the development of alternative non-bank sources of financing. Non-bank institutions (insurance companies, pension funds, hedge funds and private equity funds) have recently initiated or stepped up their lending activities in order to fill the gap left by banks or get access to higher yielding exposures. Securitization is being revitalized and new forms of market based lending are encouraged, especially as it concerns financing infrastructure and SMEs. Different models exist but often take the form of a partnership between a non-bank and a bank, whereby the bank screens the borrowers, originates the loans and distributes them to the non-bank, which provides the funding. The following table illustrates some of the partnerships that have been set up in France.

Non-bank	Bank	Announcement date	Total amount	Borrower sector
CNP assurances	Natixis	May 2012	2,000	Infrastructure
AXA	Société Générale	June 2012	Undisclosed	Mid-market Cos.
Ageas	Natixis	August 2012	2,000	Infrastructure
AXA	Credit Agricole	October 2012	Undisclosed	Mid-market Cos.
AXA	Commerzbank	June 2013	Undisclosed	Mid-market Cos.

Sources: Bloomberg, Press reports

* millions of euros

Conclusion

The SBS has become an essential pillar of global finance. Although it first grew up in the US, it has since taken on considerable weight outside the United States, particularly in Europe.

This paper draws several conclusions. First, the SBS finds itself at the heart of the banking system, not parallel to it. This is particularly true in Europe, where the universal bank model has long dominated. Following deregulation, a “market-based banking” model was developed, whose effect was wide-ranging interconnectedness between banks and markets.

The separation between market-based and bank-based banking does not exist in Europe.

Secondly, the European SBS has its own characteristics, even if it has been influenced and “hybridized” by certain innovations borrowed from US finance (such as securitization).

Indeed, the European SBS exists within the framework of a different variety of capitalism than that of the US. Finally, while being different, notably due to distinct banking traditions, the US and European SBS are strongly interconnected, especially because of the deep involvement of the major European banks in the US financial system. These close ties played a major role in quickly spreading the crisis throughout the world. International cooperation between the competent authorities is required in order to reduce the risks of instability linked to the global SBS.

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