How Insurers Differ from Banks: A Primer on Systemic Regulation

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How Insurers Differ from Banks: A Primer on Systemic Regulation

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Abstract

This paper aims at providing a conceptual distinction between banking and insurance with regard to systemic regulation. It discusses key differences and similarities as to how both sectors interact with the financial system. Insurers interact as financial intermediaries and through financial market investments, but do not share the features of banking that give rise to particular systemic risk in that sector, such as the institutional interconnectedness through the interbank market, the maturity transformation combined with leverage, the prevalence of liquidity risk and the operation of the payment system. The paper also draws attention to three salient features in insurance that need to be taken account in systemic regulation: the quasi-absence of leverage, the fundamentally different role of capital and the 'built-in bail-in' of a significant part of insurance liabilities through policy-holder participation. Based on these considerations, the paper argues that if certain activities were to give rise to concerns about systemic risk in the case of insurers, regulatory responses other than capital surcharges may be more appropriate.

[1] Email: christian.thimann@axa.com. This paper has benefitted from discussions with, and comments by, D. Duverne, B. Zoellick, F. Hufeld, S. Lemery, O. de Bandt, D. Elliott, G. Harlin, R. Koijen, A. de Mailly Nesle, J.-D. Letoquart, C. de Montgolfier, F. Lorillon as well as seminar participants at the Paris School of Economics. It has also benefitted from research assistance by Q. Gisserot. Views expressed are those of the author.

Executive Summary

The process of global regulation of systemically important financial institutions is still in full swing. Having completed the regulatory framework for systemically important banks, the Financial Stability Board (FSB) is turning to insurance companies.

In 2013, the FSB designated nine insurance companies as systemically important, and it is now in the process of designing systemic regulation for the industry, supported by the International Association of Insurance Supervisors (IAIS).

The framework that the FSB has established for insurers closely resembles its framework for banks, culminating in the design of capital standards and the calibration of capital surcharges. This parallel treatment of banks and insurers is also found in a number of important contributions on systemic risk in the academic literature.

This paper challenges this approach. It focuses on the distinct business models and balance sheet structures, outlining the main differences and similarities between banks and insurers with regard to their interaction with the financial system.

The paper identifies four differences and two similarities. It highlights that: banks are institutionally connected with each other through the interbank market, whereas insurers are stand-alone operators; banks engage in maturity transformation whereas insurers aim to match the duration of assets and liabilities; banks are inherently liquidity-short, whereas insurers are inherently liquidity-rich; and banks create money, credit and handle the payment system, which insurers do not. The two similarities are that both kinds of institutions are financial intermediaries and large-scale investors in financial markets.

The differences underscore the fact that banks have a fundamentally different role within the financial system and systemic risk. They can be seen as operating in an "inner circle" of the financial system that is given by the banking system, whereas insurers operate in an "outer circle", connected to other financial institutions essentially through their financial market investments.

The paper also highlights the fundamental differences between insurers and banks in terms of leverage, the role of capital and their capacity for loss absorbency – three critical issues for systemic regulation. Leverage is inherent in banking, but quasi-absent in insurance. Capital in banking plays an immediate role in case of stress to absorb shocks and retain funding capacity; in insurance, capital serves to ensure that the last policy-holders are paid. Loss absorbency for banks is essentially limited to equity, but for insurers an additional loss absorbency capacity exists in the form of participation by policy-holders, who may share part of asset fluctuations and potential losses.

Based on this analysis, the paper raises the question of whether capital surcharges are an appropriate instrument for regulating insurers as they may be for banks. Whereas for banks, capital surcharges may be helpful in controlling leverage, raising buffers and augmenting shock absorption capacity, these effects are not prevalent in insurance. If certain issues were to give rise to systemic risk in insurance, other policy tools to address these concerns may be more appropriate.

I. Introduction

Regulation of the insurance industry is entering a new era. The global regulatory community under the auspices of the Financial Stability Board (FSB) is contemplating regulatory standards for insurance groups that it deems to be of systemic importance. Nine insurance groups received this classification by the FSB in 2013, and the design of systemic regulation for these groups is now in progress.

The framework that the FSB has rolled out for systemically important insurers is virtually identical to its framework for systemically important banks. The identification criteria are largely the same, and so are the envisaged policy measures: enhanced group-wide supervision; preparation of crisis management tools; and possible higher capital charges for some activities.

There may be an inclination to consider institutions that provide financial services to the general public, that invest heavily in financial securities and that are publicly listed companies as being close to banks. And there may even be a temptation to bring insurance and banking closely together from a systemic perspective: after all, do the asset structures not resemble each other, and are the liabilities towards policy-holders not somehow comparable to those towards depositors? Are the two sectors not also closely interconnected through cross-holdings of securities? And would insurance companies not have been 'the next in line' to fall in the global financial crisis, if the banks had not been saved?

These questions overlook the fact that insurance companies have a fundamentally different business model and interact with each other and the financial system in a way that is very different from banks. Moreover, some of the issues that are at the core of systemic risk control – leverage, capital and loss absorbency capacity – are fundamentally different.

This means that applying bank-based or bank-inspired regulation to insurers has the potential of being flawed. The fact that prudential regulations for the two sectors – the Basel framework on the one hand and the European Solvency II framework or the US Risk-Based-Capital framework on the other hand – are entirely different is further testimony to the fundamental differences between the two sectors.

The project of systemic insurance regulation raises significant issues for both the industry and the regulators. The industry is concerned about the costs of doing business, about distortions in the global level playing field – given that European and US accounting and regulatory standards are literally continents apart – and about the rising complexity of internal financial management, when national and global standards move in different directions.

The regulators are concerned about the appropriateness and effectiveness of regulation, and about avoiding inconsistency, excessive complexity and competitive distortions. Questions of what possible capital implications are meant to achieve, how they would fit with local regulatory requirements and how they affect the competitive position of the systemically important companies vis-à-vis all other companies are considerations of critical importance.

Given what is at stake, a number of topics are likely to resurface in the upcoming regulatory debate, including those that are seemingly settled; they even include the definition of systemic risk, the criteria for designating individual institutions and the lessons from the experience of the insurance sector during the crisis. There is still confusion about whether the focus of

regulation should be on a "firm-to-system" or "system-to-firm" perspective in terms of the direction of risk. And it is often unclear whether the core concern is systemic *risk*, i.e. negative spillover between individual institutions and the system, or systemic *role*, i.e. threats to the provision of essential services for the financial system or the economy. The policy implications from the various approaches are clearly not the same.

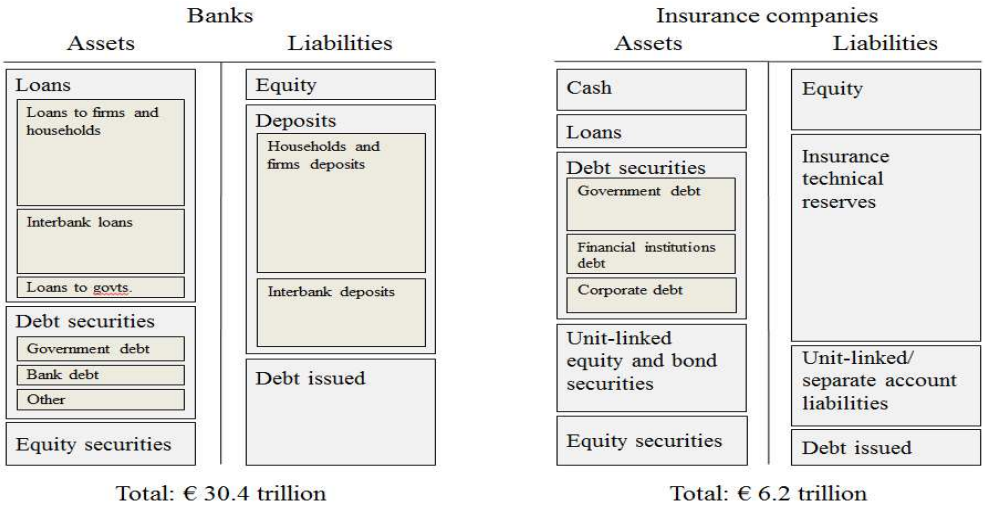
This paper aims to clarify some of the main differences and similarities between insurance and banking with regard to systemic interaction. It is structured as follows. Section II outlines the FSB approach concerning the systemic regulation of insurers and presents the main analytical literature that discusses insurance with regard to systemic risk. Section III elaborates on the main differences and similarities between banking and insurance with regard to systemic interaction, and it develops the different roles of leverage, capital and risk absorbency as regards both sectors. Section IV raises some of the broader questions in the policy debate that are likely to resurface; and Section V concludes.

II. Banks and insurers: business models and systemic regulation

Banks and insurers have different economic functions. Banks create value by maturity transformation of deposits and debt into loans and other financial assets, through which they provide credit to the economy. Insurers provide risk protection to policy-holders in exchange for a premium. They provide such protection through the pooling, diversification and management of risk, focusing essentially on life insurance and savings; and property and casualty insurance.

In terms of size, the banking sector is typically four to five times as large as the insurance sector; in the euro area, banks' balance sheets amount to 330% of GDP, those of insurers to about 70% of GDP. Banks' debt outstanding in absolute terms is about 15 times as high as debt issued by insurers. Banks' assets are dominated by credit provision; their liabilities, by deposits. Insurers' assets are dominated by financial market investment; their liabilities by policy holder liabilities that are also called technical reserves (see Figure 1).

Figure 1. Stylized balance sheet of banks and insurers compared



Note: Main balance sheet components of the euro area's aggregated banking system and insurance sector. The size of each box corresponds to the relative weight on the balance sheet. The total absolute values shown also include external assets and liabilities, fixed assets, and other assets and liabilities that are not represented for the sake of simplicity. A unit-linked insurance plan is a type of life insurance where the value of a policy is linked to the net asset value of the underlying investment and where customers are allotted units, like in a mutual fund. Source: ECB.

1. Systemic regulation of banks and insurers compared

The FSB designated nine insurance companies as systemically important in mid-2013 and has laid out its approach to the regulation of these companies.[2] This approach is deeply inspired by its framework applied to systemic banks, and follows an identical outline (Table 1).

In a first step, systemically important institutions were identified based on their size, interconnectedness and the degree of substitutability of their services.[3] The global size of insurers was measured by the volume of assets, revenues and number of countries served; the interconnectedness was measured by the holdings of intra-financial assets and liabilities,[4] the use of reinsurance, derivatives and other factors. The concepts of substitutability and complexity were essentially translated into a new concept of "non-traditional non-insurance activities (NTNI)", which included items such as revenues from sources other than policy-holders, the provision of financial guarantees, the provision of guarantees on certain life insurance products, the use of short-term funding and other variables. The definition of this last category is still rather fuzzy and the list of items in this category is still changing. Potentially, the coverage is very large. If variable annuities with certain life guarantees were included, it would cover a very large share of the US life insurance market.

At present, the International Association of Insurance Supervisors (IAIS) is charged to work out the specifics as regards capital regulation and definition of NTNI-activities, for which the first feedback is expected in autumn 2014.

Table 1. FSB framework for systemic banks and insurers compared

	FSB framework for banks	FSB framework for insurers
First designation date	November 2011	July 2013
Number of institutions	28	9
Overall justification	Size, global activity, interconnectedness, complexity and substitutability	Size, global activity, interconnectedness, non traditional non insurance activities and substitutability
Implications		
- Enhanced supervision	More intense and effective supervision, including through stronger supervisory mandates, resources and powers	More intense and effective supervision, with direct regulatory powers over Holding companies, and oversight of the Systemic Risk Management Plan (SRMP)
- Effective resolution planning	Establishment of recovery and resolution plans (RRP) including liquidity risk management plans	Establishment of recovery and resolution plans (RRP) including liquidity risk management plans
- Higher loss absorbency	Capital surcharges ranging from 1 to 3,5% of risk-weighted assets	Capital surcharges to be developed, with a Basic capital requirement (BCR) for all systemically important insurers and Higher-loss absorbency requirements (HLA) for total balance sheet or some activities
Timeline	Enhanced supervision: FSB framework in 2010 Effective resolution: resolution planning requirements by end-2012 Capital surcharge: phasing in 2016-2019	Enhanced supervision: establish SRMP as of mid-2014 Effective resolution: recovery and resolution plans by end-2014 Capital surcharge: BCR as of 2015; HLA as of 2016

Source: Financial Stability Board (2012, 2013), author's compilation.

[2] The nine companies are from the European Union (Allianz, Aviva, AXA, Generali and Prudential UK), from the United States (AIG, MetLife and Prudential US) and from China (Ping An).

[3] The lesser the degree of substitutability, i.e. the possibility of other institutions taking over the service provided by the institution under consideration, the more systemic is its role. Market concentration indices are taken as a proxy for the degree of substitutability, reinforcing the size component in the overall assessment.

[4] Intra-financial assets are the holding of debt securities issued by other financial institutions (e.g. bank bonds); intra-financial liabilities are securities issued by insurance companies and held by other financial institutions.

Overall, as virtually all indicators have a volume component, the main factor determining the identification was size. It is therefore no surprise that the list of nine identified insurance companies corresponds on the whole to the world's largest insurance companies as well as AIG, which, although its business volume had shrunk sharply following the crisis, had to be designated for political reasons given its role in the crisis.

The regulatory strategy that the FSB has laid out for the implementation of insurance regulation foresees virtually the same three-pronged approach that was applied to banks: enhanced supervision at group level; the preparation of risk management and recovery plans; and the call for higher capital requirements for NTNI activities that are still to be defined.

The parallelism between the FSB's approaches to insurance and banking follows an interpretation of the financial crisis, according to which the banking sector was at the heart of the problem but the insurance sector would have been 'the next in line' if the authorities had not put an end to the systemic banking crisis. It is also inspired by the fact that a number of insurance companies came under strain and that the company AIG had become deeply intertwined with the banking sector through its subsidiary AIG Financial Products, which had extended guarantees on financial assets that allowed the banks to minimize their capital charge.

2. Systemic risk analysis of banks and insurers

The bulk of the academic literature has also treated insurers and banks largely in parallel. The reason is that the most influential papers essentially treat them as institutions trading and operating in financial markets and look at them from an investor perspective, rather than in terms of their business models. They examine how asset, debt and equity values, as well as leverage – generally defined as market value of equity over market value of assets – perform over time, differentiating between tranquil periods and periods of stress. The papers evaluate how patterns for a single institution evolve vis-à-vis the full sample or the market as a whole. It is from this approach that they derive notions of systemic risk.

In this literature on systemic risk that includes insurers, three strands of research stand out.

(1) The CoVaR approach

The first strand is the so-called CoVaR (Conditional value-at-risk) approach, developed by Adrian and Brunnermeier (2010). This approach estimates value-at-risk of individual institutions conditional on other institutions experiencing financial distress. The authors gauge an institution's contribution to systemic risk as the increase in the value-at-risk across the entire financial sector, conditional on the individual institution being under distress. In simple terms, it is the degree to which one institution can put the sector under stress.[5]

As the CoVaR approach focuses on the market values of individual financial institutions and does not capture more 'structural' parameters of assets and liabilities, such as their duration, composition or the underlying investment motive (e.g. trading vs hold-to-maturity investment), it lends itself to all types of financial institutions, including commercial banks,

[5] The difference between the CoVaR value conditional on the institution being in distress and the CoVaR value in the 'normal' state of the institution yields the marginal contribution of a particular institution to systemic risk.

investment banks, insurers and government sponsored enterprises, which are all treated on the same footing in the sample.

The authors estimate CoVaR levels over time, including state variables such as market volatility, liquidity and credit spreads and the slope of the yield curve, and quantifying the extent to which size or leverage of institutions predict systemic risk contribution. They generally find that insurance groups display lower systemic risk levels than banks, but overall consider them part of the systemic interaction between financial institutions.

(2) Systemic capital shortfall

The second strand of research consists of estimating a 'systemic expected shortfall' (SES), defined as the propensity for any individual institution to be undercapitalized when the system as a whole is under stress. This approach has been developed in the seminal paper by Acharya, Pedersen, Philippon and Richardson (2011), and extended by Brownless and Engle (2011) and Engle, Jondeau and Rockinger (2012). The aim is to estimate the recapitalization need of a financial institution resulting from stress in the financial system. It can be expressed separately for any individual institution or as the institution's loss in the tail of the aggregate sector's loss distribution, which the authors define as the firm's 'marginal expected shortfall' (MES), a concept that has become a benchmark of systemic risk in the literature.

Using the notation of Brownless and Engle (2011) and Engle, Jondeau and Rockinger (2012), who estimate systemic risk values for US and European financial institutions, respectively, the expected capital shortfall *CS* of firm *i* in case of systemic distress in period t is defined as:

$$CS_{i,t} = E_{t-1}\left[\, \theta A_{i,t} - W_{i,t} \mid distress_t \,\right], \tag{1}$$

where A_i and W_i denote the asset and equity values of firm i and θ is a prudential ratio of equity to assets. As can be seen, such specification can be applied to any financial institution for which market values of assets and equity are available and which is traded in financial markets. The authors take a very wide sample of financial institutions including broker/dealers (i.e. investment banks), commercial banks, insurers and other financial institutions. They estimate the capital shortfall resulting from severe financial distress, proxying the latter by a large market decline (e.g. 40% decline, or cumulating a set of worst trading days in a year).

The authors subsequently define systemic risk as a positive capital shortfall:

$$SRISK_i = CS_i \ \ (for\ CS_i\ > 0) \tag{2}$$

and consider this measure as each institution's expected contribution to systemic risk. The reasoning is that in periods of severe market distress, a capital shortfall cannot be maintained nor easily corrected as no investor will want to inject capital, so that the system as a whole comes under strain.

Estimating such systemic risk values for a wide range of financial institutions, the authors generally find that investment banks and commercial banks lead the ranking, but they also find positive risk values for insurers, even though "insurance firms are overall the least systemically risky" (Acharya et al., p. 21). Within the group of insurers, the three insurance companies that have the highest risk profile were those heavily involved in providing financial guarantees for structured products in the credit derivatives area of the US market.

Brownless and Engle (2011) find that in terms of cross correlations among the various groups of financial firms (covering banks, broker/dealers, other non-depository institutions and insurers), "broker/dealers are the most correlated sector, insurance the least, and depository banks together with the other group lie in the middle".

(3) Network approach

The third strand of literature aims at capturing the dynamic network relationship between financial institutions. The seminal paper is that by Billio, Getmansky, Lo and Pelizzon (2011), who gauge network relationships in monthly returns of various types of financial institutions and examine co-movements through Granger analysis and principal components analysis. Their approach estimates empirically the degree and directions of connections between financial institutions.

The authors find that between the 1990s and the period 2001-08, the Granger-causalities among 100 US financial institutions intensified, raising the stakes of systemic risk, and that banks played by far the most important role in transmitting shocks compared with other institutions. As regards insurers, their returns are particularly influenced by returns in banks and broker/dealers, and influence themselves the returns of both these types of institutions and hedge funds. The reason for the significant connectivity of the US insurance sector during that period is attributed in large part to the involvement of insurers in financial guarantee products.

All these three important strands of research treat financial institutions from the investor perspective, examining asset, debt and equity developments over time and across sample. Yet a closer look at the business model and balance sheet structure reveals some important differences between insurance and banks, especially as regards capital and debt, which will be discussed in the subsequent section. As that section will show, while a capital shortfall might well represent an immediate source of systemic risk in banking, this is not the case in insurance; i.e. in the notation above, equation (1) applies to banking and insurance; equation (2) only to banking.

III. Banks and insurance in systemic interaction compared

This section elaborates on the main differences and similarities between banks and insurers with regard to their systemic interaction. It focuses on their business models and balance sheet structures, and discusses the different roles of capital and leverage in banking and insurance – two concepts at the heart of systemic regulation.

1. Differences between banks and insurers with regard to their systemic role

a. Institutional interconnectedness

The first key difference between banks and insurers with regard to systemic risk is that banks operate *within a system*, namely the banking system, while insurers do not. Banks are institutionally interconnected; they operate through direct balance sheet exposure on each other in the form of unsecured and secured interbank lending.

These interconnections are very large, amounting to EUR 5.3 trillion in the euro area or 60% of GDP.[6] These institutional interconnections are large not only for systemically important banks. To illustrate this point, take the example of Commerzbank of Germany, an 'average' large European institution but not on the FSB list: at end-2013, it held on its balance sheet EUR 88 billion claims on other banks, of which about one quarter overnight; and on the liability side it owed EUR 78 billion to other banks, again with a significant share overnight.[7]

These direct and important interconnections between banking institutions are an intrinsic feature of banks' operating model, and they serve as a protection against the liquidity risk that is paramount in banking (Allen and Gale, 2000). It is these direct institutional interconnections that establish the "banking system" – a structure of directly interrelated parts. The interconnections are highly fungible; they can be shifted, and are shifted, frequently among institutions and over the short term; moreover, they are often unsecured, essentially depending on trust. These interconnections and their fragility constitute the primary channel of transmission of shocks and systemic risk within the banking system.

The fact that there is a "central bank" to which virtually all banks are connected and through which they obtain liquidity if needed, is yet a further aspect that demonstrates to which degree banks function, and can only function, within a system. The systemic interconnection through the central bank can be massive: during the crisis, the ECB lent up to €1,100 billion to the euro area banking system.

Insurers are not institutionally interconnected; they are stand-alone operators in institutional terms (their interconnection via the financial market will be discussed below). For example, there is no direct balance sheet link between the systemically important insurance companies. Hence, there exists no "insurance system", and no "central insurer" comparable to a central bank; insurers themselves are not counterparties in liquidity operations of the central bank. Hence, there is also no *direct* relationship of contagion among insurers as there is for banks.

It is sometimes argued that insurers and reinsurers together constitute a system that resembles the banking system. But such a parallel overlooks the functions and size of reinsurers. Reinsurers are not first risk-takers at the same level of front-line insurers but act as backstop. This means that they are not transmitters but absorbers of risk materialization. In addition, the size of the links is far from what it is in banking. Insurers only pass on a fraction of their risk to reinsurers so that the linkages between the two levels are relatively limited. The world's largest reinsurer, Munich Re, has a balance sheet of EUR 105 billion,[8] a fraction of the balance sheet of the largest banks or central banks for that matter.

b. Maturity transformation

Banks engage in maturity transformation combined with leverage; they transform short-term liabilities into longer-term assets. As returns are usually rising with rising duration, banks have an incentive to stretch this duration gap outwards, as their expected return rises.

[6] Source: ECB Monthly Bulletin, Table 2.1, Aggregate balance sheet of Euro area Monetary Financial Institutions (essentially banks). The figure does not include the holdings of securities issued by other banks, which amount to an additional EUR 1.6 trillion.

[7] Commerzbank financial reporting, data for end-2013.

[8] This is the balance sheet value of reinsurance activities, excluding Munich Re's primary insurer Ergo.

Insurers do not engage in maturity transformation. They pursue a liability-driven investment approach, trying to match their asset profile with their liability profile. Asset-liability management (ALM) is a key function within insurance companies and an important strand of insurance economics. As insurers can estimate the duration of liabilities and assign probabilities to payouts, they will in principle seek to buy assets with a corresponding maturity, which also means that they generally can hold assets to maturity. A key measure of risk in insurance companies is the ALM mismatch or duration gap between assets and liabilities. A well-run insurance company will have an asset duration slightly shorter than its liability duration, in order to keep a liability buffer to face an increase in surrenders. Finally, since they are funded long-term, insurers are essentially "deep-pocket" investors. This makes them react very differently to downward market pressure compared with a short-term funded or leveraged investor.

Related to that is the fact that for insurers the bulk of assets is subject to marking-to-market as most of insurers' assets are quoted on large public markets and are highly liquid. The marking-to-market is a key element of Solvency II regulation and already applied by a wide range of large insurance companies. For banks, only parts of their financial assets are marked to market, whereas their banking book is not. Shocks to financial assets may thereby lead to delayed and enhanced reactions on the asset side for banks, once banking book valuations need to be adjusted, which is not the case for insurers.

c. Liquidity risk

The second key difference relates to the liquidity risk that is inherent in banking but not in insurance. Banks risk being liquidity-short; insurers are liquidity-rich. Deposits are the largest items on banks' balance sheets. For the euro area, they amount to EUR 11 trillion or 120% of GDP. The largest deposit item are households deposits, amounting to EUR 6.3 trillion, of which the largest sub-item are overnight deposits amounting to EUR 2.5 trillion. No bank has enough buffers to stem such an outflow, and a risk of liquidity shortage can quickly translate from one bank to another; systemic risk and contagion usually start from liquidity.

Hence, bank liabilities are predominantly short-term, withdrawable at will, and held exclusively by trust. Any weakening of such trust and the withdrawal of only a fraction of such liabilities would immediately put a bank under stress, have implications on the asset and capital structure and cascade through the entire banking system. This is the second key channel for the materialization of systemic risk. And even a small decline in deposits or a risk thereof, puts bank funding under strain, has an impact on credit provision and therefore has the potential to affect the real economy.

Insurance liabilities are less fugitive. The liabilities for insurance of general protection, property, casualty and health are not callable at will. They relate to exogenous events that policy-holders do not influence.

The part of liabilities that are theoretically callable concerns those parts of life insurance business that are not annuities (which cannot be withdrawn early at all). However, there are penalties for early withdrawal and tax benefits might vanish. In a crisis, where financial and economic uncertainty rise, it is also not evident that policy-holders would cancel life insurance policies that give them assurance of future incomes. In the global financial crisis, no such withdrawal was visible.

d. Money, credit and payment function

The third key difference with regard to systemic risk that is hardly regarded in the literature, is that banks deal with the payment function, they create credit and their liabilities constitute money. This means that they are a means of payment and entail a public good function in a market economy.

Of the entire stock of money within an economy, only a fraction – 10% in the euro area – is created by central banks, essentially banknotes. The overwhelming amount of money in a modern market economy, essentially consisting of deposits, is held and created by the commercial banking sector. For the euro area, the stock of money measured by M3 amounts to €9.9 trillion, of which 85% are bank deposits (March 2014).

If the function of money and payments is impaired, this has immediate consequences for the economy. Banks create money through the credit multiplier process, they are the essential component in the monetary policy transmission mechanism and they organize the payment function. This is a unique role of the banking system.

Insurers' liabilities do not constitute money but represent an illiquid financial claim. Moreover, insurers do not provide essential financial market utilities and are less integrated into the financial market infrastructure. In particular, they are not an organizational part of the payments or settlement systems.

Table 2. Banks and insurers: differences and similarities with regard to systemic interaction

Differences		Similarities
Institutional interconnectedness		**Financial intermediary**
Banks are institutionally connected through the interbank market	Insurers are stand-alone operators	Banks and insurers are financial intermediaries between savers and investors
Maturity transformation and leverage		**Financial investors**
Maturity transformation and leverage are inherent in banking	Insurers match asset-liability duration; leverage is quasi-absent	Banks and insurers are large-scale investors in financial markets
Exposure to liquidity risk		
Banks face an inherent liquidity risk	Insurers are liquidity-rich	
Role on money and payment system		
Banks create money and they constitute the payment system	Insurers do not create money; they use the payment system	

Source: Author's compilation.

2. Similarities between banks and insurers

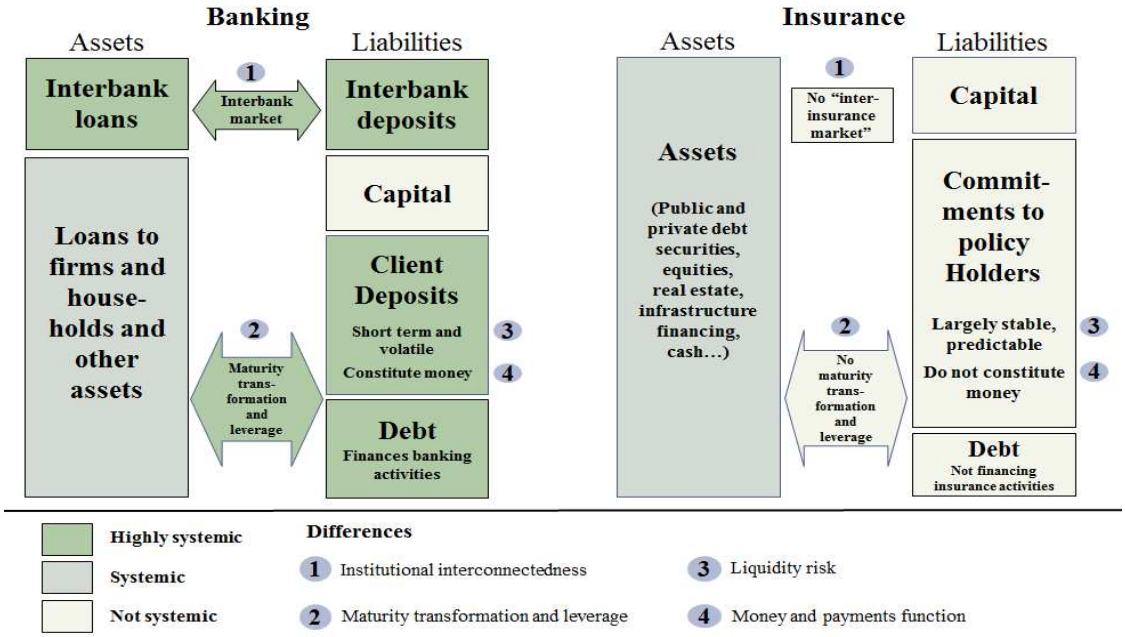
There are two important similarities between banks and insurers.

a. The role as financial intermediaries

Just like banks, insurers are financial intermediaries as far as their life insurance business lines are concerned. Their liabilities represent financial claims for policy holders, and their assets are predominantly financial assets. Insurers collect savings, intermediate between savers and investors, channel funds and fulfil a function of capital allocation in the economy.

They are indeed important sources of funding for the real economy, also as a wide range of assets are eligible for them. This includes in particular infrastructure financing, which is attractive for insurers because of the long-term and secured nature of the investment. Empirically, default rates on infrastructure are significantly lower than on corporate bonds for example.

Figure 2. Banks and insurers: stylized balance sheets and systemic linkages



Source: Author's compilation.

b. The role as investors

Just like banks, insurance companies are large investors in financial markets. They receive insurance premia against a promise to cover adverse events and carry savings forward. The premia are invested in a diversified portfolio of assets, encompassing government and private-sector bonds, equities, loans, infrastructure finance and other assets. Contrary to banks, insurers are not primarily lenders but investors, which means that they do not create financial claims but primarily purchase financial claims in the market. Insurers do not create money and credit, and hence do not fuel credit/debt cycles with risks of bubbles and bursts, and their capacity to add to financial bubbles is limited because they do not build up leverage and because their income stream from policy premia is comparatively gradual.

As investors, insurers seek a match between assets and liabilities, which is the main function of their asset-liability management and as they can choose the assets in view of their liability structure, their main concern is credit risk. With new regulation, in particular Solvency II, they will however move to a capital standard in which they mark-to-market their assets but are allowed to adjust their liability estimates in large part for short-term market volatility so that there are not major short-term fluctuations in capital.

Taking the four differences and two similarities combined, insurers just as other non-banks are indeed not "funny-looking banks" as already pointed out by Elliott (2013) but they are simply not banks at all; they do not interact with the financial system like banks and therefore should not be regulated like banks as far as their systemic role is concerned. As it has been shown, in terms of financial structure, they are even the 'contrary' to banks in some dimensions, for example as concerns the asset-liability duration mismatch, the absence of liquidity risk and the duration of liabilities themselves. Whereas banks are in the business of facilitating leverage for other sectors, insurers are in the business of managing risk. This is why banks are more prone to be shock-transmitters, while insurers are more prone to be shock-absorbers.

3. The roles of leverage, capital and loss-absorption capacity

(1) The role of leverage

The chief enemy of systemic risk control is leverage. The reason is that it reflects money created out of debt and follows cycles with typically much sharper downturns than upturns.[9] It is the propensity to finance risky activities by borrowing, which links asset returns that are uncertain with obligations that are certain. In tranquil states of the world, this strategy is profitable, collecting return premia, but in uncertain states, the relationship turns, and leveraged institutions come under strain. If the turn affects a broad range of assets and persists, the entire financial system is risking default. Clearly, the high degree of leverage in the global financial system was seen as the key factor triggering and aggravating the crisis (World Bank, 2009).

Leverage is inherent in banking and quasi-absent in insurance. "Banking is all about leverage", writes Stefan Ingves, Chair of the Basel Committee for Bank Supervision. "Banks are highly leveraged financial institutions that are in the business of facilitating leverage for others" (Ingves, 2014, p. 1). While for industrial companies, the share between debt and equity funding of assets is typically about 50:50,[10] for some banks before the crisis, this ratio had been 98:2.

In economic terms the leverage ratio is mostly defined by the relation of borrowed funds over own funds, i.e. debt to equity; yet, it has become convention to define it as assets to equity (or its inverse). For banks, this approximation is possible because the share of equity-financed assets is small and because on the liability side all what is not equity is either financial debt or debt vis-à-vis depositors, which is even shorter term.

[9] For a fascinating exposition of short and long debt cycles, written by a practitioner and founder of the world's largest hedge fund, see Dalio (2014).

[10] Average of Apple, Exxon Mobil, Google, PetroChina, General Electric, Wal-Mart Stores, IBM, Microsoft, Nestlé and Chevron (Ingves, 2014).

For insurers, the largest liability consists of policy-holder reserves. The fallacy in applying a bank leverage ratio to insurance consists of treating policy-holder reserves akin to short-term financial debt, which they are not. Applying a bank-type leverage ratio would equate the banks' debt-financed purchase of assets with the insurers' premia-funded purchase of assets. The important point is that in insurance, there is a *functional link* between the two, established through an asset-liability management whose objective is to avoid undue maturity mismatch. Moreover, insurers do not raise debt to purchase financial assets to cover liabilities towards policy-holders.

Yet, insurers do issue and hold debt. They do so mainly to finance mergers and acquisitions, and to a lesser extent to establish a cash buffer if needed or buy fixed assets (buildings, etc.). Hence, the main counterparts of insurers' debt on the asset side are goodwill, cash or fixed assets.

Therefore, for insurers a leverage ratio would better not be defined as equity over assets but as equity over debt, or the inverse, which is often referred to as the gearing ratio.[11]

If one were to measure the leverage of insurers by relating their equity to their total balance sheet, one would only obtain a measure of their business mix: if they write short tail business like property, they will have a small balance sheet and the ratio will be low; if they write long tail business like annuities, the ratio will be high. Hence, such a ratio would reflect their business mix, not their riskiness.

What is the link with systemic regulation? For banks, capital surcharges can actually control leverage because they slow the asset acquisition, also by slowing credit growth; this is the process of deleveraging. Insurers can reduce the debt gearing but they cannot reduce their insurance assets because this would imply to cancel insurance contracts with existing policy-holders that is generally not allowed. For these reasons, in the case of insurers the notion of leverage, or controlling leverage, is by far not as pertinent as in the case of banking.

(2) The role of capital

The lynchpin of bank systemic regulation is capital. Higher capital requirements are the key policy lever for the control of systemically important banks. Such higher capital requirements are effective in addressing systemic risk for banks because in addition to restraining leverage, they raise the costs of balance sheet growth and augment the immediate loss absorption capacity of individual institutions to shocks, which in turn limits the pass-through of such shocks to the system. This is the key reasoning for why higher capital requirements are a tool to internalize systemic risk.

Higher capital ratios also help improve a bank's ratings and access to the funding market. All other factors being equal, a bank with higher capital ratios will have better market access in particular in periods of stress and is therefore less prone to require recourse to public backstops of whatever sort.

The relationship between capital and liquidity risk or depositor protection is only indirect. Liquidity risk is addressed by specific regulation, such as the Liquidity Coverage Ratio in Basel III, and the prime tool for depositor protection are deposit insurance schemes. However, to the extent that liquidity risks are beginning to materialize, for example by an incipient

[11] In the same vein, rating agencies measure the leverage of insurers by dividing their debt by their equity and by comparing their debt to their pre-tax earnings.

withdrawal of deposits, capital can help stem an initial outflow by helping to tap market funding or central bank recourse, for which sufficient capital levels are a precondition. While robust capital levels do not protect depositors directly, they can be seen as providing a *first* protection against deposit outflows or other liquidity shortages.

In insurance, capital has a very different role (for an excellent overview see Platin and Rochet, 2007). It serves essentially to ensure that the *last* policy-holder is being paid. First all assets are wound down, which typically can take many years,[12] and to be sure that there enough assets to cover eventually all liabilities also under adverse market conditions, regulators demand more assets than liabilities from the outset, which is what establishes capital. Hence, whereas in banking, capital enters the sequence of adverse events at the beginning, in insurance it enters the sequence of adverse events at the end.

This difference has an important implication for systemic regulation because it changes the effectiveness of capital surcharges. Raising capital levels for banks increases their buffer to withstand shocks and therefore helps avoid that a chain of systemic contagion unravels. It also reduces the likelihood of adverse shocks *ex ante*, by reducing leverage, and thus the propensity to cycles of bubbles and crashes.[13]

Raising capital for insurers, in contrast, essentially means that there are (even) more assets available to cover the liability stream than otherwise, but such additional capital will be consumed, if at all, at the end of the process and has no crisis prevention or stabilization function.

Regulators recognize this important difference and therefore envisage requiring more capital only for so-called 'non-traditional' insurance activities. Depending on the ultimate definition, the scope may represent a significant share of insurers' balance sheets and be not far from overall capital surcharges applied to banks. These activities have not yet been conclusively defined; so far, several compilations exist, listing mainly variable annuity products with certain guarantees, financial guarantee products, securities lending, and other activities.

Interconnectedness is also a concern to regulators and is sometimes considered to be addressed through higher capital requirements, to reduce the degree of interconnectedness. Obviously, if capital surcharges were prohibitive, such activities could not be undertaken. But short of being prohibitive, capital surcharges may not be effective; hence, if an activity – in the form of 'non-traditional' or in the form giving rise to unwarranted interconnectedness – were to give rise to systemic risk, measures other than capital surcharges may be more appropriate to address them. Only such other measures, and not capital surcharges, would have been effective in preventing the AIG debacle, resulting from an unregulated financial subsidiary in London engaging in financial guarantees and credit enhancements of subprime

[12] UK Equitable, for example, had to be wound down and has been in runoff for years. Policy-holders are served from the asset pool just as if the insurance company was active.

[13] There is another fundamental point regarding the role of capital in prudential regulation. Policy holder protection can be enhanced through demanding more capital on top of calculated technical reserves, or by strengthening the demands on the calculation of reserves themselves. Continental European supervisors have traditionally focused their attention on the adequacy of technical reserves, which represent 90% or more of liabilities, whereas UK or US supervisors have focused more on capital. It is important to recall that the prime emphasis of insurance supervision should be on the adequacy of technical reserves or provisions themselves, less on capital, as the latter is merely an additional buffer in case reserves have been underestimated.

products. Eventually, AIG required $180 billion in support from the Federal Reserve and US Treasury. This is yet another illustration of how unrealistic effective – or, put differently, how ineffective realistic – capital surcharges would be.

This, however, requires a very careful definition in the first place so as to avoid wrongly classifying insurance products with certain guarantee components that provide an important value for policy-holders and society at large (and whose guarantees can be hedged). It also requires not confusing the use of derivatives for hedging purposes with that for engaging in leverage.

For example, one source of interconnectedness is identified as the holding of bank bonds by insurers (IAIS, 2013). Applying higher capital charges related to such securities' holdings would indeed lower their return but not eliminate such interconnectedness. And higher capital charges would also not stem the potential unravelling of such interconnectedness through the potentially rapid sales of such bonds in the case of a crisis. If cross-sector holdings were a major concern, such holdings could be limited as a share of the balance sheet, rather than being made more expensive. Having said that, it should be noted that the problem of cross-holdings of securities across the two sectors was not identified as an issue in the regulation of banks and did not lead to limits or surcharges there.

(3) Loss absorption capacity

There is a third factor that has a bearing on the absorption of systemic risk, and which this time is specific for insurance. For banks, the loss absorbency on the liability side is mostly confined to the equity tranche. There have been recent market and regulatory initiatives to raise the degree of loss absorption through debt contracts converting into equity (conditional convertibles) and through the formalization of bail-in rules allowing for the write-down of subordinated debt. In Europe, this is foreseen in the Bank Recovery and Resolution Directive that is currently in the final stages of legal adoption. The double motivation of these steps is to limit the pass-through from shocks to individual institutions to the system and to protect even more effectively the depositors.

In insurance, the bail-in is built in: there is an inherent loss absorption capacity in the form of beneficiary participation in a significant part of life insurance contracts. In these contracts policy-holders participate in the gains and losses of the investment linked to their policies. Hence, there is a built-in loss absorbency function in insurance on top of the equity tranche.

The loss absorbency resulting from participating contracts does not affect all policy-holder reserves. Property and casualty insurance contracts are all excluded; policy-holders need the same damage protection independent of investment performance. The loss absorption concerns specific life insurance contracts allocated to the insurers' 'General account' that are prevalent in most countries, and they apply to insurance contracts of so-called unit linked accounts. Loss absorption is quite significant and likely to amount to between one third and one half of life insurance underwriting of an average European insurer. This loss absorption limits the propensity for 'fire sales' feared by authorities as one issue of interconnectedness. For example, in the Greek debt restructuring, about 80% of the losses of some European insurance companies were passed through to policy-holders.

Hence, insurers have achieved what is currently considered for banks, a partial loss absorption capacity of liabilities beyond equity, i.e. a form of bail-in.

IV. Broader questions about systemic regulation

Differences in business model and balance sheet structure, especially with regard to capital and leverage, are key to understanding the differences in the systemic interaction of banks and insurers with the rest of the financial system. But there are also other key issues still open.

Even though there is not a single dominant definition of systemic risk, there is a broad common understanding of the concept (for a recent overview, see Eling and Pankoke, 2012). This can be summarized as the risk of system-wide distress and economic damage. The system-wide distress has sometimes been defined as the failure of a significant part of financial institutions (Acharya et al., 2011; De Bandt and Hartmann, 2000); as correlated defaults of financial institutions over a short period of time (Billio et al., 2010); as an impairment of the financial system (Adrian and Brunnermeier, 2011); as the malfunctioning of the entire financial system (Bach and Nyuyen, 2012; Rodriguez-Moreno and Pena (2013); or as the loss of economic value or widespread loss of confidence in the financial system (Baur et al., 2003; Chen et al., 2013; Cummins and Weiss, 2011 and 2013; Weiss and Mühlnickel, 2013).

The economic fallout has been consistently described as a negative effect on credit supply, withdrawal of liquidity or negative effects on the economy. As these terms illustrate, the main focus has been on banking, and less on non-bank financial institutions.

There are still a number of open questions that will resurface in the debate about insurers. These are all issues that warrant close considerations in the period ahead and many of them still need clarification.

1. Which system and which channels of transmission?

What is the system that the notion of systemic risk actually refers to? The preceding section has shown that the answer "*the financial system*" is no longer sufficiently granular because of different types of financial institutions and fundamentally different types of interactions among them.[14] In particular, for the reasons discussed above, banks can be seen as representing a "system within the system", and the transmission of shocks within this "inner circle" constituted by the banking system is fundamentally different compared with other financial institutions in the "outer circle".

The distinction between the banking system as inner circle and non-bank financial institutions in an outer circle, linked to the financial system mainly through their financial market investments is consistent with a number of empirical findings. The large and potentially vulnerable interconnections within the banking system have motivated recent research to use network analysis to capture these interconnections and analyze the channels of systemic risk (European Central Bank, 2010; Halaj and Kok, 2013). These studies cover only banks and explain how interbank interactions can be described as a network. In their study of interconnectedness, which includes several types of institutions, Billio et al. (2012) find that banks play by far the most important role in transmitting shocks compared with other institutions.

[14] Zigrand (2014) provides an insightful and comprehensive analysis of systems in finance and economics.

Therefore, when it comes to designing regulatory measures, the generic description of systemic risk needs to be complemented by an analysis of transmission channels. Such analysis must encompass three steps: identifying the source of vulnerability; elaborating channels of transmission to other financial institutions; and elaborating the transmission to the real economy.

For banks these three steps can broadly be described as follows. First, the primary source of vulnerability is given by the combination of fugitive liabilities combined with stickier long-term assets as a result of maturity transformation; it is thus liquidity risk that can trigger solvency risks. Second, their transmission to the banking system predominantly occurs through the institutional interconnectedness to other banks which are short-term, callable at will and largely based on trust. Third, the transmission to the real economy can occur through a combination of a fall in the trust in the safety of deposits, disruptions to the payment function of money, and/or the credit provision. The fact that banks are investors in financial markets and financial intermediaries can aggravate the transmission of financial risk, but they are dwarfed in importance by the bank's specific channels listed earlier.

For insurers, none of the bank-specific channels apply. Liabilities represent no means of payment, are less fugitive and mostly longer-term, assets are broadly matched and institutional interconnectedness is not given. The sole potential channel of transmission is in the role of financial intermediary and investor. Here, an insurer like any large investor, facing challenges in asset management, might be able to contribute to strain in the financial system. If that is the case, the solution to containing risk may lie less in the nature of the institution than in the nature and functioning of financial markets or the nature of the accounting.[15] In any event, the issue of transmission channels of insurance-originated systemic risk is still open.

2. Which direction of risk?

There is still confusion whether the focus is on a "firm-to-system" or "system-to-firm" perspective, or both. Yet, the policy implications of the two perspectives are not identical.

The first perspective concentrates on the risk that the failure of a firm causes system distress; the second one, on the risk that a firm cannot withstand systemic stress and would require recapitalization, which in stressed market conditions may not be available and then cascade onto the system. Policy-makers mostly focus on the first perspective, researchers mostly on the second one.

The discussion about systemically important banks focuses strongly on the "firm-to-system" perspective. It is related to the fear that some institutions are too-big-to-fail because their failure would cause widespread distress to the financial system. For insurers, the debate has mostly focused on the possibility of fire sales. Yet, the risks that insurers are exposed to, is not correlated with capital market risks but rather lies in the areas of natural catastrophes, questions in the life insurance model during periods of low interest rates or other drain on insurers' liquidity. Hence, there is no clear firm-to-system channel.

[15] In the last two equity market crises (2002-03 and 2008-09) the marking-to-market of assets (in IFRS and US-GAAP), combined with the stress tests applied to insurers by regulators and supervisors in times of market distress, have had a procyclical effect in forcing insurers to sell holdings of equities to protect their solvency, whereas in previous crises they were more able to act as holder of long-term assets of last resort.

Insurers can hypothetically be subject to liquidity withdrawals although these are only partly possible and, to the extent that they are possible, they are likely to be rather gradual. They are only partly possible because a large fraction is linked with adverse events in property and casualty insurance that policy-holders will not inflict on themselves; they are likely to be rather gradual since cancellations of life insurance contracts are often not in the interest for policy-holders as they would lose the benefit for which they took the insurance in the first place, be it for annuities, a benefit for their survivors or a tax advantage. Therefore, it can be assumed that the overall process is far more orderly than in the case of banks.

3. Systemic risk or a systemic role?

There is also still a need of clarification whether the focus is on systemic *risk*, i.e. negative spillovers between individual institutions and the system, or on systemic *roles*, i.e. the provision of essential services in the financial system or the economy. The latter implies that systemically important institutions are those whose viability is deemed crucial for the functioning of the financial system and/or economy. Again, policy implications from the two approaches are not the same.

It is clear that that insurance companies provide an important service to the real economy. They help firms, households and public sector entities to manage risks they face, including the support to households on long-term income through life insurance products. It is less evident that insurance companies provide a systemic service within the financial sector more broadly such as market infrastructures do or as banks do in the payment system. Therefore, the systemic importance for the economy may be more straightforward to identify than the systemic importance for the financial system. The financial system would function without insurers, the economy would not.

V. Conclusion

To understand the difference between banking and insurance, one has to start from the liability side of the balance sheet and, more specifically, from the comparison of bank deposits with insurance liabilities. Bank deposits represent a ‘monolithic’ block of homogenous claims whose predominant maturity is zero; insurance liabilities represent a set of highly heterogeneous claims whose average maturity is several years. In the first case, an expectation of withdrawals or payouts over time cannot be formed; in the latter case, actuarial methods have at their heart the calculation of expected runoffs.

Several consequences follow from this important distinction, including that insurers can conduct asset-liability management to harmonize their asset and liability structures, and focus mostly on longer-term and hold-to-maturity investments. This is very different from banks, which seek returns through maturity transformation.

This paper has aimed at elaborating the main differences and similarities between insurance and banking with regard to systemic interaction and highlighted the differences in institutional interconnectedness, liquidity risk, payments function and maturity transformation. It has also elaborated on the different roles of leverage and capital between both sectors. In contrast with banking, capital in insurance serves directly the protection of the last policy-holders, and it

serves much less to desire to access capital markets to fund asset purchases or obtain temporary liquidity support, nor does it serve the controlling of leverage.

Therefore, the paper has raised the question of whether capital surcharges motivated by fears of systemic risk would have a justification in insurance as they may have in banking. In case certain activities gave rise to systemic risk, the question therefore arises whether regulatory responses other than capital surcharges would be more appropriate. Such responses would have to be targeted at the activities under consideration and might range from prohibitions, e.g. of activities providing financial guarantees as did AIG, investment limits (e.g. if the holding of bank bonds was a concern due to interconnectedness) or changes to the design of insurance contracts (e.g. on withdrawal limits to slow a possible sudden withdrawal over time). Also consolidated solvency capital requirements and supervision by the supervisor of the group holding company, which still does not exist in the US, would be relevant measures.

More broadly, the paper has aimed at highlighting the different roles of banks and insurance in the financial system and their different degrees of interaction with that system. These differences are fundamental. The reason is that banks are constitutive of the financial system in general and the payment system in particular; the financial system cannot be conceived without banks. Insurers use the financial system as well as the payment system, but the system can exist and function without them.

These relationships are different as far as the economy is concerned: both banks and insurers are essential for modern market economies, whose functioning cannot be envisaged without either of them: banks for their role in the handling of money and payments, and the extension of credit; insurers for their role in the management of risk.

Banks are often equated with financial institutions and therefore "systemic risk in the financial system" is mostly meant to mean the banking system. It is therefore a logical fallacy to conclude that insurers, being financial institutions, are part of the systemic risk sources and channels just like banks.

Insurers no doubt have a systemic role for the functioning of the economies; whether they can indeed originate and create systemic risk in the financial system is an issue that is still to be demonstrated. The comprehensive systemic risk study by the US Treasury's Office of Financial Research stresses the importance of *four L's* in systemic crises: linkages, liquidity, leverage and losses (Bisias et al. 2012). This paper has tried to demonstrate that these four issues need to be conceived in a fundamentally different way in insurance than in banking.

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