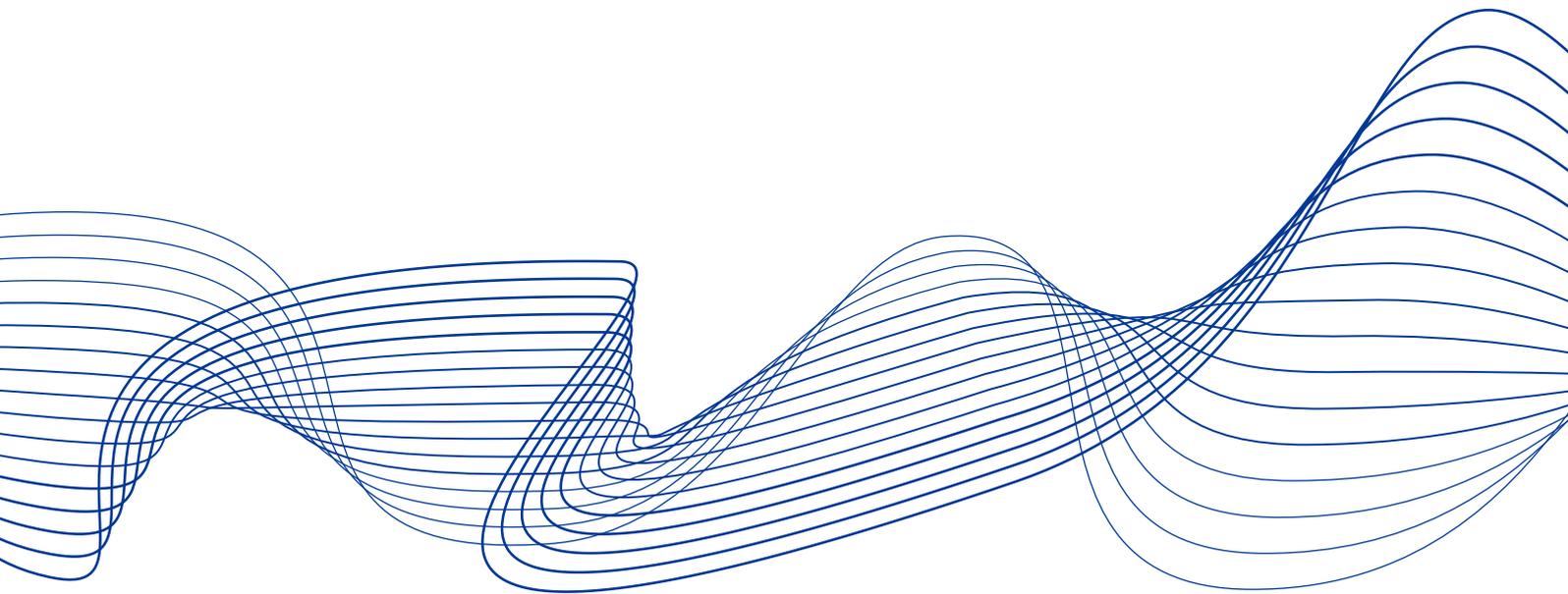


**Macroprudential
provisions, measures and
instruments for insurance**

November 2018



ESRB
European Systemic Risk Board
European System of Financial Supervision

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Executive summary

Given the importance of the (re)insurance sector, a comprehensive regulatory framework requires tools targeting the key systemic risks of (re)insurance. A healthy (re)insurance sector is essential for the functioning of a modern market economy and contributes to economic growth and financial stability. A comprehensive regulatory framework is needed to help ensure that the sector can fulfil its essential role, even during times of crisis. Such a framework consists of a number of elements that complement each other: microprudential regulation and supervision protect policyholders and make individual (re)insurers safer, recovery and resolution regimes provide legal certainty when an (re)insurer gets into trouble and ensure that failure is orderly, and macroprudential policy looks beyond individual (re)insurers and deploys tools that target systemic risks. Against this backdrop, this report informs the ongoing discussions and review of Solvency II.

Two key systemic risk types for (re)insurance, identified in this report, are the risk of systematic withdrawal/failure of (re)insurance services and the risk of direct and indirect contagion. Threats to financial stability typically originate from vulnerabilities of institutions and/or systems that are not self-correcting and lead to a build-up of risks. Once triggered, these risks are amplified and transmitted to other sectors and/or the real economy. Analysing the chain of events leading to systemic risk makes it possible to identify systemic risks created by the failure of one institution or the activities/behaviour of the sector. Two key systemic risk types for (re)insurance emerge from analysing the commonalities within such chains of events: systematic withdrawal/failure of (re)insurance services and contagion (both direct and indirect).

Macroprudential policies could intervene at different points along a chain of events leading to a build-up and transmission of risks in order to prevent or mitigate systemic risk.

Underlying the chain of events, vulnerabilities in individual (re)insurers' balance sheets are typically addressed by microprudential regulation. In contrast, macroprudential policies for (re)insurance most naturally target sectoral vulnerabilities or intervene along the chain to dampen amplifiers and/or prevent spillovers to other sectors by blocking the transmission mechanism. In addition, macroprudential policies with a scope beyond the (re)insurance sector could also attempt to address some of the events triggering systemic risk at the start of the chain.

Current (re)insurance regulation already helps prevent or mitigate systemic risk by addressing certain systemic amplifiers and sectoral vulnerabilities. Current (re)insurance regulation and international legislative initiatives help policymakers to prevent or mitigate the key systemic risk types through a set of microprudential provisions, measures available to (re)insurers and instruments at the discretion of the supervisor. For example, Solvency II contains measures which dampen systemic amplifiers like procyclical behaviour and (re)insurer failures following the impact of financial shocks on the regulatory balance sheet, while international initiatives such as Higher Loss Absorbency (HLA) aim to increase the resilience of certain systemically relevant institutions.

Current regulation was not designed to fully address the key systemic risk types, so a broader macroprudential toolkit is needed to fill the gaps. As current regulation was not specifically designed to address systemic risks, current provisions, measures and instruments naturally lack the completeness and consistency of a macroprudential framework. For example,



they may not be sufficient to prevent a collective build-up of risks/exposures, which are significant amplifiers of the key systemic risk types identified. In a similar vein, they may not provide sufficient protection against systemic amplifiers, such as mass lapses and market-wide under-pricing/under-reserving and/or under-capitalisation. Furthermore, they may not apply to all (re)insurers as, for example, is the case for the long-term guarantee (LTG) measures which are subject to eligibility criteria. In addition, the qualitative approach of current regulation towards liquidity risk could benefit from the support provided by quantitative requirements.

This report identifies a shortlist of options for additional provisions, measures and instruments that the European Systemic Risk Board (ESRB) deems sufficiently promising to warrant further work. The report complements the work undertaken by the European Insurance and Occupational Pensions Authority (EIOPA) and reaches broadly similar conclusions. The shortlisted options would address the key systemic risk types by targeting several significant systemic amplifiers, sectoral vulnerabilities and transmission channels. They were selected on the basis of expert judgement since, as Solvency II has only recently come into effect, the data reported do not yet support a comprehensive time series analysis. The shortlisted options reflect the specificities of the (re)insurance business and their functioning naturally differs from the toolkit that was developed for other financial sectors (e.g. banking).

The shortlisted options would form part of a comprehensive regulatory framework. First, as part of making (re)insurers safer to protect policyholders, the shortlisted options include a proportionate extension and enhancement of microprudential reporting requirements. Second, as part of providing legal certainty in case an (re)insurer runs into difficulties and to ensure that any failure is orderly, they confirm the financial stability benefits of a harmonised EU-wide recovery and resolution framework. Third, as part of a macroprudential toolkit to target systemic risks, they include the possibility for (i) a power for authorities to impose, entity-based (like HLA) and/or activity/behaviour-based market-wide capital increases and dividend restrictions in situations in which (re)insurance market developments could generate systemic risk, (ii) symmetric capital requirements for cyclical risks, (iii) liquidity requirements for (re)insurers with a vulnerable liquidity profile, (iv) a discretionary power for authorities to intervene in cases of mass lapses and (v) instruments to target bank-like activities to ensure cross-sectoral consistency of macroprudential policy. With the exception of the symmetric capital requirements for cyclical risks, which partly interact with measures already present in Solvency II, in particular the volatility adjustment (VA) and the matching adjustment (MA), the shortlisted options address the macroprudential aspects not captured by the current EU regulation.

Further work should consider international developments, changes in current regulation and determine the appropriate level of legislation. As the potential implementation of any of the shortlisted provisions, measures and instruments would require legislative changes, it would typically be accompanied by an impact assessment. Further analysis should also include items such as the impact of cross-sectoral aspects, the assignment of regulatory responsibilities (including clarifying modalities for reciprocity) and the development of appropriate communication channels. In addition, future work should consider the pros and cons of a rule-based design versus a discretionary design of certain options and take account of proportionality when determining the appropriate level of thresholds that could trigger the use of certain shortlisted options. One of the key elements of any future work would be to consider the



extent of the legislative changes needed to implement certain provisions, measures or instruments and to consider the appropriate level of legislation. The implementation of these options at EU level would provide all authorities with the necessary means and flexibility to address a wide range of systemic risks. However, as national (re)insurance markets differ, some provisions, measures or instruments would be more effective and/or efficient in certain jurisdictions than others. As a consequence, the modalities of certain shortlisted options may differ between national markets. Additionally, certain options, which are not part of the shortlist set out in this report, may – depending on the characteristics of national (re)insurance markets – still prove to be useful in certain jurisdictions. As the ways in which reinsurers and primary insurers can pose systemic risks are similar, the remainder of this report refers to insurers and only explicitly mentions reinsurers to highlight any differences.



Introduction

A healthy insurance sector is essential for the functioning of a modern market economy and contributes to economic growth and financial stability. Insurers take on risks. For example, companies can transfer non-commercial risk and the risks of an exogenous disaster to insurers. In many cases, such risk transfers are a precondition for economic activities and businesses in need of funding. Insurers also offer protection against the financial consequences associated with mortality and longevity and they mobilise and invest the savings of households. Households in Europe depend on the insurance sector for their future income, with one-third of their wealth comprising claims on the insurance sector (ESRB, 2015a). A significant proportion of the liabilities of the insurance sector are long term and insurers typically try to invest the premiums they receive in assets that match the maturity of their liabilities. This makes insurers an important source of long-term funding to the economy, in particular banks and governments (ESRB, 2015a). With almost €9.8 trillion of assets under management at the end of 2015, equivalent to around 60% of EU GDP, the insurance sector is the largest institutional investor in the EU (IMF, 2016; Insurance Europe, 2016). As a whole, the insurance sector represents around 10% of the total assets of the euro area financial sector (ECB, 2017c).

Given the importance of the insurance sector, a comprehensive regulatory framework is needed to help ensure that the sector can fulfil its essential role, even during times of crisis. Such a framework consists of a number of elements that complement each other: microprudential regulation and supervision protect policyholders and make individual insurers safer, recovery and resolution regimes provide legal certainty when an insurer runs into difficulties and ensure that any failure is orderly, and macroprudential policy looks beyond individual insurers and deploys tools that target systemic risks.

- **The new EU-wide microprudential framework for insurance, which is established in the Solvency II Directive, is a major step forward and makes individual insurers more resilient.** Following the global financial crisis, substantial efforts were made to increase the resilience of individual insurance companies. In the EU, Solvency II has introduced a new regulatory regime that improves policyholder protection by, among others, introducing a risk-based regulatory regime and enhancing governance and reporting requirements for insurers. This has improved policyholder protection by making insurers safer and has contributed to financial stability.
- **Recovery and resolution regimes already exist in some Member States but an EU-wide regime for the insurance sector is lacking.** In many instances, existing regulatory intervention measures and/or ordinary insolvency procedures may suffice when an insurance company encounters difficulties. However, ordinary insolvency procedures may not always be consistent with policyholder protection and financial stability objectives. While ordinary insolvency procedures exist, the extent of the implementation of national recovery and resolution frameworks differs across countries. A more harmonised approach towards recovery and resolution across the EU would help manage the failure of a large cross-border insurer or the simultaneous failure of multiple insurers in an orderly fashion. Reflecting this, EIOPA (EIOPA, 2017a) and the ESRB (ESRB, 2017b) have published reports advocating the



implementation of a more harmonised recovery and resolution framework for the EU (re)insurance sector.

- **Macprudential policy that looks beyond individual insurers and deploys measures and instruments to target systemic risks may need to be developed.** There are conflicting views on the systemic nature of the insurance industry; some see it as having little systemic relevance for the industry as a whole (Harrington, 2009; Bell et al., 2009; The Geneva Association, 2010; Thimann, 2014; Insurance Europe, 2014) while others find that the insurance sector can be a source of systemic risk or can at least play a major role in transmitting such risk (Billio et al., 2012; Acharya et al., 2014; Weiß et al., 2014; Houben et al., 2014; Berdin et al., 2015; ESRB, 2015a; ESRB, 2016a; IAIS, 2016a; IMF, 2016; Hufeld, 2016; Hufeld et al., 2017; IMF, 2018; EIOPA, 2018a). Some of these studies acknowledge that certain types of insurance products or activities contribute more to systemic risk than others. Recent studies have also covered specific systemic aspects of the insurance sector, including (i) risks arising from insurers' simultaneous investment decisions (Ellul et al., 2011; Merrill et al., 2012; Larrain et al., 2017; ECB, 2017a), (ii) liquidity stresses, in the event that policyholders were to lapse in large numbers following an interest rate shock (Feodoria et al., 2015), and (iii) the impact of a failure of a dominant insurer, resulting in the unavailability of cover and sharp price increases (as illustrated by the cases of HIH Insurance (IAIS, 2011; ESRB 2015a) and United Medical Protection (UMP) (Australian Treasury, 2015) in Australia). It has been shown that systemic risk cannot be addressed by microprudential regulation alone, as the resilience of individual financial institutions is insufficient to ensure the resilience of the financial system as a whole (Crockett, 1997; Borio, 2003). Indeed, one of the main lessons learned from the financial crisis is that risk in a financial system is not merely an aggregation of exogenous individual risks, but rather stems from the collective behaviour of institutions and is therefore endogenous to the system. Reflecting this, supervisors at the International Association of Insurance Supervisors (IAIS) (Saporta, 2016) and insurance supervisors in Europe (EIOPA, 2018a) have already signalled the need to complement microprudential regulation with macroprudential overlays.

This report identifies two key systemic risk types emerging from chains of events and indicates where macroprudential policies could intervene to prevent or mitigate these risks.

Building on previous analyses (ESRB, 2015a; ESRB, 2016a; IAIS, 2016a; IMF, 2016; IMF, 2018; EIOPA, 2018a), this report presents a conceptual framework showing what could go wrong for a chain of events to create a systemic impact. Analysing such a chain of events makes it possible to identify systemic risks created by either the failure of a single institution ("too big to fail") or the activities/behaviour of the sector. Threats to financial stability typically originate from underlying vulnerabilities of institutions and/or systems that are not self-correcting and lead to a build-up of risks. Once triggered, these risks are amplified and transmitted to other sectors and/or the real economy. Two key systemic risk types emerge from analysing the commonalities within such chains of events: systematic withdrawal/failure of insurance services and contagion (both direct and indirect). Macroprudential policies could intervene at different points along such chains of events in order to prevent or mitigate such risks.

This report sets out a range of options to address the two key systemic risk types identified.

The ultimate objective of a macroprudential policy is to safeguard the stability of the financial



system. Intermediate and/or operational objectives serve as specifications for this objective (see Box 1). Current regulation includes a number of provisions, measures and instruments with macroprudential relevance that help meet these objectives. However, as current regulation was not specifically designed to address systemic risk, the prevailing provisions, measures and instruments naturally lack the completeness and consistency of a macroprudential framework. One consideration in the design of a macroprudential framework is the right balance between rules and discretion. On the one hand, discretion could make it difficult for insurers to anticipate policy. The provisions and measures with macroprudential relevance contained in Solvency II are predominantly rule-based and leave little room to exercise discretion. On the other hand, discretion could enable authorities to respond promptly to emerging risks and provide accountability, avoiding a bias towards inaction or excessive intervention (Haldane et al., 2017). To strike a balance, the use of discretion in a macroprudential framework is often guided by specific balance sheet, economic and/or financial indicators, as well as their associated thresholds. Another consideration in the design of a macroprudential framework is the fact that macroprudential policymakers require at least as many instruments as they have operational objectives (Tinbergen, 1952). Moreover, as the transmission mechanism of these macroprudential instruments is uncertain, pursuing a given objective with a range of different instruments is likely to result in better outcomes (Brainard, 1967; Haldane et al., 2017). Reflecting this, this report analyses a broad selection of options for additional provisions, measures and instruments based on their macroprudential relevance and ability to help prevent or mitigate the key systemic risk types for insurance.

This report identifies a shortlist of additional provisions, measures and instruments that the ESRB deems sufficiently promising to warrant further work. The identification of the shortlisted options is built on a range of criteria and a decision rule, but is ultimately based on expert judgement. Future work – which may result in a reassessment of the shortlisted options – could include indicators and the calibration of thresholds signalling the need to activate specific instruments. Further analysis should also include items such as the impact of cross-sectoral aspects, the assignment of regulatory responsibilities (including clarifying modalities for reciprocity) and the development of appropriate communication channels. In addition to further analytical work, the implementation of any of the shortlisted provisions, measures and instruments would require legislative changes, which would typically be accompanied by an impact assessment. Against this background, this report informs the ongoing discussions and review of Solvency II. It complements work undertaken by EIOPA and reaches broadly similar conclusions (EIOPA, 2018c).

Box 1

Intermediate objectives of a macroprudential policy for insurance

Intermediate objectives make macroprudential policy more operational, transparent and accountable and provide an economic basis for the selection of instruments. Reflecting this, the ESRB has recommended that macroprudential authorities define and pursue such intermediate objectives (ESRB, 2013). These objectives should include – but are not limited to – mitigating and preventing excessive credit growth and leverage; mitigating and preventing excessive maturity mismatches and market illiquidity; limiting direct and indirect exposure concentrations; limiting the systemic impact of misaligned incentives, with a view to reducing moral hazard; and strengthening the resilience of financial infrastructures.



Intermediate objectives need to be adaptable to reflect the emergence of new risks to financial stability and the part of the financial sector considered.

That intermediate objectives are not static but evolving has been recognised by the ESRB (ESRB, 2013). Reflecting this, EIOPA has proposed a list of operational objectives to help achieve the specific intermediate objectives of mitigating the impact and likelihood of systemic risk in the insurance sector (EIOPA, 2016a; EIOPA, 2018a). These objectives include ensuring sufficient loss-absorbing capacity and reserving, discouraging excessive involvement in certain activities and/or products, discouraging excessive levels of direct and indirect exposure concentrations, limiting procyclicality and discouraging risky behaviour. These findings and the findings of this report will inform any future review of the ESRB Recommendation on intermediate objectives and instruments of macroprudential policy.

The remainder of this report consists of five sections. Section 1 describes the build-up and transmission of systemic risk in the insurance sector and the intervention points for prudential policies to prevent or mitigate these risks. Section 2 describes the provisions, measures and instruments with macroprudential relevance available in Solvency II, as well as future regulation that would transpose international initiatives. Section 3 sets out options for additional macroprudential provisions, measures and instruments. Section 4 identifies the shortlist of the most promising options. The final Section concludes. An annex provides a more detailed analysis of cross-sectoral aspects, interconnectedness and insurance sector exposures.



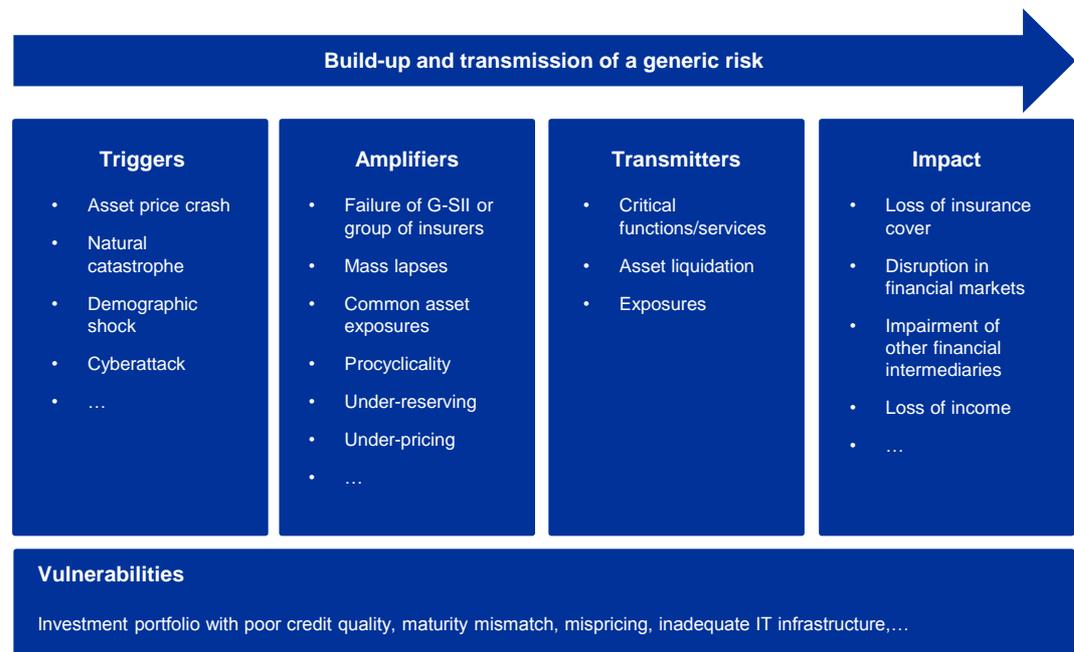
1 Insurance and systemic risk

This section identifies the key systemic risk types for the insurance sector and considers where macroprudential policy could intervene to prevent or mitigate these risks. It describes the build-up and transmission of systemic risk in the insurance sector and sets out the different possible points at which a macroprudential policy could intervene.

1.1 Build-up and transmission of risks in the insurance sector

Threats to financial stability typically originate from underlying vulnerabilities of institutions and/or systems that are not self-correcting and lead to a build-up of risks. Once triggered, these risks are amplified through chains of events and finally transmitted to other sectors and/or the real economy. Figure 1 illustrates a generic chain of events. It presents a conceptual framework showing what could go wrong for such a chain of events to create a systemic impact. It does not express the probability that a particular chain of events will occur and abstracts from dampening mechanisms (including those already included in the regulation), complex interactions between the different components or possible feedback loops.

Figure 1
Build-up and transmission of risk in the insurance sector



Vulnerabilities refer to the inability of insurers and/or the insurance sector to withstand adverse events, ultimately reflecting weaknesses in balance sheets and operational or business processes.

Vulnerabilities are typically internal to the insurance sector. At the level of the sector, they can originate through the nature of the insurance business, institutional characteristics and interconnectedness with the rest of the financial system. For example, through their investment exposures, insurers have a large presence in certain financial markets. Similarly, the occurrence of mass lapses could be influenced by, for example, the prevalence of low (contractually fixed) surrender values in the life insurance market, the level of market rates compared with the interest rates guaranteed in an insurance market (The Geneva Association, 2012) and the incentive structures given to intermediaries (Schmidt-Tobler, 1994). At the level of individual insurers, vulnerabilities originate from company characteristics, operational processes and the selected business model. For instance, in the event of a severe storm, an insurer's exposure to windstorm risk and its reinsurance strategy are important determinants of its vulnerability to the risk. Similarly, the degree to which an insurer is able to match the duration of its assets to its long-term insurance liabilities is a major determinant of its vulnerability to a macroeconomic environment characterised by low interest rates. In cases of cyberattacks, for example, the IT infrastructure and protection mechanisms will determine whether or not the insurance company will feel an impact.

Triggers refer to adverse events that affect individual insurers and/or the insurance sector as a whole.

Triggers are typically external to the insurance sector. They could adversely affect the assets side of the balance sheet, as in an asset price crash. Triggers could also adversely affect the liabilities side of the balance sheet. For example, a natural catastrophe would result in additional insurance claims, or a demographic shock that positively impacts longevity would increase certain technical provisions. Other events, such as cyberattacks, could impact operational or IT processes. The nature of the insurance business means that the impact of triggers affecting the liabilities side of the balance sheet would typically be limited to the sector. In contrast, since insurers invest in assets that are also held by other market participants, such as government bonds, corporate bonds, equities and real estate, the impact of a trigger affecting the assets side of the balance sheet would generally affect the financial sector more broadly.

Systemic amplifiers refer to features that may cause events that are idiosyncratic to individual insurers or the insurance sector to become systemic events.

Events are idiosyncratic if they affect one or few insurers and their impact is ultimately limited to the insurance sector. In contrast, systemic events are felt beyond the insurance sector, impact the financial system and ultimately damage the real economy. In the chain of events considered, amplification can be either direct or indirect. Direct amplification focuses on entities and can, as such, result from the failure of a systemically important institution or a number of companies that may not be systemic individually but that, in aggregate, have a systemic effect. Indirect amplification can result from the types of activities insurers engage in and/or from the way they react to adverse events (IAIS, 2017; IMF, 2016; EIOPA, 2018a). The list of potential systemic amplifiers is long and



depends on the circumstances. For example, aligned and procyclical investment behaviour (Bijlsma et al., 2016; Becker and al., 2013; ECB, 2017a) could result in fire sales of assets (Ellul et al., 2011; Merrill et al., 2012; Larrain et al., 2017). Similarly, in spite of fiscal incentives and/or contractual clauses, a large number of policyholders may start lapsing policies during times of crisis, thereby triggering liquidity problems (Feodoria et al., 2015¹).

Transmitters refer to the channels through which adverse events spread beyond the insurance sector and become systemic events.

Three key transmission channels are: the critical function or service channel, the asset liquidation channel and the exposure channel (IAIS, 2016a; IMF, 2013). The critical function or service channel operates through distress in the insurance sector that affects the wider financial system through a decrease or even a cessation in the supply of critical insurance services (FSB, 2016) that cannot be substituted in a reasonable amount of time and at a reasonable cost. The asset liquidation channel operates through the sale of assets by insurers, which reduces the value of the same or correlated assets held by other market participants, thus weakening their balance sheets. The exposure channel operates through direct or indirect exposures on the assets or liabilities side of insurers' balance sheets.² For example, insurers may be part of a financial conglomerate, have ownership links with other sectors or provide these sectors with funding. Insurers may also be counterparties in derivatives transactions (Cummins and Weiss, 2014) or a borrower from another sector. A number of insurance groups play a particularly central role characterised by a strong interconnection with the rest of the financial system (Alves et al., 2015). While these interconnections can transfer risks to institutions where they can be better managed, they can also lead to spillovers and contagion to other parts of the financial system.

Impact refers to the effect on the wider financial system, and ultimately the real economy, and is the final element in the chain of the build-up and transmission of systemic risk.

Not all risks are systemic if they materialise, but the combination of specific vulnerabilities with one or more triggers and systemic amplifiers can make them systemic. For example, being unable to obtain insurance cover at a reasonable price because certain insurance services are disrupted could make it impossible for certain industries, such as the airline industry or marine transport industry, to operate. The consequences of such disruption were illustrated by the cases of HIH Insurance and UMP in Australia and the temporary unavailability of certain insurance products following the 2001 terrorist attack on the World Trade Center. Similarly, asset fire sales, insurer defaults or a combination of such events could impair systemically important markets and/or financial intermediaries, or result in a contraction of credit supply. Moreover, the failure of a systemically important institution or a number of smaller insurers could have an impact on the economy through reduced household spending in cases where promised returns and payments are not honoured.

¹ A study on mass lapses in the event of rising interest rates.

² See Annex.



1.2 Key systemic risk types for insurance

Previous analyses have shown how chains of events can result in the insurance sector becoming a source of, or playing an important role in, the transmission of systemic risk. For example, IMF (2016) sets out how insurers could play an important role as transmitters of spillovers through their interconnectedness with the wider financial system. Similarly, ESRB (2015a, 2016a) establishes a number of such chains of events. This includes details on how insurers may amplify shocks as a result of their involvement in activities and insurance products with potential systemic features (previously referred to as non-traditional, non-insurance activities), how insurers may act in a procyclical manner with regard to investment and premium setting, how the economy may be affected by a lack of substitutability in certain types of insurance, and how life insurers may collectively fail under a scenario of prolonged low risk-free rates combined with suddenly falling asset prices. EIOPA (2018a) has recently published a list of possible sources of systemic risk in insurance (entity-based, behaviour-based or activity-based).

Analysing commonalities within the different chains of events makes it possible to identify the key systemic risk types in insurance. The elements (triggers, amplifiers and transmitters) along the chains of events that cause an underlying vulnerability in an insurer/the insurance sector to have an impact on the wider economy have a number of common features that allow the key systemic risk types in insurance to be identified. For example, a scenario in which a crash in equity markets is combined with a low interest rate environment could force some insurers to reduce their exposures to equity markets. This could lead to procyclicality, either because insurance companies decide to stop holding certain equity exposures or, depending on the regulatory framework, their solvency position is threatened. The selling of assets into a falling market could – depending on the size and number of the insurers concerned, similarities in portfolio holdings and the behaviour of other market participants – amplify the initial fall in equity prices. Similarly, policyholders may, in response to an equity market crash, decide to simultaneously lapse their policies if they are concerned about sustaining further losses if the market were to fall further. The impact and likelihood of such mass lapses³ can be reduced by means of asset and liability management (ALM) practices and is often linked to institutional characteristics, such as insurance product tax arrangements and/or contractual surrender penalties. However, around 50% of the liabilities of large life insurance companies in the EU can be surrendered without penalty and another 40% with a penalty lower than 15% of the policy value (ESRB, 2015).⁴ In particular, insurance products with potential systemic features, such as variable annuities, typically carry few surrender penalties. If such mass lapses were to occur, insurers could even be forced into procyclical behaviour in order to obtain the necessary liquidity to meet policyholder pay-outs. This may particularly be the case when an asset price crash is combined with a low-yield environment in which increased competition for savings diminishes liquidity inflows through insurance premiums (ESRB, 2016a). While the

³ As defined in Article 142 of the Commission Delegated Regulation (EU) No 2015/35 (Solvency II): “all legal or contractual policyholder rights to fully or partly terminate, surrender, decrease, restrict or suspend insurance cover or permit the insurance policy to lapse”.

⁴ Figures are for the end of 2013.



triggers and the amplification mechanism differ, these chains of events point to a common type of indirect contagion risk resulting in a fire sale of assets, as illustrated in Figure 2 below.

Figure 2

Indirect contagion resulting in a fire sale of assets



The two key systemic risk types identified are (1) direct and indirect contagion and (2) a systematic withdrawal/failure of insurance services. In addition to the example of indirect contagion through fire sales given above, commonalities within the different chains of events also signal the risk of direct contagion and the risk of a systematic withdrawal/failure of insurance services (as described in more detail below). None of the risks identified would require insurers to fail in order to have a systemic impact, but the number and pace of any failures would be an important amplifying mechanism. The same applies to the size and the number of the affected insurers, with larger insurers or many (smaller) insurers increasing the amplifying mechanism for each of the key systemic risk types.

1.2.1 Contagion

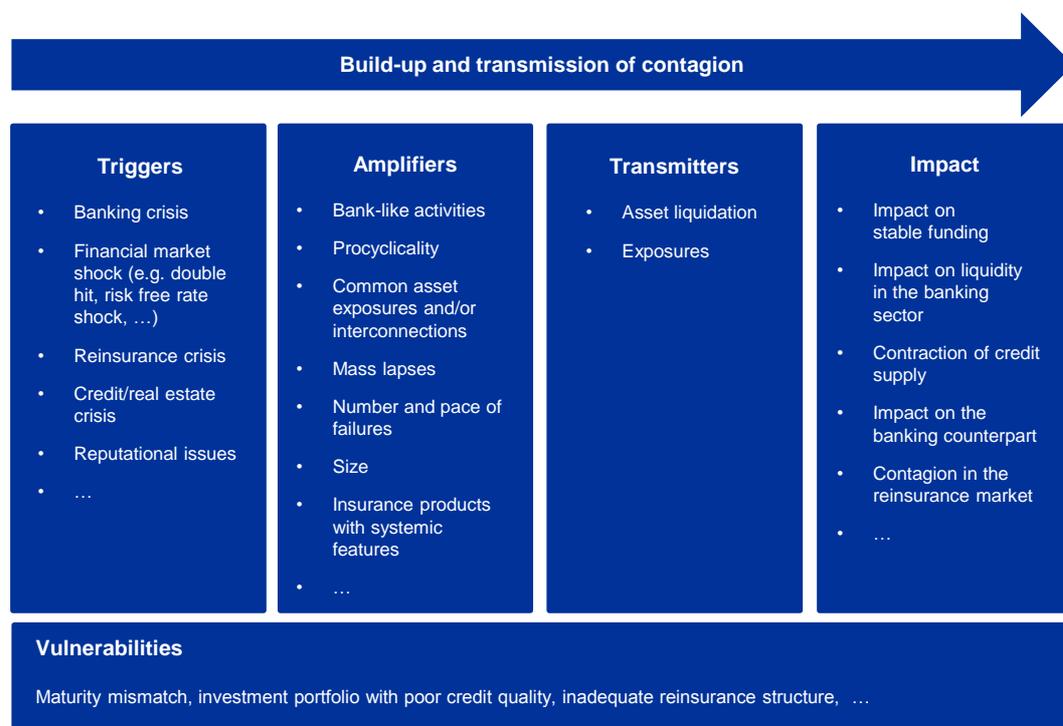
Contagion risk represents any situation where the insurance company, being part of the financial system, contributes to systemic risk either directly or indirectly. Direct contagion could occur through equity and ownership links (since insurers are part of a financial group/conglomerate), reinsurance activities (liability-driven) or a broad range of other direct investment exposures and interconnections (asset-driven). By way of example, a negative impact on bank funding could arise from insurers' decisions about their investments in bank equity/securities and/or securities lending and repo activities. The higher the degree of



interconnectedness and common exposures, the greater the influence of the insurance sector would be. Contagion risk can also arise more indirectly, for example, as a result of insurers' investment decisions. For example, a real estate crisis could be aggravated by insurers selling their real estate exposures, a reduction of insurers' mortgage loan activities could contribute to a contraction of credit supply and insurers could decide to alter their investment structure in a way that would be detrimental to public policy goals, such as fostering market-based finance. Insurers also compete with banks, investment funds and asset managers for household savings, which influences both asset pricing and asset allocation throughout the financial system. Contagion is often characterised by a transmission in the form of a liquidation of assets and is therefore also linked to the liquidity position of the insurer. In extreme cases, a large part of the insurance sector could start partly or fully selling certain asset exposures at a distress price, i.e. a fire sale of assets. Such fire sales could be amplified by, for example, mass lapses, procyclical behaviour or the liquidity needs of insurers with a high exposure to insurance products with potential systemic features and/or a large activity in certain derivatives markets characterised by margin calls. In cases of indirect contagion, other investors owning the same assets or assets that correlate closely in terms of price may then also be forced to sell, leading to a generalised disruption in financial markets and, potentially, failures of financial institutions unrelated to the insurance sector. These asset compositions risk becoming more similar and correlated across financial institutions owing to the low-yield environment (ESRB, 2016a). The impact of fire sales on the real economy could manifest itself in different ways, e.g. household income could fall if losses incurred through fire sales were to result in insurers being unable to honour their promises. A more detailed analysis of certain features of contagion risk can be found in the annex. The chain of events relating to the risk of contagion is illustrated in Figure 3 below.



Figure 3
Risk of contagion



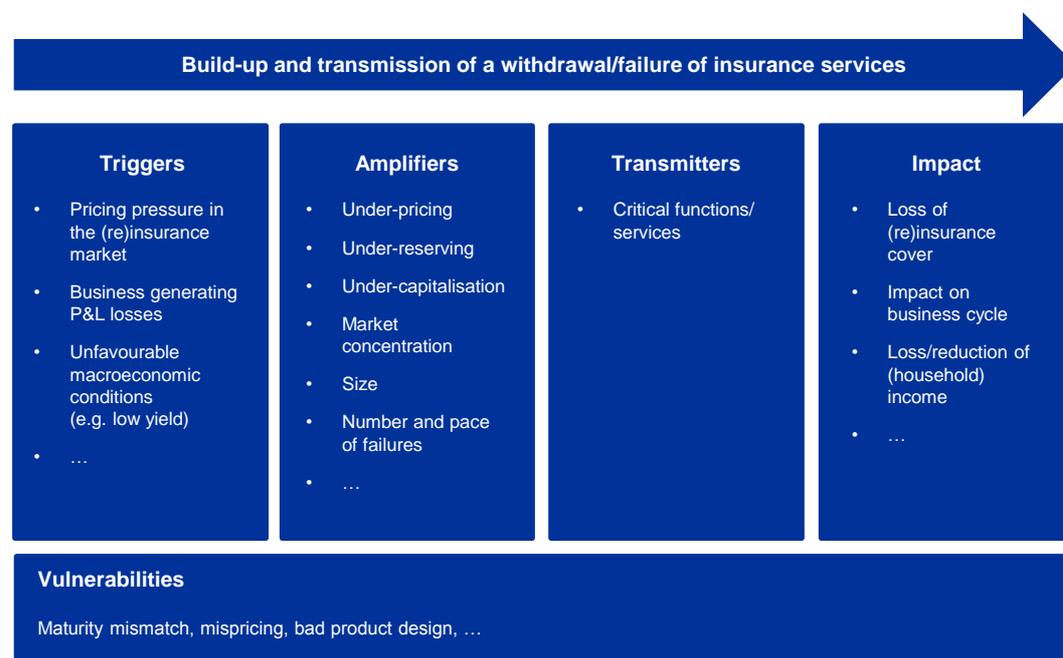
1.2.2 Systematic withdrawal/failure of insurance services

This risk type refers to a situation where the market dynamics and/or the underwriting process of the insurance sector result in a systematic withdrawal or failure of key insurance services. Due to the losses incurred, insurance companies may no longer be able or willing to offer a certain type of insurance cover (i.e. a loss of cover). Such a withdrawal of cover, combined with a lack of substitutability, could adversely affect the real economy. For example, insurance cover may be needed for a business to run. Alternatively, incurred losses may be transferred to policyholders with a (guaranteed) savings-type insurance product, which would have an impact on the wealth of consumers (i.e. a loss of income). Typically, both situations reflect an underlying vulnerability resulting from insurers' bad underwriting practices, which include offering mispriced insurance products, promising unrealistic (interest rate) guarantees and/or applying overly optimistic reserving assumptions (sometimes as a result of under-pricing). Large underwriting losses or investment losses caused by unfavourable macroeconomic conditions (e.g. a low-yield environment) could act as a trigger. Additionally, any situation where insurance companies are under-capitalised and/or fail could increase the impact of this chain of events. Aggressive pricing and uncontrolled growth could lead to high market concentration and a build-up of undetected under-reserving over time. A highly concentrated market characterised by the dominance of some insurers or general adverse conditions/bad underwriting practices that affect a large part of the market could create a situation where new insurers cannot quickly provide a substitute for disappearing services or take over



liabilities (low contestability leading to a lack of substitutability or loss of income). Recent developments, such as digitalisation, big data and “insurtech”, may play a dual role. On the one hand, they could lower the barriers to entering certain insurance markets, thereby increasing their contestability and mitigating part of this risk. On the other hand, such developments may also lead to increased pricing pressure, causing market-wide under-pricing and/or increased risk segmentation, which would render insurance unavailable for a segment of the population perceived as “bad risks”. The chain of events relating to the withdrawal/failure of insurance services is illustrated in Figure 4 below.

Figure 4
Withdrawal/failure of insurance services



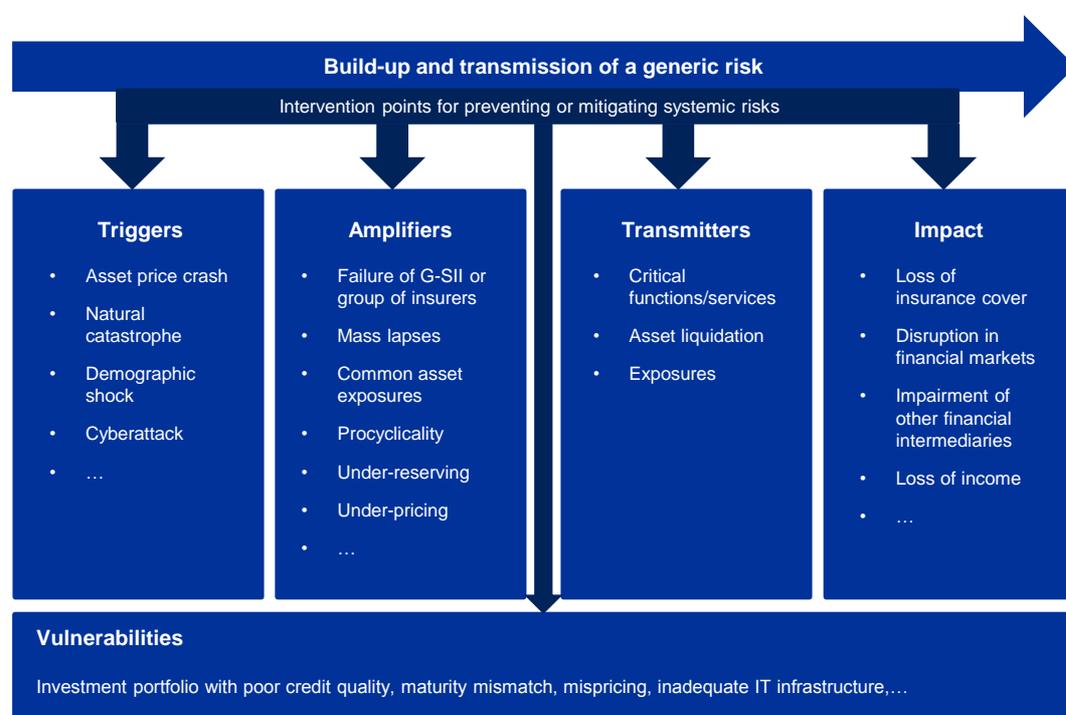
1.3 Intervention points for preventing or mitigating the key systemic risks

Macroprudential policies could address some triggers, target sectoral vulnerabilities, dampen systemic amplifiers and/or prevent spillovers to other sectors by blocking the transmitters. Authorities can intervene at different points along the chain of events leading to a build-up and transmission of risks. Underlying the chain of events, vulnerabilities in individual insurers’ balance sheets are typically addressed by microprudential regulation. For example, through capital charges based on the riskiness of the investment exposures, Solvency II discourages excessive risk-taking behaviour at the individual company level. At the start of the chain, macroprudential policies with a scope beyond the insurance sector could also attempt to address some of the triggers identified, for example, with a view to reducing the incidence and severity of asset price crashes. At the end of the chain, insurance services could be provided



directly by other stakeholders, such as the government. This was the case following the terrorist attacks that took place in the United Kingdom in the early 1990s; when insurers and reinsurers ceased to provide cover for terrorist attacks, the UK government formed a mutual reinsurer (Pool Re) to continue providing such cover for commercial property. Macroprudential policies for insurance would most naturally intervene to target sectoral vulnerabilities, dampen amplifiers and/or prevent spillovers to other sectors by blocking the transmission mechanism. For example, by intervening to prevent mass lapses or block the sale of certain asset exposures, authorities could avoid a vicious circle whereby falling asset prices induce distressed sales and spillovers to other financial markets and institutions active within these markets. The different intervention points along the chain of events leading to systemic risk are illustrated by the dark arrows shown in Figure 5 below.

Figure 5
Different intervention points



2 Existing and pending provisions, measures and instruments with macroprudential relevance for insurance

This section shows how current regulation helps prevent or mitigate the key systemic risk types and identifies gaps. Although the main focus of this section is Solvency II, other (international) legislation or legislative initiatives are considered. A distinction is made between three different ways of preventing and/or mitigating systemic risk: (1) microprudential provisions in existing or pending legislation, (2) measures in Solvency II that insurers can choose to apply, and (3) instruments in prudential and consumer protection legislation at the discretion of the supervisor. This section focuses on the provisions, measures and instruments with a direct macroprudential impact. It describes their function, links them to intervention points and sets out their strengths and weaknesses in more detail.

2.1 Microprudential provisions

Solvency II reduces vulnerabilities at the level of individual insurers. It has introduced a market-consistent, risk-based framework and enhanced governance and reporting requirements. This has strengthened the resilience of insurers and has contributed to financial stability. There are several provisions with macroprudential relevance, as described below.

- Through the calculation of a risk-sensitive capital requirement for a range of predefined risk categories and a quality-based classification of own funds, Solvency II helps prevent the build-up of vulnerabilities and increases the resilience of insurers. Some of the capital charges used in the standard formula (and any similar components that insurers may use in their internal models) also help dampen certain systemic amplifiers identified in Section 1. For example:
 - the premium and reserve capital charges protect against the consequences of under-pricing and under-reserving;
 - the lapse capital charge protects against the consequences of mass lapses;
 - the concentration risk capital charge protects against the consequences of a counterparty default in cases of large individual exposures.
- Solvency II targets certain vulnerabilities underlying the key systemic risks through a set of qualitative and quantitative standards and rules. For example, it:
 - requires insurers to have adequate asset-liability, liquidity and risk management in place to enhance their overall risk governance and awareness;
 - stipulates the prudent person principle, which encourages insurers to diversify their asset management to ensure the security, quality, liquidity and profitability of their portfolios,



and stipulates that insurers should only invest in assets with risks they can, among others, properly monitor, manage and report;

- enforces the application of an 'own risk and solvency assessment' (ORSA), which, for example, requires insurers to assess their solvency needs, taking into account their whole risk profile including risks not covered by the standard formula;
- introduces the concept of a capital add-on, which allows supervisors to increase capital requirements to enhance the resilience of the targeted insurer under certain specified circumstances, such as when the risk profile deviates from the calculated capital requirements or in cases of poor risk governance;
- allows supervisors to cancel or defer dividends/profit participations when the Solvency Capital Requirement (SCR) of an insurer is (or risks being) breached.

Most of the Solvency II provisions are not specifically designed to prevent or mitigate systemic risk and only have an indirect macroprudential impact. They target individual insurers or specific segments of their portfolios and therefore do not necessarily take account of system-wide aspects. Examples of such shortcomings are set out below.

- Solvency II does not include capital charges for exposure concentrations of individual insurers towards certain sectors or regions, nor does it account for concentrations in exposures at the sectoral level. The prudent person principle can only be used to stop the build-up of excessive investment concentrations for individual insurers. As a consequence, herding behaviour in investments or excessive exposure concentrations at the sectoral level can only be targeted through coordinated individual interventions.
- A capital add-on has to be adapted to the specific risk profile/situation of the individual insurer, which is also the case for the power to cancel or defer dividends. As a result, neither of these provisions can be used to target a set of insurers at the same time, such as in the event of adverse market trends.
- Sector-wide under-reserving and under-capitalisation could still arise if certain inputs are estimated incorrectly across the insurance sector. For example, the components of the risk-free rate curves (in particular, the last liquid point, convergence period and the ultimate forward rate) used to discount the liabilities of insurers are estimated on the basis of certain assumptions. If not all components are fully market consistent, this could lead to an underestimation of insurers' technical provisions (ESRB, 2017a).⁵ Moreover, the capital requirements for the underwriting risk of non-life insurance business are determined by applying fixed capital charges on the basis of the volume of premiums earned or the value of the best estimate of non-life technical provisions. If insurers collectively underestimate premiums or technical provisions, these volume measures could result in the capital

⁵ The possible effects of a pure market valuation on procyclical behaviour are discussed below.



requirements being too low, even if the capital charges are calibrated correctly. Additionally, when a large share of own funds is constituted out of the expected profit from future premiums, this may hamper the instantaneous loss-absorbing capacity of these own funds.

- The standard formula has few explicit anticyclical, symmetric capital charges to help prevent a build-up of exposures in good times or sales of assets in times of stress.

The symmetric adjustment (SA) of the equity capital charge, defined in Solvency II, and the international initiative of Higher Loss Absorbency for global systemic institutions have a direct macroprudential impact. These two provisions are described in more detail below.

2.1.1 Symmetric adjustment of the equity capital charge

The SA introduces an anticyclical capital requirement in Solvency II for risks arising from exposures to equity markets. The SA applies to all insurers that use the standard formula to calculate the equity risk sub-module of the SCR.⁶ It decreases the capital requirement for equity investments during downturns (when equity prices fall) and increases it during upturns (when equity prices rise). The SA is calculated monthly by EIOPA on the basis of an aggregate equity index composed of 11 country indices comprising European and international advanced economies (EIOPA, 2016b).⁷ If the level of this aggregate equity index falls (rises) below (above) its three-year average plus 8%, the risk charge decreases (increases). The adjustment is capped, so that the equity risk charges cannot decrease or increase by more than 10 percentage points.

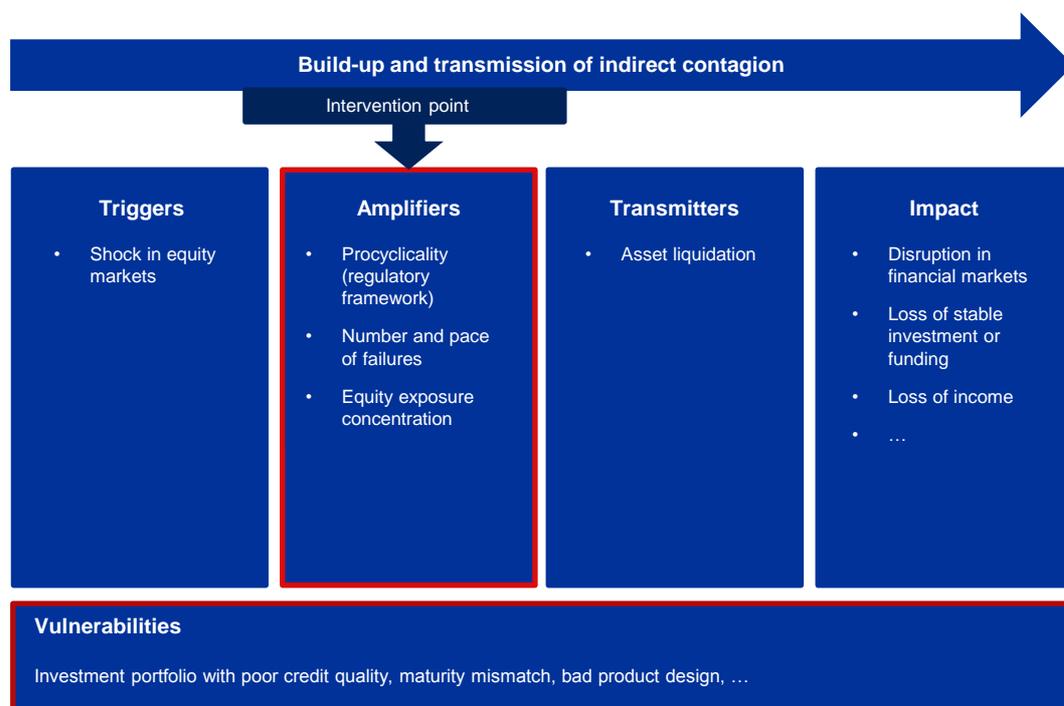
The SA discourages an unsustainable build-up and helps prevent a fire sale of equity exposures. By reducing capital requirements when equity prices fall, the SA reduces the incentive for insurers to dispose of their equities to improve their solvency positions. As a result, the SA helps dampen procyclical behaviour with regard to equity exposures and the likelihood of equity fire sales. Moreover, by increasing the capital requirements during periods of equity price booms, the SA increases the resilience of insurers against subsequent price falls and discourages an unsustainable build-up of equity exposures (see Figure 6). Given the varying importance of equity exposures across the EU, the systemic relevance of the SA depends on the local insurance market.

⁶ For (partial) internal models covering equity risk, insurers are free to decide whether to include the anticyclical features (subject to the approval of the supervisors).

⁷ These countries are: France, Germany, Italy, Japan, the Netherlands, Poland, Spain, Sweden, Switzerland, the United Kingdom and the United States.



Figure 6
Intervention point for the SA of the equity capital charge



Capping the impact on the capital charge and the short calibration horizon could reduce the effectiveness of the SA to mitigate risks from procyclical behaviour. The recent introduction of the SA means that there are few observations on which empirical analysis can be based. This is compounded by the fact that, for the first six years of Solvency II, a transitional measure for the calculation of the capital requirement for equity risk applies to all insurers, making it difficult to differentiate between the impacts of both measures. However, conceptual shortcomings can be identified. First, the equity risk charge is capped so that it cannot fall or rise by more than 10 percentage points. As a consequence, the SA may not be effective in reducing the risk of fire sales during an equity market crash similar to the one observed during the global financial crisis. Examining the evolution of the SA during 2016, the capital charge hit the lower bound once.⁸ Equally, during a prolonged equity market boom, a 10 percentage point add-on to the standard capital charge may not be sufficient to discourage the build-up of excessive exposures to the equity market. Second, as the capital charge is calibrated on the basis of a three-year moving average, it cannot capture prolonged equity market booms or slumps and it is sensitive to large market movements entering into and dropping out of the moving average. Finally, the SA does not apply to

⁸ Available at: eiopa.europa.eu.



insurers that use an internal model for the equity risk sub-module. As around 30% (in terms of technical provisions) of the insurance sector uses an internal model to calculate the equity risk component, this reduces the effectiveness of the measure, even though some of these insurers may have replicated similar features in their (partial) internal model. The benefit of reducing the likelihood of fire sales by calibrating the SA on an aggregated basis implies shortcomings from a microprudential perspective, with a possible macroprudential impact. For example, the SA is calculated on the basis of 11 different country indices and, as such, is not tailored to the specific portfolio of individual insurers. Therefore, for a given insurer, the adjustment may turn out to be either too high or too low. In the event of a fall in equity prices, this leads to a situation where either the capital charge after adjustment is too low or the capital relief given is not sufficient to discourage fire sales (and vice versa if there is a rise in equity prices).

2.1.2 Higher Loss Absorbency

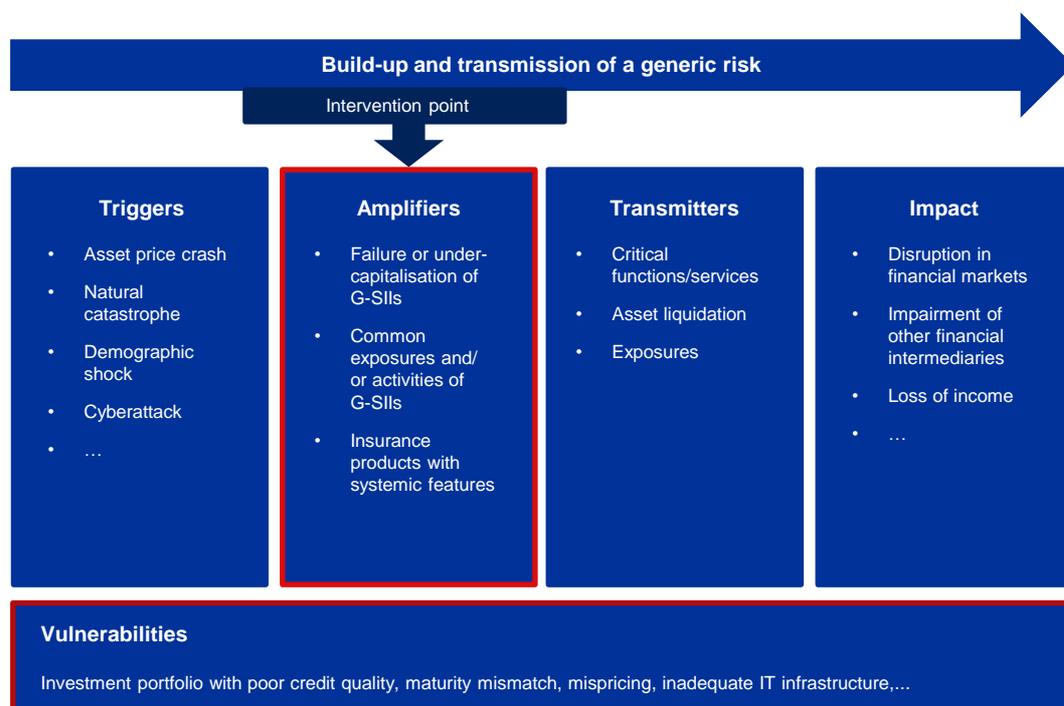
Higher Loss Absorbency is a measure for introducing higher capital requirements which is being developed by the IAIS for globally systemically important insurers (G-SIIs).⁹ By 2022, the framework aims to define, for every G-SII, a level of regulatory capital that is not less than the sum of the Insurance Capital Standard (ICS) plus an add-on (HLA) that depends on the systemic risk profile of the respective G-SII. HLA should be defined on the basis of a set of activities and exposures that are believed to contribute to the systemic relevance of an insurance company (IAIS, 2017). As such, HLA tries to internalise some of the costs to the financial system and real economy that would be incurred following the failure or distress of a G-SII and reduce the probability of such failure or distress.

HLA should reduce the systemic risks related to the behaviour or failure of a designated G-SII (see Figure 7). HLA should ensure that G-SIIs are better able to withstand a materialisation of all types of systemic risk. By increasing capital requirements, HLA reduces the likelihood that a G-SII will fail (a systemic amplifier). It also creates an incentive for insurers to reduce those activities and exposures or to stop selling insurance products that contribute to their systemic relevance, as such actions would result in a lower HLA. Based on these features, one could consider expanding the HLA concept beyond G-SIIs, i.e. to insurers that are deemed systemically important at either the EU or Member State level (see Section 3).

⁹ In 2016, the IAIS last published an update of designated **G-SIIs referring back to the 2015 G-SII list**. In 2017, it was decided not to publish a new list.



Figure 7
Intervention point for Higher Loss Absorbency



The IAIS considers that HLA will be implemented into (supra)national legislation from 2022. This requires further work and negotiations in order to, for example, finalise the development of a comparable global capital standard (i.e. the ICS) on which to base HLA.

2.2 Measures available to insurers

Solvency II includes LTG measures with direct macroprudential relevance: the matching adjustment, the volatility adjustment and two transitional measures. As the use of these four measures tends to result in lower reserving requirements, they typically require supervisory approval, an exception being the VA, for which only some Member States opted for an approval process. Insurers are also required to meet a set of additional rules and standards when applying these measures. For example, when applying the MA or VA, insurers must set up and maintain a liquidity plan, regularly assess their sensitivity to these measures and calculate the impact of a reduction of these measures to zero, among other requirements. When applying the transitional measures, a phasing-in plan must be drawn up and maintained in order to rectify a situation where the SCR is not covered without the use of these measures. Furthermore, additional requirements related to governance, disclosure and supervisory reporting aim at preventing an unwarranted use of these measures. Reflecting the above, not all LTG measures are applied to the same extent.



2.2.1 The volatility adjustment and the matching adjustment

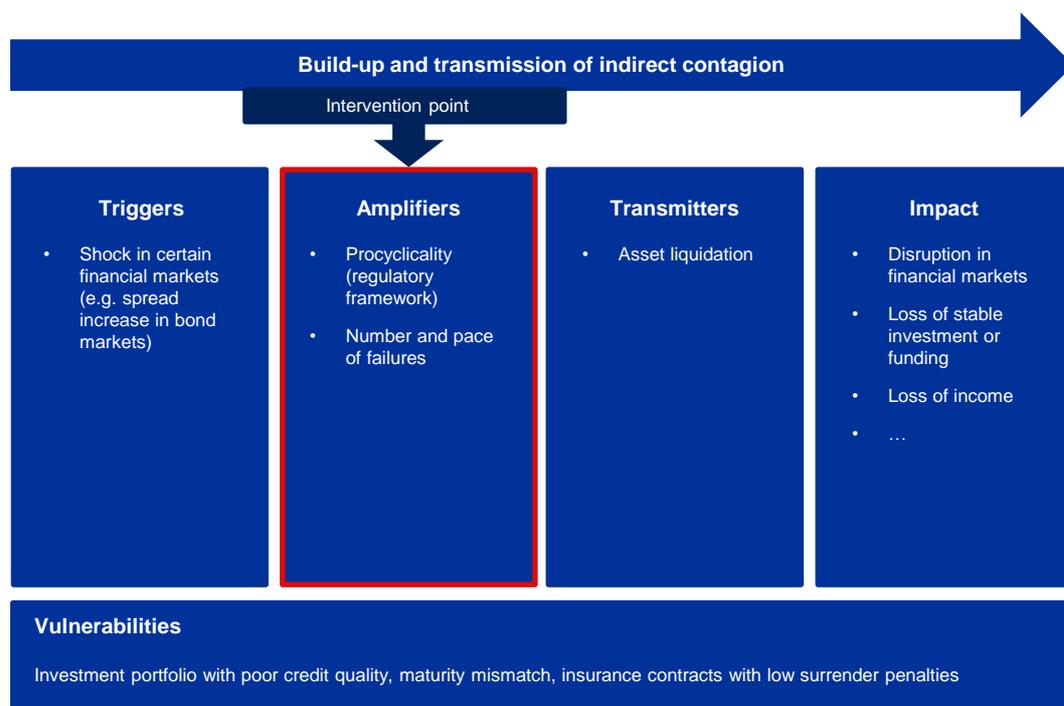
The VA and MA aim at dampening the impact of market volatility on the Solvency II balance sheet following spread movements. Insurers' liabilities tend to be long term and therefore insurers are typically not forced to sell assets in response to market volatility. However, in the absence of any adjustments, movements in government and corporate bond spreads would lead to changes in the value of insurers' bond portfolios, while leaving the value of their liabilities – which are ordinarily estimated by discounting expected future claims at the risk-free rate – largely unchanged.¹⁰ This would introduce volatility into insurers' own funds and could prompt procyclical behaviour. By typically adding¹¹ a part of the spread – unrelated to changes in credit fundamentals – of a specific portfolio of assets to the level of the risk-free rate, the VA and MA aim at mirroring part of the impact of spread movements on the valuation of the assets by adjusting the valuation of the liabilities they are supporting. This dampens the impact on own funds and helps prevent procyclical behaviour following such spread movements (see Figure 8). The potentially stabilising impact of both measures was illustrated in the 2016 EIOPA stress test (EIOPA, 2016c). Apart from this common characteristic, the VA and MA apply their own calibration, scope, eligibility criteria and rationale.

¹⁰ For life insurance business providing profit participation, the value of the future discretionary benefits may also decrease in the event of spread increases.

¹¹ The measures typically result in a positive adjustment. A negative adjustment can occur, albeit rarely, as this would require the yield of the respective investment portfolios (see below) to be exceptionally low.



Figure 8
Intervention point for the VA and the MA



Neither the VA nor the MA aims to increase the resilience of insurers and both measures may have unintended effects in the event of a persistent increase in spreads or a deterioration of credit quality. The VA and MA typically do not add to the resilience of an insurance company. Specifically, they help dampen procyclical behaviour following spread increases, but they do not typically prevent a build-up of spread-sensitive investments in times of low spreads. The use of the MA and VA may incentivise insurers to delay replacing their risky assets with assets of better credit quality. In the event of a persistent increase in spreads or a deterioration of credit quality, such a delay could ultimately weaken insurers' balance sheets.¹²

The macroprudential impact of certain features of the MA and VA and other sources of interest rate volatility on procyclical behaviour are not considered any further in this report.

The macroprudential impact of certain features of the MA and VA is not yet fully understood. This includes the interaction between the balance sheet components and the SCR when companies anticipate the impact of the VA in an internal model (the “dynamic VA”) and the effectiveness and

¹² Solvency II aims to disincentivise credit quality deterioration in an MA portfolio by including an extra safeguard. In particular, it is stipulated how the fundamental spread must be increased where necessary to ensure that the MA for sub-investment grade quality assets does not exceed the MA for investment grade quality assets of the same duration and asset class.



macroprudential consequences of the eligibility criteria of the MA. Additionally, the macroprudential impact of other sources of interest rate volatility warrant further investigation. Stabilising elements within the set-up and design of the risk-free curve, such as the UFR, help dampen balance sheet volatility following interest rate movements. Such balance sheet movements are expected to be minimal for portfolios to which the MA is applied, as MA assumes an adequate match between assets and liabilities. Further empirical evidence on procyclical behaviour following interest rate changes is still mixed (ESRB, 2017a) and needs to be further developed. Simulations from a model calibrated on data from the United Kingdom show evidence that the current design of the risk margin could act to amplify the balance sheet effect of interest rate shocks (Bank of England, 2016; Douglas et al., 2017). The calculation of the risk margin is made up of two interest-rate sensitive components, i.e. the future projection of SCR amounts, which are sensitive to interest rates, and the discounting of these future SCR amounts. As a consequence, the risk margin reacts “twice” to a single interest rate change. The output of the model demonstrated how the resulting balance sheet volatility could contribute to the risk of a fire sale of assets and how this set-up incentivises insurers in the United Kingdom to enter into complex hedging arrangements to attempt to mitigate the balance sheet impact of these risk margin changes.

2.2.1.1 Matching adjustment

The MA applies to specific liabilities against which insurers can hold assets to maturity, since their cash flows closely match these liabilities. It acts as a time-varying adjustment that automatically adapts the risk-free discount rate of certain specific liabilities if part of the spread – considered unrelated to credit fundamentals (i.e. the non-fundamental part) – of the corresponding matching assets changes. The MA has an extensive set of eligibility criteria. In terms of insurance product characteristics, liabilities cannot rely on future premiums; they include no surrender options for the policyholder or only include a surrender option where the surrender value does not exceed the value of the assets. The only underwriting risks that may apply to them are “limited” mortality, longevity, revision and expense risks. This implies that the assumptions made in the calculation of the technical provisions are restricted to mortality tables, cost charges and interest rates. In terms of asset characteristics, assets must be assigned to the specific portfolio of liabilities and the cash flows must be fixed (i.e. they cannot be changed by the issuers).¹³ These criteria aim to reduce market and liquidity risk, safeguard the matching of asset and liability cash flows and ensure that insurers are able to earn the extra MA-implied yield in addition to the risk-free rate.

The MA helps prevent fire sales of assets that match corresponding insurance liabilities.

The MA mainly dampens the systemic amplifier “procyclicality” resulting from the market-consistent valuation principle by reducing the impact of a spread shock on the insurer’s own funds (see Figure 8). The time-varying element of the adjustment removes the incentive for insurers to react in

¹³ The full set of criteria is set out in Article 77b of the Solvency II Directive (consolidated version).



a procyclical manner to volatility in the assets “covered” by the MA. As a result, the MA reduces the risk of fire sales and prevents sudden failures following spread movements.

The systemic dampening qualities of the MA do not extend across the EU insurance sector and its eligibility criteria are necessary to avoid under-reserving and under-capitalisation.

Many insurance products in Europe retain market, liquidity and/or underwriting risks that make them ineligible for the use of the MA. Reflecting this, according to the 2017 EIOPA report on the LTG package (EIOPA, 2017b), only 38 insurers out of the 2,945 (re)insurers surveyed, concentrated in two Member States, Spain (15 insurers) and the United Kingdom (23 insurers), use the MA. In total, they represent 15% of the EU technical provisions. Despite this concentrated use, the MA plays an important role in ensuring financial stability in the aforementioned Member States. The MA has a material impact on the level of the reserves and the solvency ratio of the insurers applying the measure (EIOPA, 2017b). As such, strict eligibility criteria are necessary to avoid under-reserving and under-capitalisation. For example, losses incurred from a forced sale of assets in the MA portfolio or rating downgrades rendering the assets ineligible for the use of the MA may lead to undue capital relief if realised losses exceed the expectations captured in the fundamental spread. Insurers may also anticipate that the MA will “immunise” their prudential balance sheet against the widening of credit spreads and take on more spread risk solely to maximise the benefit of the MA. The eligibility criteria of the MA aim at limiting such incentives and behaviour. In the United Kingdom, insurers are using internal securitisations in their MA portfolios that may contain equity release mortgage portfolios, which, in isolation, would not be eligible for the use of the MA. Understanding and managing the risk of such securitisations as part of the MA portfolio may create new challenges for insurers and supervisors (Rule, 2018).

2.2.1.2 Volatility adjustment

The VA typically compensates an insurer using the measure for part of the spread volatility observed in a reference portfolio of assets by increasing the risk-free discount rate of all liabilities. The level of the VA is equal to 65% of the spread corrected for credit risk fundamentals (the “risk-corrected” spread) of a representative portfolio of assets (the “reference portfolio”). This reference portfolio, which is based on a weighted average of the government and corporate bond holdings of the insurance sector, is determined once a year by EIOPA for a range of currencies. The VA includes a country-specific add-on for countries within the same currency area, in particular the euro area. The add-on, which has only been applied in Greece at the date of publication of this report, is triggered if the risk-corrected spread at country level is higher than 100 basis points and is at least twice the risk-corrected spread at currency level. The VA cannot be applied to the risk-free discount rate of those liabilities which are already subject to the MA.

The VA can mitigate fire sales by insurers and prevent sudden failures following spread movements (see Figure 8). The VA is widely used among insurers. Out of the 2,945 (re)insurers surveyed, 730 insurers in 23 countries, representing a European market share of 66 % in terms of technical provisions, used the VA (EIOPA, 2017b). The VA may reduce procyclical behaviour and fire sales of insurers by dampening balance sheet volatility following spread increases unrelated to changes in the credit fundamentals of insurers’ assets. This is particularly relevant for the insurance sector, which generally holds a large amount of government and corporate bonds and is therefore



exposed to this type of spread volatility. Additionally, the dampening impact of the VA on own funds during stressed market circumstances prevents quickly deteriorating solvency positions and sudden failures.

The design features of the VA may entail a risk of under-reserving and under-capitalisation.

The use of a reference portfolio to calibrate the VA reduces the incentives for individual insurers to chase yield in order to maximise the impact of the VA and simplifies its calibration. However, if insurers were to mimic the reference portfolio in an attempt to optimise the dampening impact of the VA, it could lead to herding behaviour and increase risks associated with common asset holdings across the sector. While such behaviour has not been observed thus far, a divergence between the assets held by an insurer and the reference portfolio also poses risks. For an individual insurer, the VA would either be too high or too low and, as a consequence, its solvency position may, for example, improve during stressed market circumstances. This divergence could imply a risk of under-reserving and under-capitalisation. It could also imply that an insurer would benefit from an increased discount rate through the use of the VA, which would not necessarily be reflected in the expected investment yield of its assets. A risk of under-reserving may also arise when insurers are unable to hold their bond investments to maturity, which is not guaranteed by the set-up of the VA, or when the liabilities of an insurer have a longer duration than the assets. Particularly in the latter case, the effect of the VA on the liabilities may be stronger than the corresponding spread widening on the asset side. To avoid overcompensation, the VA is only applied to the risk-corrected spread (see above). As a result, the VA cannot address all sources of spread volatility.

2.2.2 Transitional measures

The two transitional measures are designed to give insurers time to gradually adapt to the market-consistent valuation of technical provisions required under Solvency II.

The transitional measure on the risk-free rate phases in the difference between the discount rates used under Solvency I and Solvency II. The transitional measure on technical provisions phases in the difference between the value of the technical provisions calculated under Solvency II and the value of the technical provisions calculated under Solvency I. Both measures allow a period of 16 years, until 2032, to move from the Solvency I discounting/valuation to the Solvency II discounting/valuation. They only apply to insurance obligations on the balance sheet before the start of Solvency II.

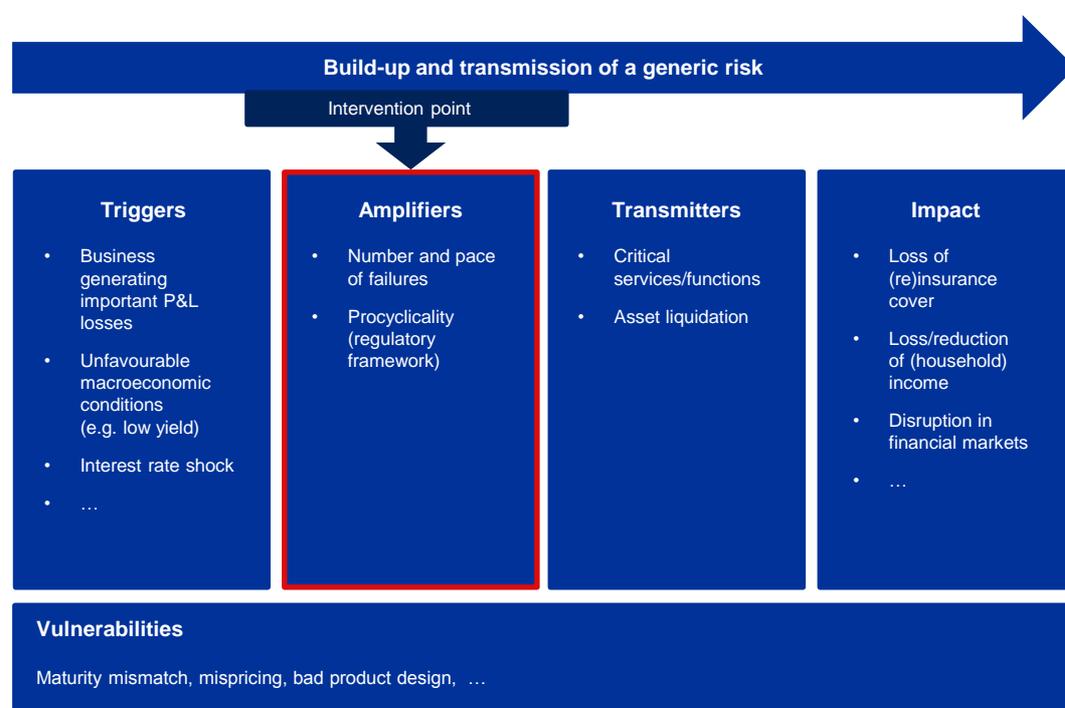
The transitional measures help avoid the withdrawal/failure of insurance services and the ability to recalculate the transitional measure on technical provisions could also help prevent fire sales (see Figure 9).

The transitional measure on technical provisions is much more widely used than the transitional measure on the risk-free rate. Out of the 2,945 (re)insurers surveyed, 163 insurers, representing an EU market share of 24.8% in terms of technical provisions, made use of the transitional measure on technical provisions (EIOPA, 2017b). However, only six insurers, representing 0.3% of the technical provisions, use the transitional measure on the risk-free rate. Both transitional measures should allow insurers, mainly those characterised by life insurance contracts with high interest rate guarantees, to gradually adapt to the full market-consistent valuation of Solvency II. The measures aim to avoid an immediate deterioration



of solvency positions that could result in the disruption of the provision of this type of insurance product. As such, the measures help, for example, to dampen the systemic amplifier “number and pace of failures”. Additionally, the recalculation features of the transitional measure on technical provisions could have a dampening impact on procyclical behaviour. The benefit resulting from the use of the transitional measure on technical provisions can be recalculated every 24 months, and if the risk profile of the insurer has materially changed. Where an exogenous shock, such as an interest rate shock, affects the level of the technical provisions, this can trigger the recalculation of the transitional benefit. This recalculation mechanism has been proven to partially offset the impact of an exogenous interest rate shock on the Solvency II balance sheet of insurance companies in the United Kingdom (Bank of England, 2016), helping to prevent procyclical behaviour resulting from such a shock.

Figure 9
Intervention point for transitional measures



The transitional measures could lead to under-reserving and the positive impact of the recalculation mechanism of the transitional measure on technical provisions on procyclical behaviour will fade. The transitional measures could result in under-reserving during the transitional phase, as insurers are able to hold fewer technical provisions than required under the full application of the Solvency II regime. As a result, companies applying the measures could have insufficient assets to cover the full amount of Solvency II technical provisions (without transitional benefit). The set of standards and rules governing the use of these measures (e.g. the phasing-in plan) partly reduces this risk. Although the experience in the United Kingdom has shown how the recalculation mechanism of the transitional measure on technical provisions can be used as a



countercyclical tool for insurers that are vulnerable to interest rate volatility (insurers offering products with fixed returns that also bear longevity risk), the measure was not specifically designed for the purpose of preventing procyclical behaviour following interest rate shocks. The dampening impact of the recalculation mechanism depends, for instance, on the level of the statutory (Solvency I) technical provisions. In case the value of these provisions has increased since the introduction of Solvency II, the impact of recalculating the transitional benefit is relatively small(er). Furthermore, the transitional measure on technical provisions will be phased out by 2032, with the capacity to absorb interest rate shocks decreasing by 6.25% each year. This means that, over time, the impact of this measure on procyclical behaviour will gradually reduce and eventually disappear.

2.3 Instruments at the discretion of the supervisor

The insurance legislation contains two instruments with macroprudential relevance, which require guided supervisory discretion in order to (de)activate them. Solvency II offers the possibility to extend the recovery period if the SCR of an insurer is breached in an exceptional adverse situation. Conduct regulation, i.e. the Packaged Retail and Insurance-based Investment Products (PRIIPs) Regulation,¹⁴ makes it possible to prohibit or restrict certain activities/products under certain circumstances. Both instruments are explained in more detail below.

2.3.1 Extension of the recovery period

Solvency II foresees that, during an exceptionally adverse situation, national supervisory authorities (NSAs) can extend the recovery period if insurers breach the SCR. The standard Solvency II procedure is that, if the SCR is breached, insurers must take measures to comply with the requirements again within six months. This period can be extended by another three months by the NSA. However, NSAs can ask EIOPA to declare an exceptional adverse situation under a set of predefined events i.e. a sharp fall in financial markets, a persistent low interest rate environment or a high-impact catastrophe event. If EIOPA decides to declare the existence of such an exceptional adverse situation, the requesting NSA can grant an affected insurer an extension by up to seven years to recover the breach of the SCR.

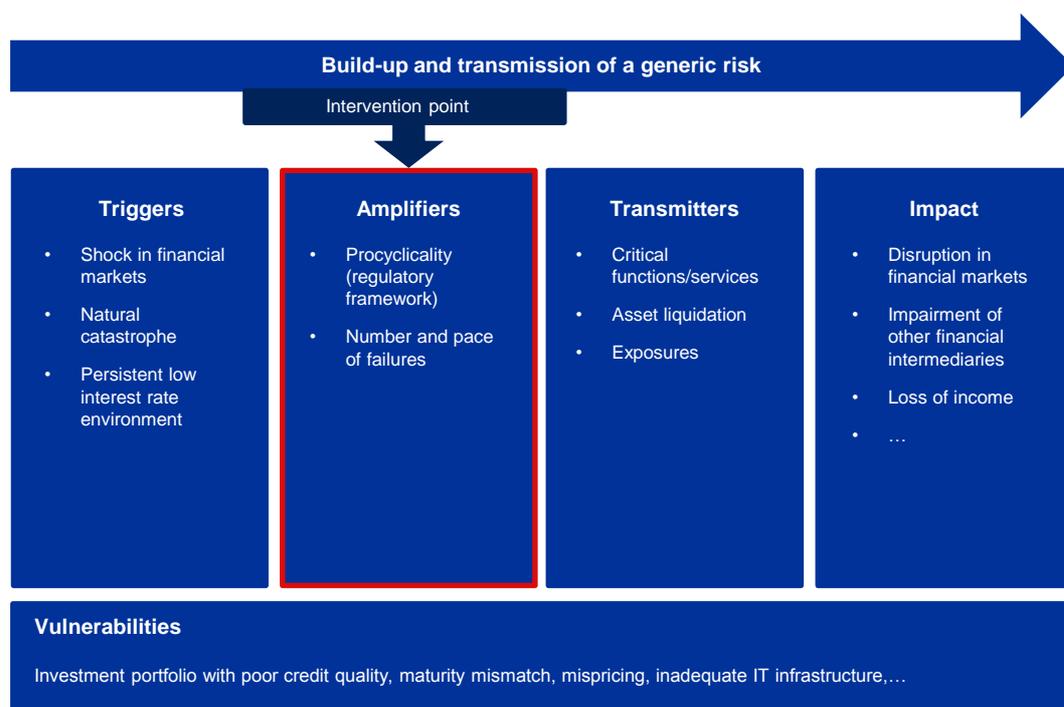
Declaring an exceptional adverse situation dampens the systemic amplifier procyclicality and avoids immediate failures. As a consequence, the instrument could be used to mitigate any type of systemic risk (see Figure 10). A macroeconomic crisis or a high-impact catastrophe event could make a significant share of the insurance market face a situation of under-capitalisation. This could lead to repercussions for the market as a whole if insurers are forced to pursue similar actions to restore their solvency ratio within a short time frame. Under these circumstances, this

¹⁴ Regulation (EU) No 1286/2014 of the European Parliament and of the Council of 26 November 2014 on key information documents for packaged retail and insurance-based investment products (PRIIPs).



instrument creates flexibility with regard to the timing of the measures to be taken and avoids immediate failures. This flexibility could further reduce procyclical behaviour and adverse effects on financial markets, as it could help prevent fire sales by giving insurers time to adjust to an exceptional adverse situation.

Figure 10
Intervention point for the extension of the recovery period



Uncertainty surrounding the triggering and disclosure requirements could hamper or reduce the impact of the instrument. First, the lack of a clear definition of some aspects of an exceptionally adverse situation (e.g. the definition of a sharp fall in financial markets) may leave insurers facing uncertainty about the possible declaration of such a situation and whether relief will eventually be granted. Clear communication by EIOPA and, possibly, the NSAs, such as the use of public statements during an exceptional adverse situation, could increase the transparency of the instrument and alleviate this concern. Any remaining uncertainty about the (timing of) activation could still lead to procyclical behaviour if insurers wish to reduce their risk profile and do not want to wait for the supervisory decision. This could be even more relevant if a large group of smaller insurers is simultaneously affected by a crisis in which these insurers are unaware of each other's situations. Second, the declaration of an exceptional adverse situation and the need to disclose SCR breaches to the market could create additional pressure from investors and other stakeholders. It may also be anticipated that strengthening insurers' capital is not possible under the adverse market conditions. Third, the seven-year extension of the recovery period is long. To avoid a situation of prolonged under-capitalisation, the (de)activation of the instrument is reviewed regularly and accompanied by the setting-up of a recovery plan to ensure that the SCR can be



restored in due time. This recovery plan could then include elements such as restrictions on dividends and de-risking strategies. Finally, although the declaration of an exceptional adverse situation should take market characteristics into account, the final decision to extend the recovery period should be directed towards individual insurance companies. This allows supervisors to account for the specificities of the different insurers when deciding on the possibility and potential length of an extension of the recovery period. However, from a macroprudential perspective, this implies that the reach and market-wide effect of the instrument cannot be achieved automatically.

2.3.2 Prohibiting/restricting certain types of activities

Conduct regulation (i.e. PRIIPs) enables EIOPA and national competent authorities (NCAs) to prohibit or restrict certain retail insurance-based investment products or types of financial activities/practices, including in the event of financial stability issues. In particular, the regulation provides for a restriction/prohibition of the marketing, distribution or sale of certain insurance-based investment products, including those with certain specified features, or a type of financial activity or practice of (re)insurers. The PRIIPs Regulation is especially relevant for all types of life insurance products that have an investment element. Any restriction/prohibition must address a significant investor protection concern or threat to the orderly functioning/integrity of financial markets or the stability of the financial system (either the EU in the case of EIOPA or the Member State's financial system in the case of other authorities). The Commission has established delegated acts¹⁵ to further specify criteria, such as a "significant investor protection concern" or a "threat to the orderly functioning/integrity of financial markets".

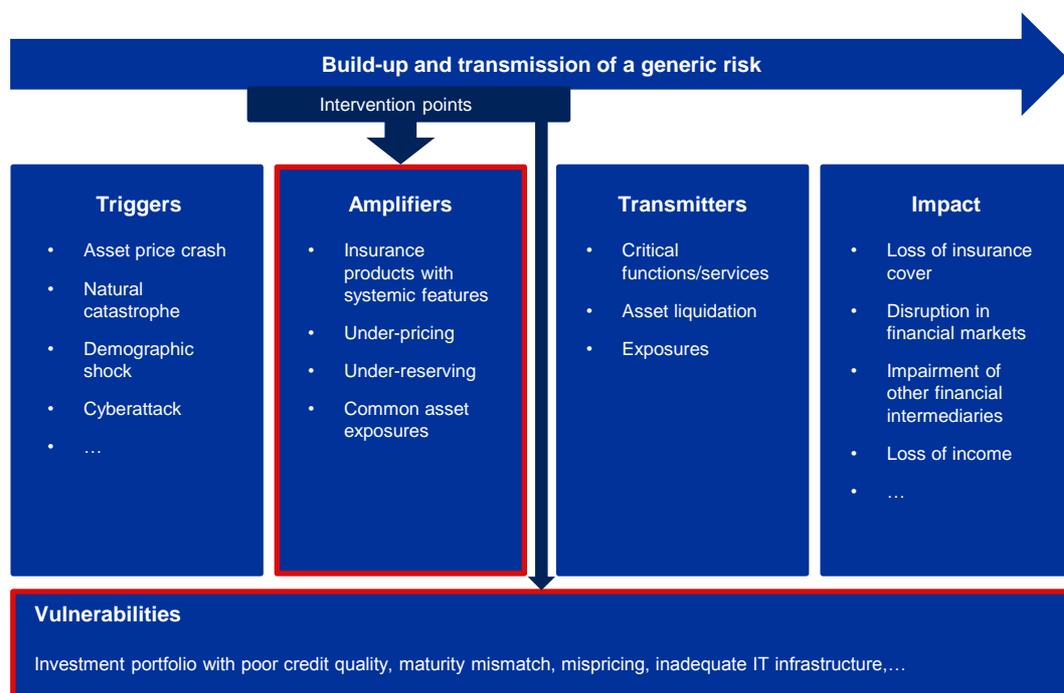
These powers could help prevent any of the key systemic risk types. The risk of a systematic withdrawal of insurance services could be mitigated by restricting the distribution of products that could potentially jeopardise financial stability or consumer rights. For contagion risk, authorities could prevent insurers from building up a large amount of exposures in speculative or dangerous investment activities, thereby dampening the systemic amplifier "common behaviour/exposures". If authorities were to, for example, decide to intervene in the distribution of certain risky life insurance products, they could prevent the sale of insurance products with potential systemic features, which are another systemic amplifier of contagion risk. As these types of intervention can target a certain activity or insurance product, they could immediately apply to all institutions performing such an activity or selling a particular product. This also makes it possible to target sectoral vulnerabilities. The dynamics explained above are illustrated in Figure 11 below.

¹⁵ Commission Delegated Regulation (EU) 2016/1904 of 14 July 2016 supplementing Regulation (EU) No 1286/2014 of the European Parliament and of the Council with regard to product intervention.



Figure 11

Intervention points for prohibiting/restricting certain types of activities



The instrument is subject to strict conditions and cannot necessarily be used to solve problems related to past activities and/or products already sold. Although the instrument has not yet been used for an insurance-related matter, some challenges can already be observed. First, the power conferred by the PRIIPs Regulation is subject to strict conditions. It must be proven that EU regulatory requirements do not (sufficiently) address the targeted issue and that this issue would not be better addressed by improved supervision or enforcement of existing requirements (only in the case of NCAs). EIOPA can only take action if NCAs have not already taken action to address the threat or the actions taken do not adequately address the threat. Additionally, it must be shown that the targeted issue does not have a disproportionate or discriminatory effect (in the case of NCAs) and does not create a risk of regulatory arbitrage (in the case of EIOPA). Furthermore, prohibitions or restrictions issued by EIOPA under the regulation only remain active for three months and are not automatically renewed. These conditions may hamper the (macroprudential) impact of the instrument. Second, prohibiting or restricting certain activities or insurance products can help prevent future problems, but may not always be appropriate for tackling issues related to past activities or products sold before the instrument's activation date. Finally, activating the measure could create contagion to certain markets of financial or insurance products not targeted initially. It could also prompt questions of responsibilities within or between authorities, as consumer protection and financial stability objectives could be conflicting.



2.4 Gaps in current regulation

Current insurance regulation helps prevent or mitigate the key systemic risk types. Current insurance regulation contains several provisions, measures and instruments with a macroprudential impact, which play a useful role in addressing certain systemic amplifiers and sectoral vulnerabilities of the key systemic risk types. An overview of the systemic amplifiers captured by current regulation is given in Table 1 below.

Table 1
Systemic amplifiers captured by current regulation

Provision, measure or instrument	Targeted systemic amplifiers
Symmetric adjustment of the equity capital charge	Procyclicality (induced by regulatory framework), number and pace of failures, equity exposure concentrations
HLA	Failure and under-capitalisation of G-SIIs, common exposures/activities of G-SIIs
LTG measures	Procyclicality (induced by regulatory framework), number and pace of failures
Extension of recovery period	Procyclicality (induced by regulatory framework), number and pace of failures
Prohibition/restriction of certain types of activities	Insurance products with potential systemic features, under-pricing, under-reserving, common exposures

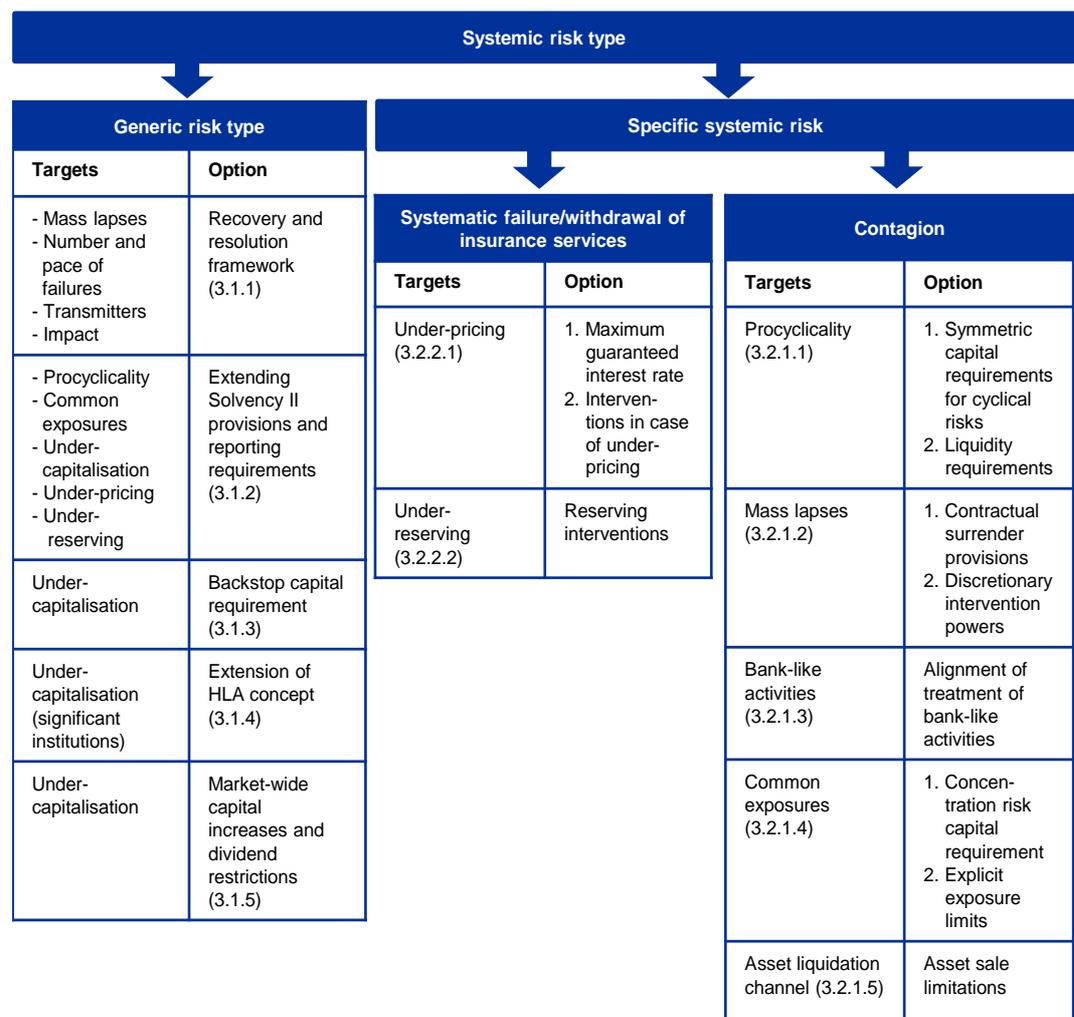
Current insurance regulation was not designed to fully address the key systemic risk types, so a broader macroprudential toolkit is needed to fill the gaps. As current regulation was not specifically designed to address systemic risks, current provisions, measures and instruments naturally lack the completeness and consistency of a macroprudential framework. For example, they may not be sufficient to prevent a collective build-up of risks/exposures, which are significant amplifiers of the key systemic risk types identified. In a similar vein, they may not provide sufficient protection against systemic amplifiers, such as mass lapses and market-wide under-pricing/under-reserving and/or under-capitalisation. Furthermore, they may not apply to all insurers as, for example, is the case for LTG measures which are subject to eligibility criteria. In addition, the qualitative approach of current regulation towards liquidity risk could benefit from the support provided by quantitative requirements. As a consequence, not all crucial elements along the chain of events of the key systemic risk types are covered by current regulation.



3 Options for additional macroprudential provisions, measures and instruments for insurance

This section considers options for additional provisions, measures and instruments to close the gaps in current legislation and describes how they function. The options set out in this section are selected on the basis of their macroprudential relevance and ability to help prevent or mitigate the key systemic risk types in insurance. This section distinguishes between those provisions, measures and instruments targeting all systemic risks and those focusing on one of the key systemic risk types. The goal(s), intervention point(s) and functioning of each of the options are described. Figure 12 gives an overview of the options by systemic risk type and indicates their corresponding subsection.

Figure 12
Overview of options by systemic risk type



Each of the options undergoes a preliminary evaluation according to three main criteria. The evaluation criteria are: (1) effectiveness, (2) efficiency and (3) ease of operationalisation. Both effectiveness and efficiency are evaluated based on the assumption that the provision, measure or instrument is properly applied. The ease of operationalisation then reflects the level of complexity and difficulty related to the operational and calibration challenges of a provision, measure or instrument. The evaluation takes into account the degree to which an option would fill a gap and complement EU legislation. National insurance legislation, which is diverse and may already include options similar to those presented in this section, is not taken into account. As Solvency II has only recently come into effect the data reported do not yet support a comprehensive time series analysis and the evaluation is therefore based on expert judgement. The evaluation takes into account the definitions and considerations set out in Table 2, as well as the usefulness of the options from an EU-wide perspective.

In addition to the evaluation criteria, two other dimensions of the options are highlighted.

These are: (i) cross-sectoral aspects – the degree to which addressing the systemic risks at the level of the insurance sector sufficiently addresses financial stability risks – and (ii) legislative needs – the extent of the legal changes needed to implement an option, including those extending beyond Solvency II, such as business conduct and consumer protection regulation. While these dimensions are important elements to consider when implementing the options, they are beyond the scope of this preliminary evaluation. The assignment of regulatory responsibilities and the reciprocation of measures/instruments are the prerogative of legislators and are not discussed in this report.

Table 2

Criteria for evaluating the additional provisions, measures and instruments

Criteria	Preliminary evaluation	Considerations
Effectiveness	The likelihood that the provision/measure/instrument helps prevent and/or mitigate systemic risk across the insurance sector is: Low – Medium – High	<ul style="list-style-type: none"> - Is the provision/measure/instrument easy to circumvent? - Does it (automatically) apply to all relevant insurance contracts/companies? - Does it allow for a timely response?
Efficiency	Considering the level of costs to achieve the financial stability benefits of the provision/measure/instrument, the efficiency is: Low – Medium – High	<ul style="list-style-type: none"> - What are the costs to stakeholders (e.g. policyholders, shareholders) when the provision/measure/instrument is applied? - How great are these costs in order to achieve the desired financial stability benefits?
Ease of operationalisation	The ease of operationalisation is: Low – Medium – High	<ul style="list-style-type: none"> - Which elements need to be defined in order to set up and apply the provision/measure/instrument and minimise operational hurdles? - What is the level of complexity when defining these elements?



3.1 Provisions, measures and instruments relevant for all types of systemic risk

Certain provisions, measures and instruments help prevent or mitigate all types of systemic risk. The text below considers: the implementation of an harmonised EU-wide recovery and resolution framework (3.1.1), the enhancement of certain Solvency II provisions and reporting requirements to increase their macroprudential relevance (3.1.2), the concept of a backstop capital requirement for insurance (3.1.3), a possible extension of the HLA concept to insurers that are systemically important at a local level (3.1.4) and the power for authorities to set market-wide capital increases and dividend restrictions (3.1.5). Although the options are presented separately in this section, they are not necessarily mutually exclusive, i.e. one could consider combining the extension of the HLA concept (entity-based) with the power to set market-wide capital increases and dividend restrictions (activity-based and/or behaviour-based).

3.1.1 A harmonised EU-wide recovery and resolution framework

The need for a comprehensive and harmonised recovery and resolution (RR) framework to complement micro- and macroprudential policies has recently been stressed by several institutions (FSB, 2016; ESRB, 2017b; EIOPA, 2017a). An RR framework would be an important cornerstone for the prudential regulation of the insurance sector. It aims to provide orderly procedures in cases of failures across the EU and contribute to financial stability. The ESRB (ESRB, 2017b) has advocated the elements listed below for such a framework:

- Existing RR frameworks should be evaluated and, if appropriate, enhanced and harmonised at EU level. Furthermore, efforts should be made to ensure their consistent implementation.
- The existing RR toolkit should be expanded. A majority of ESRB member institutions have taken the view that this should include giving resolution authorities the power to modify the terms of existing contracts as a measure of last resort, subject to adequate safeguards.
- The RR framework should cover the whole insurance sector, while allowing for proportionality.
- The financial stability objectives of the RR framework should be recognised with a majority of ESRB member institutions taking the view that it should be put on an equal footing with the objective of policyholder protection. In addition, the interactions of the resolution authority with the macroprudential authorities should also be clarified.
- Work on RR frameworks should go hand-in-hand with a discussion on how resolution should be funded.

From a macroprudential point of view, an RR framework would help intervene at different points in the chain of events of all types of systemic risk (see Figure 13). It dampens several systemic amplifiers, most significantly mass lapses and the number and pace of failures. It can provide extra time to resolve issues, which avoids assets being quickly liquidated (asset liquidation channel) and ensures continuity of key insurance services (critical services/function channel). It aims at limiting moral hazard and enhances market discipline, dampening, among others,



contagion to other financial market participants. Increased harmonisation of RR frameworks in Europe could also limit systemic risks of cross-border failures and direct contagion. Through resolution funding and/or an insurance guarantee scheme (IGS), an RR framework could also help reduce the loss of policyholder income following the failure of an insurer, thereby dampening the final impact of such an event.

Implementing an RR framework would require changes beyond Solvency II and a consideration of cross-sectoral aspects. For the harmonised parts, specific EU legislation would need to be developed. Additionally, changes to the national administrative laws would be needed for those Member States without an RR framework. An RR framework would be targeted at the (re)insurance sector, thereby taking its specificities into account. However, an alignment of certain RR principles across the different sectoral frameworks would be helpful to, for example, guide the setting-up of RR frameworks for financial conglomerates.

Figure 13
Intervention points for a harmonised EU-wide recovery and resolution framework

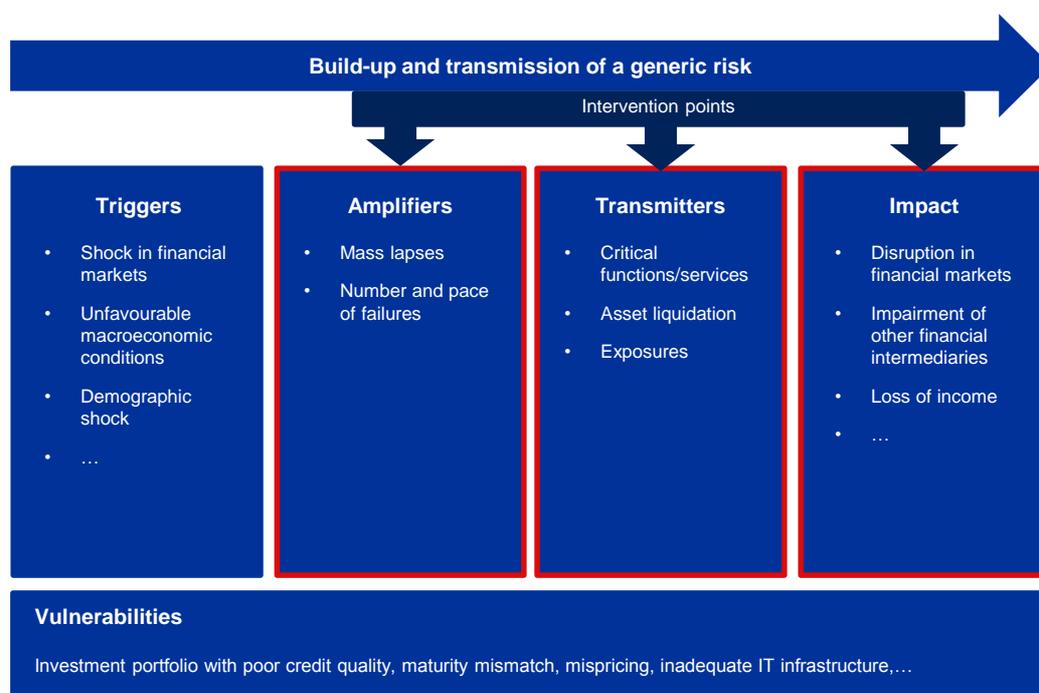


Table 3

Evaluating a harmonised EU-wide recovery and resolution framework (macroprudential impact)

Criteria	Preliminary evaluation	Explanation
Effectiveness	High	An RR framework, although predominantly aimed at individual insurers, can effectively help prevent or mitigate systemic risk at different intervention points.
Efficiency	High	The financial stability benefits of a proportional RR framework providing for, for example, orderly resolution outweigh the administrative burden and additional costs if, for instance, resolution funding and/or an IGS were considered.
Ease of operationalisation	Medium	An RR framework is an independent legal framework that makes interaction between its different components necessary. The links between the EU harmonised and national components of the framework need to be defined.

3.1.2 Extending Solvency II provisions and reporting requirements

The scope of certain qualitative microprudential provisions in Solvency II could be extended to give them more macroprudential relevance. Such extensions would aim to encourage companies to take into account the macroprudential aspects of their decisions/behaviour, while leaving the existing microprudential regulation in place. They could have a direct impact on company characteristics, such as the risk profile, the ALM structure and liquidity profile, thereby decreasing certain vulnerabilities. Such extensions could also target specific systemic amplifiers, such as procyclicality, help prevent a build-up of certain exposures/activities, such as bank-like activities or help reduce the distribution of certain products, such as insurance products with potential systemic features. Examples of such extensions are set out below.

- The prudent person principle could be extended by incentivising insurers to explicitly take into account the behaviour of other market participants, macroprudential risks and market trends when analysing the diversification and liquidity of their own investment portfolios. This would require supervisors to publish information about aggregate exposures and trends and develop guidance, which should be considered by the insurer.
- ORSA and risk management requirements could be expanded to, for example, require the management of insurers to take explicit account of certain macroprudential risks, topics and trends. Insurers could also be encouraged to reflect on the consequences of their own decisions on the market, including when developing contingency strategies in the event that markets were to be characterised by diminished liquidity or reduced availability of hedging. EIOPA (2018c) provides further examples of how ORSA could be extended to cover macroprudential considerations.
- Specific provisions and/or guidance could be developed to enhance liquidity management by insurers, e.g. extending the liquidity risk management plan idea developed by the IAIS or



developing a liquidity stress test. These provisions could be aimed at insurers performing certain liquidity-sensitive activities.

Additional reporting requirements and indicators could be introduced to improve authorities' monitoring of macroprudential developments. Such additional reporting requirements should be proportional and focus on the most relevant insurers. They could target the most material reporting gaps by developing indicators and tools to: (i) monitor liquidity risk, such as liquidity reporting; (ii) help detect under-reserving/under-pricing, e.g. monitoring the actuarial assumptions used, including mortality tables and lapse tables; and (iii) help compare and monitor internal models across insurers, such as developing the reporting of a leverage ratio. Furthermore, ORSA findings could be used to help extract relevant macroprudential information. Enhancing data-sharing requirements between the different authorities could also be considered.

Including a macroprudential perspective or extending reporting requirements could be relevant for all types of systemic risks. Figure 14 below illustrates how several systemic amplifiers and sectoral vulnerabilities could be targeted.

An extension of the current provisions or a development of additional reporting requirements should leverage the knowledge and legislative infrastructure of Solvency II. The existing provisions and requirements that could sensibly be extended to also cover a macroprudential perspective would need to be defined. A proportionate extension of reporting requirements could make use of additional (reporting) requirements that already exist in some Member States or leverage work conducted by EIOPA, e.g. on internal models. These provisions would only be applicable to the insurance sector.



Figure 14

Intervention points for extending Solvency II provisions and reporting requirements

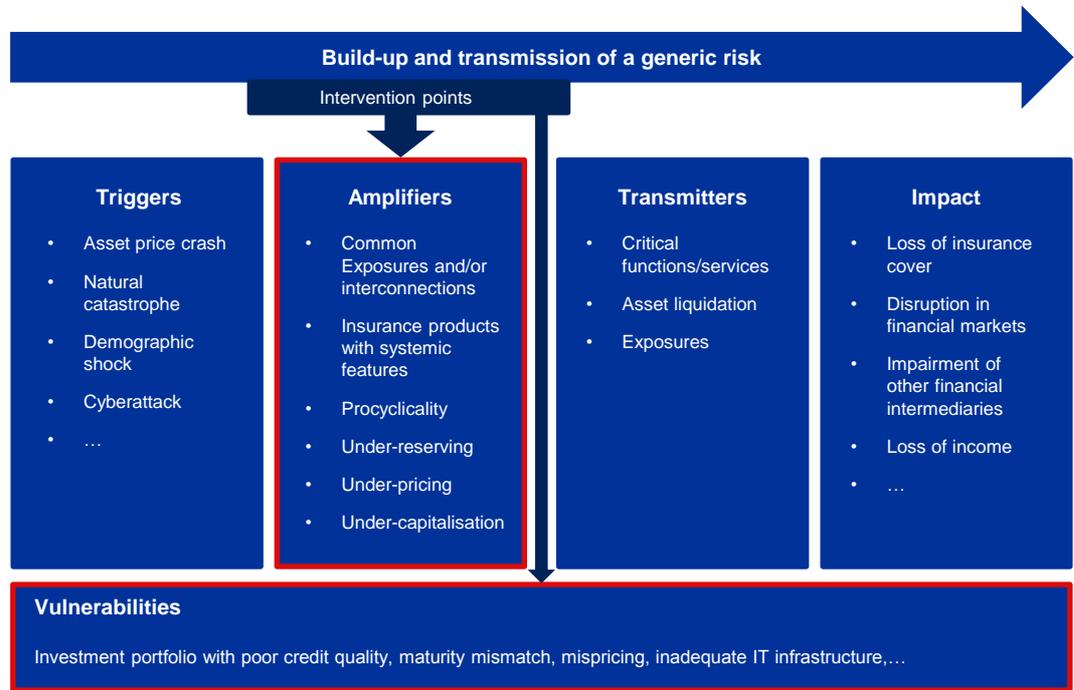


Table 4a

Evaluating the extension of Solvency II provisions

Criteria	Preliminary evaluation	Explanation
Effectiveness	Low	Relies mainly on the self-regulating capacities of individual insurers and/or enforceability by authorities. In certain cases, it assumes insurers would internalise the system-wide impact of their decisions, even if this leads to a sub-optimal outcome from their individual point of view.
Efficiency	Medium	New costs would mainly be generated if insurers were to take decisions that were sub-optimal from their point of view because of macroprudential concerns.
Ease of operationalisation	Medium	Authorities would need to develop guidance and benchmarks when introducing a macroprudential scope into certain provisions, keeping in mind the balance between micro- and macroprudential objectives.

Table 4b

Evaluating the extension of the Solvency II reporting requirements

Criteria	Preliminary evaluation	Explanation
Effectiveness	Medium	Would allow authorities to more easily observe certain (adverse) macroprudential trends and share data. This would serve as a basis for determining the need for further action.
Efficiency	Medium	More information means an extra administrative burden and IT investments for insurers and authorities. Developing the reporting requirements in a proportional way, taking into account the size and risk profile of insurers, could alleviate part of this concern.
Ease of operationalisation	High	Reporting requirements, including definitions and benchmarks, would need to be defined. Once established, it would not require much additional effort from authorities.

3.1.3 Backstop capital requirement

A backstop capital requirement could prevent under-capitalisation at both the micro- and macroprudential levels and help mitigate all types of systemic risk (see Figure 15). Several elements of the Solvency II framework are model-based. This includes the calculation of the best estimate of technical provisions and the calculation of the SCR, whether the standard formula or a (partial) internal model is used. Reliance on models in a Solvency II context is intentional, e.g. a model is needed to determine the market value of the technical provisions for which no active, deep and liquid market exists. The idea of a backstop requirement is to ensure that a minimum level of own funds is determined, independent from the Solvency II SCR calculations. Following the ladder of intervention of Solvency II, this minimum is already fixed at the Value at Risk (VaR) level of 85% by the Minimum Capital Requirement (MCR). In addition, for small insurers, the MCR has an absolute floor designed to ensure an adequate level of own funds. However, this absolute floor has



no impact for most insurers. For them, the MCR is also bound by a corridor of 25% to 45% of the SCR. This means that the MCR may not always provide an independent backstop. Independence from the Solvency II SCR calculations could be achieved in the ways described below.

- A separate requirement could be designed that, for example, calculates the ratio of loss-absorbing items, such as own funds over total assets. The calculation of this ratio would have to take into account insurance characteristics, such as the loss-absorbing capacity of the technical provisions.
- The current MCR calculation could be redesigned to make the calculation of the corridor independent from the SCR calculation.

The minimum level of protection achieved would vary, as the first option should aim for a confidence level similar to that of the SCR (VaR 99.5%), while the second option redesigns the MCR (VaR 85%). In addition to this minimum level, a backstop could, in the event of insurance market developments contributing to systemic risk (see option 3.1.5), also include a macroprudential add-on. A backstop requirement could create wrong incentives and/or procyclical behaviour. For example, minimum requirements solely based on volume measures, such as premiums and/or technical provisions, could incentivise deteriorating underwriting standards. A minimum quality of own funds should be guaranteed for a backstop to work.

The extent to which Solvency II would need to be adapted depends on the option chosen. A backstop capital requirement would be specifically designed for the insurance sector. Should the MCR be redesigned, a backstop requirement could be integrated into Solvency II by amending the existing provisions. Introduction of a new backstop requirement would be more complex, as consideration would need to be given to its interaction with the SCR and MCR of Solvency II.



Figure 15

Intervention point for a backstop capital requirement

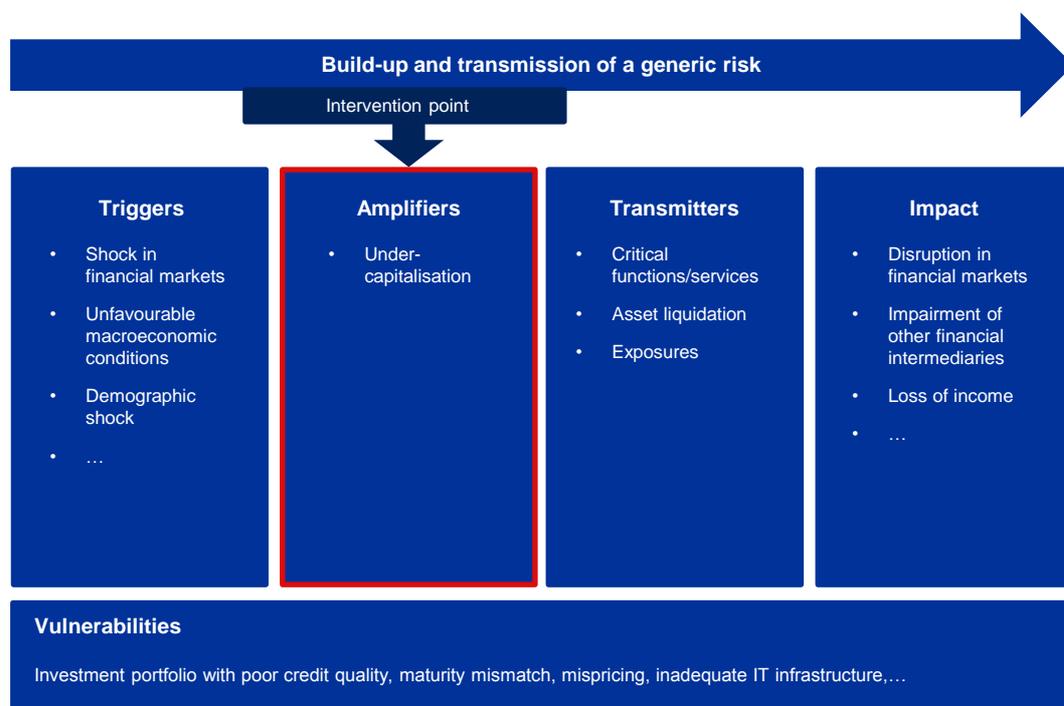


Table 5

Evaluating a backstop capital requirement

Criteria	Preliminary evaluation	Explanation
Effectiveness	Low (redesigning MCR) Medium (new backstop)	A backstop ensures a minimum proportion of own funds at all times. Such a minimum would mainly solve instances of under-capitalisation related to model-based calculations. Its effectiveness depends on the confidence level chosen.
Efficiency	Low (new backstop) Medium (redesigning MCR)	Increasing the resilience through ensuring a minimum proportion of own funds only comes at a cost for those insurers for whom the backstop is a binding requirement, which, in turn, depends on the confidence level chosen. A backstop could create wrong incentives and/or procyclical behaviour.
Ease of operationalisation	Low	It is difficult to reconcile requirements that are independent from Solvency II SCR calculations with the risk-sensitive philosophy of the Solvency II framework, regardless of the option chosen.



3.1.4 Extension of the HLA concept

As highlighted in Section 2, the HLA concept could be extended to cover insurers that are systemically important at a local level. Similar reasoning and concepts to those applying to G-SIIs could be used, while adopting a more local perspective (EU and/or national level).

An extension of the HLA concept could reduce systemic risks related to the behaviour or failure of a designated insurer (see Figure 7). The HLA concept applies an entity-based approach by trying to ensure that targeted insurers are better able to withstand a materialisation of all types of systemic risk. By increasing capital requirements, it reduces the likelihood of a failure of the targeted insurers. It could create an incentive for designated insurers to reduce those activities and exposures or stop selling products that contribute to their (local) systemic nature, as such actions would result in lower capital requirements.

Extending the HLA concept would also require the Solvency II legislation to be extended.

This work could leverage the experience and work currently being conducted by the IAIS. The concept would need to be designed to reflect the specificities of the insurance sector.

Table 6
Evaluating an extension of the HLA concept

Criteria	Preliminary evaluation	Explanation
Effectiveness	High	A capital requirement targeting systemically important institutions could increase their resilience. It could also incentivise these insurers to reduce those exposures, products and activities that increase their systemic relevance.
Efficiency	Medium	The increased resilience of the targeted insurers would mean increased capital requirements. However, this increase should be proportional to the contribution of the targeted insurer to systemic risk. Reducing certain systemic activities, products and/or exposures could create procyclical effects, decrease underwriting capacity or lead to higher premiums.
Ease of operationalisation	Medium	The drivers of an institution's systemic relevance would need to be identified and a capital requirement derived. Work conducted by the IAIS could be leveraged.

3.1.5 Market-wide capital increases and dividend restrictions

Authorities could be given powers to increase capital requirements and restrict dividend payments in the event of insurance market developments contributing to systemic risk. This power applies an activity or behaviour-based approach. As such, it could apply on a market-wide basis or it could target common risk exposures (see option 3.2.1.4), similar activities, specific products or certain behavioural trends. Such capital increases could be useful in any (unforeseen) situation where the entire (or a significant part of the) insurance sector is affected simultaneously and the Solvency II capital requirements would not sufficiently capture the systemic riskiness or particularities of the situation. In addition to such capital increases, authorities could consider temporarily restricting the distribution of dividends (i.e. rule-based dividend restrictions). This could,



for example, help avoid simultaneous de-risking of similar exposures. The capital increases or dividend restrictions would only prevail as long as necessary.

Market-wide capital increases and dividend restrictions aim to strengthen the resilience of the insurance sector. They could help avoid under-capitalisation when the current regulation is unable to capture certain market trends or risks. They could aim to increase the resilience of insurers selling insurance products with potential systemic features, insurers exposed to systemically relevant exposures/counterparties and/or insurers performing systemically relevant activities. They could also, as a secondary objective, incentivise insurers to change their behaviour and stop selling insurance products with potential systemic features and/or reduce the targeted activities/exposures.

Introducing market-wide capital increases and dividend restrictions would require the Solvency II legislation to be extended. Extending the existing capital add-on framework or creating a new framework could be considered. The current capital add-on framework only makes it possible to use add-ons on a case-by-case basis under very specific conditions. As a consequence, the possible scope of application would need to be broadened. Alternatively, a new framework could be created in combination with the possibility of restricting dividends on a market-wide basis. In both cases, only the insurance sector would be targeted.

Figure 16
Intervention point for market-wide capital increases and dividend restrictions

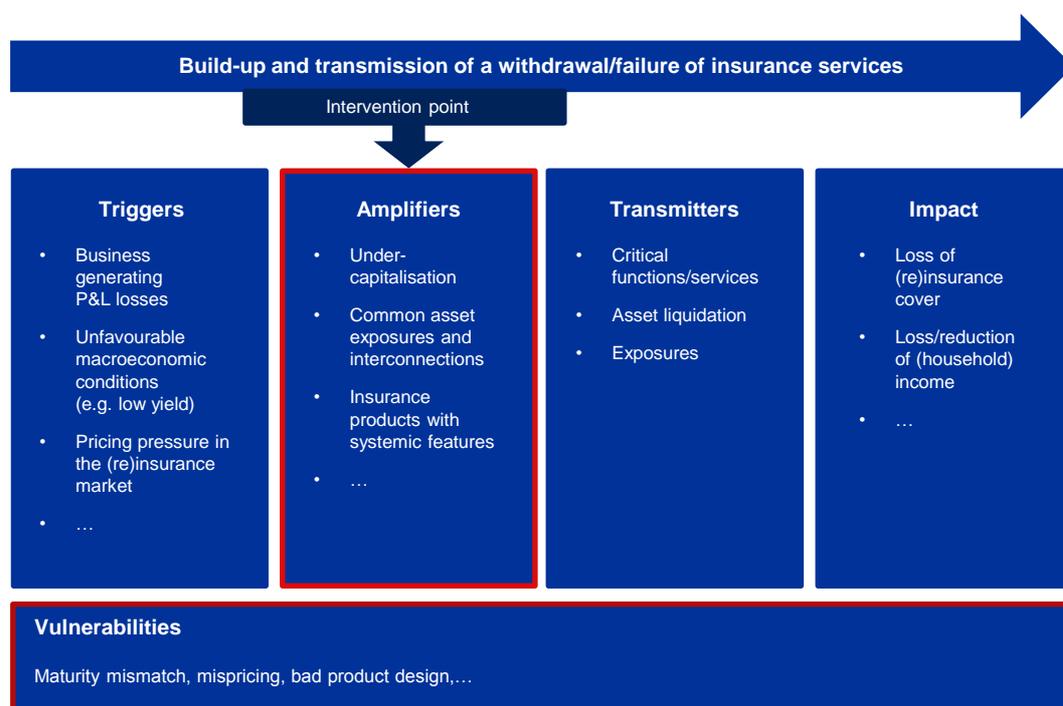


Table 7

Evaluating market-wide capital increases and dividend restrictions

Criteria	Preliminary evaluation	Explanation
Effectiveness	High	Market-wide capital increases enhance the resilience of the sector in specified circumstances. They may be less effective in adapting the behaviour of (well-capitalised) insurers. This could be partly alleviated if dividend restrictions are also applied.
Efficiency	Medium	The increased resilience of the targeted insurers would mean increased capital requirements and/or reduced dividends, which could create procyclical effects. However, the instrument should only be activated if (systemic) risks arise that are not adequately captured by the current framework. Furthermore, it should only prevail as long as the “risky” situation persists. The instrument would not necessarily differentiate between the risk profiles and business models of insurers but could target certain activities, products, exposures or behavioural trends.
Ease of operationalisation	Medium	Authorities should develop rules or use discretion in determining the magnitude of the capital increase or dividend restriction, optimising its effectiveness. If discretion is used, guidance could be developed to avoid inaction bias, know when to (de)activate the instrument and ensure an EU level playing field.

3.2 Provisions, measures and instruments targeting a specific type of systemic risk

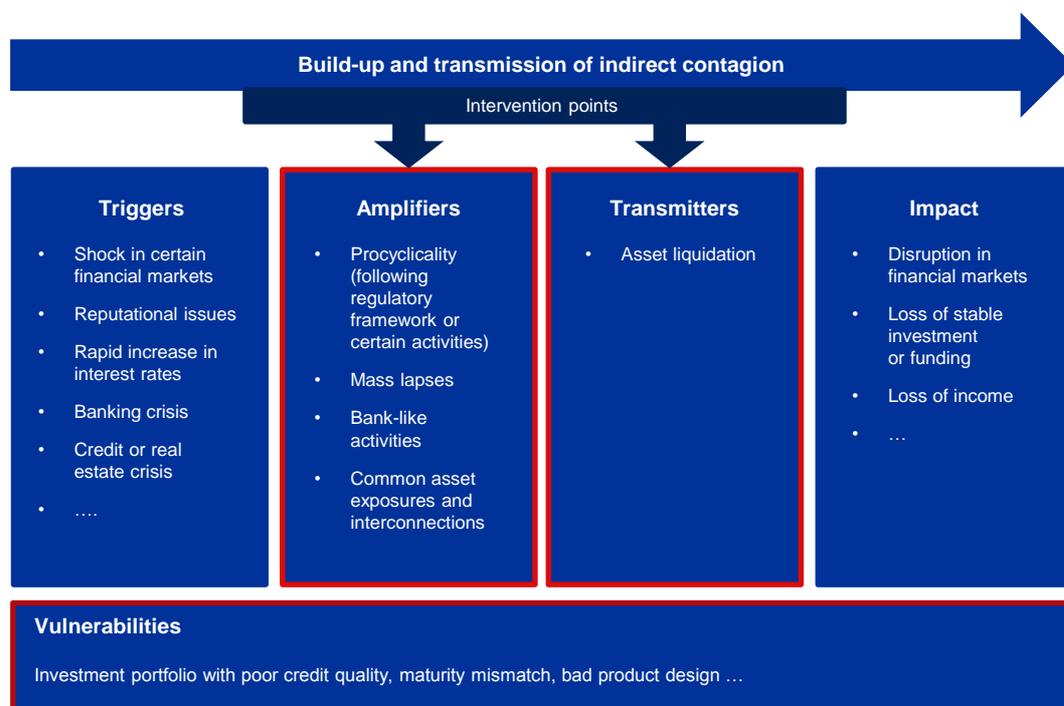
This section investigates options for provisions, measures and instruments targeting a specific type of systemic risk. The first set of options focuses on how to prevent and/or mitigate the risk of both direct and indirect contagion. The second set focuses on preventing and/or mitigating the risk of a systematic withdrawal/failure of insurance services. Although the options are presented separately, they are not necessarily mutually exclusive.

3.2.1 Contagion

The subsections below consider several options for addressing contagion risk (see Figure 17). First, the systemic amplifiers procyclicality (3.2.1.1), mass lapses (3.2.1.2), bank-like activities (3.2.1.3) and common investment exposures (3.2.1.4) are examined. Subsequently, the asset liquidation channel (3.2.1.5), a key transmission channel, is examined.



Figure 17
Dealing with contagion



3.2.1.1 Procyclicality

Option: symmetric capital requirements or a discretionary buffer tool for cyclical risks

Explicit symmetric capital requirements would complement the current symmetric or anticyclical features of the Solvency II standard formula. Symmetric capital requirements typically aim to prevent an excessive build-up of investment exposures or excessive risk-taking in good times and a drastic reduction in exposures or excessive risk aversion in bad times. As such, explicit symmetric capital requirements help dampen procyclical behaviour and indirectly mitigate the build-up of sectoral vulnerabilities. They could first focus on insurers' most significant cyclical risks, i.e. spread risk and interest rate risk. In this case, capital requirements would increase (decrease) if spreads are low (high) and/or the risk-free rate is high (low) compared with a predefined benchmark, such as a long-term average of a spread and/or a risk-free rate index. The concepts used and analysis performed in the calculation of the Solvency II risk-free rate curve, such as the UFR or calibration of the VA, could form a useful basis for deriving such a benchmark. The benchmark could be different for upward or downward shocks to the risk-free rate in order to take into account different types of exposures to interest rate risk (i.e. positive versus negative duration gaps). Symmetric capital requirements should target procyclical behaviour and would introduce further anticyclical features in Solvency II. They could be designed as an automatic mechanism that recalibrates the existing standard formula SCR components, in a similar way to the mechanism created for the SA (see above). Alternatively, they could be designed as a separate buffer tool that, taking into account



market expectations, authorities could (de)activate through the cycle and apply across the insurance sector at their discretion. In the case of a buffer tool, separate legal provisions would need to be created. For spread risk, the calibration of symmetric capital requirements would need to take into account the balance sheet impact of the existing measures: the VA and MA (see Section 2). If the symmetric features of these LTG measures were to change over time, the need for and/or the calibration of the symmetric capital requirements for spread risk would need to be re-evaluated. Symmetric capital requirements could be separately developed at the level of the insurance sector, although some cross-sectoral interactions could be taken into account in the calibration.

Table 8
Evaluating symmetric capital requirements or a discretionary buffer tool for cyclical risks

Criteria	Preliminary evaluation	Explanation
Effectiveness	Medium	Capital requirements increase the resilience but they may be less effective in adapting the behaviour of (well-capitalised) insurers. For spread risk, this behaviour is already affected by the VA and MA. When incorporating the symmetric features in the standard formula SCR, the effect is not necessarily transferred to internal models. Applying a discretionary buffer tool may solve the latter problem, but requires a timely (de)activation to be effective.
Efficiency	High	Although the impact on insurer behaviour is not guaranteed, calibrating, for example, interest and spread risk capital charges symmetrically should not be more expensive on average (as long as the current standard formula is adapted to take this into account).
Ease of operationalisation	Medium (rule-based) Low (buffer tool)	The calibration would require a judgement to be formed on the drivers and long-term trends of the interest rate and spread cycle. For spread risk, interaction with the VA and MA would also need to be assessed. When considering a buffer tool, the development of guided discretion may be necessary to, for example, know when to (de)activate the buffer, to avoid inaction bias and to ensure a level playing field across the EU.

Option: liquidity requirements for insurers

Liquidity requirements aim to ensure that insurers hold an amount of available liquid assets that, in exceptional circumstances, can be used to avoid incurring large losses that would arise from having to sell non-liquid assets at distress prices. The availability of liquid assets could help avoid such fire sales, both in cases of mass lapses and of margin calls following derivatives and/or repo/securities lending activities. Specific reporting requirements for liquidity would improve the monitoring and assessment of liquidity risk for insurers (see 3.1.2). Such reporting requirements could also help design a liquidity stress test for insurers and determine whether a liquidity buffer is needed and how it could be calibrated. Such a buffer could, for instance, be based on the “possible maximum cash flow shortfall” calculated at a certain confidence level for a short-term stress of incoming (e.g. premiums and coupon/maturity payments) and outgoing (e.g. policyholder benefits, costs, commissions and margin calls) cash flows. The calibration of such as shortfall should ensure that a liquidity buffer would only target insurers with a vulnerable liquidity profile. This could include



insurers with high exposure to derivatives/repos and/or highly liquid liabilities resulting from selling, for example, insurance products with potential systemic features. A liquidity buffer could be rule-based or discretionary. Quantitative liquidity requirements would require Solvency II to be extended, as they aim to complement the existing, mainly qualitative, Solvency II requirements (e.g. the prudent person principle). These requirements could be implemented at the level of the (national) insurance sector only, but would need to consider the regulation of other financial sectors to (i) avoid cross-sectoral spillovers if insurers needed to alter their investments or derivatives strategy and (ii) avoid regulatory arbitrage owing to different liquidity regulations across sectors.

Table 9
Evaluating liquidity requirements for insurers

Criteria	Preliminary evaluation	Explanation
Effectiveness	High	The availability of a buffer of assets that are liquid even during times of market stress could make losses for insurers avoidable and prevent contagion to financial markets, which could arise when insurers have to sell off non-liquid assets.
Efficiency	Medium	The availability of a buffer of liquid assets would likely reduce the return of insurers' investment portfolios if they reduced non-liquid investments or altered their derivatives strategy for the sole purpose of meeting this buffer. It could also increase their maturity mismatch and reduce their investment horizon. The measure could also trigger an increase in common (liquid) investment exposures. A buffer that only targets insurers with a vulnerable liquidity profile would partly alleviate such concerns.
Ease of operationalisation	Medium	Liquidity reporting and a liquidity stress test need to be developed. If a quantitative liquidity buffer were considered, a calibration should be designed including the definition of a set of liquid assets. For discretionary instruments, the development of guided discretion may be necessary.

3.2.1.2 Mass lapses

Option: structural integration of contractual time- and/or state-dependent surrender provisions

Certain contractual clauses could deter policyholders from lapsing a life insurance contract following an event of force majeure and/or financial market shocks. Other clauses could give insurers extra time to handle lapses that have already occurred. The aim is to either prevent mass lapses or mitigate their impact. State or time-dependent surrender provisions, or a combination thereof, could be considered. State-dependent surrender provisions could be designed by calculating surrender values as a function of one single variable, such as the number of lapses or the level of interest rates. In Belgium, for instance, during the first eight years of a life insurance contract, the surrender value is adjusted according to the level of the market interest rates. Alternatively, several factors influencing surrender behaviour could be targeted at the same time, e.g. the level of provisions offered to intermediaries in combination with the level of surrender values and the premiums paid. Time-dependent surrender provisions could give insurers an (extra)



grace period between the date on which a policyholder lapses and the date on which the insurer has to repay the policyholder. A combination of time and state-dependent surrender provisions could be set up, so that policyholders requesting instant repayment following a lapse would receive reduced surrender values, while those willing to wait for a longer period would receive the full amount. Taking into account national specificities and institutional characteristics, such time and/or state-dependent contract provisions need not be identical across the EU, although aligning certain contractual elements of how insurers deal with lapses at EU level would amplify any macroprudential impact. To ensure transparency and safeguards for consumers, a set of standard provisions could be defined by authorities. The implementation of these provisions may require the simultaneous adaptation of prudential, consumer protection and fiscal regulation. Introducing such contractual provisions would mean ensuring their gradual implementation in newly sold insurance contracts.

Table 10
Evaluating the structural integration of contractual time- and/or state-dependent surrender provisions

Criteria	Preliminary evaluation	Explanation
Effectiveness	Medium	Although contractual surrender provisions may not counteract all possible reasons for lapsing (e.g. non-rational consumers), they aim to align certain incentives before or at the time the risk materialises. The measure would only apply to new insurance contracts and would take time to become effective.
Efficiency	Medium	Influencing policyholder behaviour to create macroprudential benefits could impact the timing of pay-outs and/or the magnitude of the surrender values for (new) policyholders. Under unfavourable circumstances, they may not receive repayment as promptly and/or repayment may have a lower value (even if the insurer is in a sound liquidity and solvency position). Under favourable circumstances, surrender values could be higher. Costs should be transparent in the contract clauses and in cases of time-dependent provisions mainly borne by first movers.
Ease of operationalisation	Medium	For the calibration of certain types of clauses (surrender value based on interest rates), the experience of regulation existing in certain countries could be applied. For other clauses (varying lead time, a combination of time- and state-dependent clauses), a new approach is needed. Transparency and safeguards for policyholders must be ensured.

Option: discretionary powers to temporarily limit/stop the pay-out of lapses

Authorities could be given the power to slow down lapses, temporarily stop them or momentarily allow only the partial pay-out of surrender values (redemption gates) when many policyholders simultaneously terminate/lapse their insurance contracts ahead of maturity (so-called mass lapses). This power is expected to be used only in exceptional circumstances, e.g. when mass lapses turn into a run on one or several insurers that could threaten financial stability through second-round effects on financial markets. The power (i) could be focused on certain (life insurance) products, such as those with potential systemic features, (ii) could only be triggered in cases of mass lapses



surpassing a certain threshold, (iii) should aim to take away the first mover advantage, and (iv) could take into account the reasons for surrendering the insurance contract (e.g. force majeure or reputational issues). In some jurisdictions, this type of power is already available at individual company level, for example, as part of a RR framework. A temporary (three-month, once-renewable) market-wide lapse limitation was introduced in France through separate legislation (“Sapin 2” Law) at the end of 2016. This experience could be used when considering EU-wide implementation. For a market-wide instrument, both prudential and consumer protection regulation may need to be adapted. This should ensure transparency and safeguards for consumers, consider insurance contract regulation and avoid reputational damage for authorities. The instrument could be targeted at the insurance sector only, but cross-sectoral coordination is warranted, especially where similar powers exist in other sectors such as in the investment fund sector (ESRB, 2017c).

Table 11
Evaluating discretionary powers to temporarily limit/stop the pay-out of lapses

Criteria	Preliminary evaluation	Explanation
Effectiveness	High	Limiting/stopping lapses gives the necessary time to authorities and insurance companies to rectify difficult situations and protect policyholders and financial markets from the consequences of runs. Anticipating the activation of the instrument could create a self-fulfilling prophecy and trigger earlier lapses. The timing of the (de)activation is critical for the success of the instrument.
Efficiency	Medium	Creating financial stability benefits by mitigating the impact of a run implies that policyholders have delayed access to their (full) surrender value. However, this should only happen under exceptional circumstances. Typically, this delayed access should only apply to first movers. When applied to contracts existing prior to the introduction of the instrument, it is seen as more intrusive and legal restrictions may apply.
Ease of operationalisation	Low	The development of guided discretion may be needed to, for example, (de)activate/time the instrument and to avoid inaction bias. Possible reputational issues and communication challenges for the authority exercising the power would need to be managed.

3.2.1.3 Bank-like activities

Option: alignment of the treatment of bank-like activities, such as loans

Where there is a risk of a build-up of macroprudential imbalances at a cross-sectoral level, a different regulatory (macroprudential) treatment may not only lead to regulatory arbitrage but also adverse and unintended effects at a macroprudential level. For example, the different treatment of loans made by banks and insurers could produce such unintended effects. From a macroprudential point of view, this could be solved by applying certain macroprudential (bank) instruments on a cross-sectoral activity basis, such as loan-to-value (LTV) ratios, loan-to-income (LTI) ratios, debt service-to-income (DTSI) ratios, maximum duration of loans and/or by aligning the macroprudential treatment of capital requirements across sectors. This would require insurance legislation to be expanded. Such an expansion should consider the specificities of the insurances sector. For



example, changing the capital requirements of insurers should take into account the existing diversification benefits between the different SCR risk sub-modules. Such an expansion should also be proportional and could include thresholds to reflect materiality and importance of the activity for the insurance sector. Some countries, such as the Netherlands, have already expanded the legislative scope of certain instruments/powers to the insurance sector. This legislative experience could be drawn upon. A cross-sectoral approach and coordination would not only increase the overall effectiveness of macroprudential policy, but also help target vulnerabilities across sectors.

Table 12
Evaluating the alignment of the treatment of certain bank-like activities such as loans

Criteria	Preliminary evaluation	Explanation
Effectiveness	High	Aligning the regulatory treatment of bank-like activities, such as loans, should increase the overall effectiveness of macroprudential policy.
Efficiency	Medium	The benefits of a macroprudential policy that is aligned across sectors imply, in this case, more stringent rules for insurers (higher capital requirements or more constrained investments). Insurers should, however, only be affected when conducting the activity. A proportional approach, where the materiality and importance of the activity is taken into account, could further alleviate this concern.
Ease of operationalisation	Medium	The ease of operationalisation depends on the measures/instruments chosen. The experience gathered from the banking sector could be used. However, efforts are required to adapt certain elements to an insurance context.

3.2.1.4 Common investment exposures

Option: capital requirements for sectoral and regional concentration risk at the level of the individual insurers and the insurance sector

The Solvency II concentration risk capital charge could be further developed from a quantitative perspective. Individual, name-based exposure concentrations are already covered by Solvency II.16 First, the exposure concentration of individual insurers to different sectors and/or regions could be taken into account. As in the current methodology, this would require a capital requirement to be calculated by applying a shock to the regional/sectoral exposures in excess of a predefined threshold. Second, adopting a macroprudential perspective, the exposure concentration of the insurance sector as a whole could be captured. This would require a threshold to be defined at the level of the EU/national sector above which a capital charge would have to be calculated. A capital charge proportional to the contribution of the individual insurers to this threshold could then be

¹⁶ For certain internal models, more sophisticated features may already exist.



determined. The resulting capital charge could be discretionary/temporary (see 3.1.5), rule-based or a combination thereof, e.g. a rule-based layer for the exposures at the level of the individual company combined with an EU/national discretionary layer for exposure concentrations at the market level. Under certain circumstances, asset class-specific capital charges that increase as exposures rise could create similar effects. By sharply increasing concentration risk capital charges when exposures reach a certain threshold, implicit concentration limits could be created. Concentration risk capital charges aim to further incentivise diversification behaviour at the level of the individual insurer and, depending on the type of charge, the sector as a whole. This could dampen the systemic amplifier “common exposures and interconnections” and prevent the build-up of structural sectoral vulnerabilities by tempering the increase of certain exposures and/or linkages with certain counterparties. Integrating a sectoral/regional component into the Solvency II framework necessitates an extension of the regulation, possibly also triggering changes to other standard formula components. Also taking into account the exposure concentrations at the sectoral level would require a more elaborate extension. The capital charge could be targeted at the insurance sector only, but a cross-sectoral follow-up is desirable to monitor regulatory arbitrage or migration of risks between sectors.

Table 13
Evaluating capital requirements for sectoral and regional concentration risk at the level of individual insurers and the insurance sector

Criteria	Preliminary evaluation	Explanation
Effectiveness	Medium	Capital requirements increase resilience but may be less effective in changing the behaviour of (well-capitalised) insurers. Standard formula components are not necessarily transferred to internal model users. Applying a discretionary buffer tool could circumvent the latter problem, but requires a timely (de)activation to be effective.
Efficiency	Medium	The benefit of creating more diversified, less concentrated investment portfolios implies (at least temporarily) increased capital requirements for insurers. It could also lead (less-capitalised) insurers to quickly dispose of certain assets to avoid the extra capital requirements, which could have an impact on certain financial markets. A transitional introduction of the requirements could alleviate part of this concern.
Ease of operationalisation	Medium (for asset-specific capital charges or individual charges for sectors/regions) Low (for sectoral capital charges)	Individual concentration risk charges for sectors and/or regions or asset-specific charges could be developed in a similar way to the existing concentration risk charges. Depending on the alternative chosen, regions and/or sectors would need to be defined. Designing capital charges for the insurance sector would be more difficult by requiring the definition of thresholds for the sector as a whole and the development of a distribution rule for allocating the insurers' capital charge in line with its individual contribution to the exposures of the sector. In case of a discretionary layer, guided discretion may need to be developed, e.g. to avoid inaction bias and to ensure a level playing field across the EU.



Option: explicit limits on investment exposures

The aim would be to define maximum quantitative investment limits for certain insurer investment classes. These limits could be defined by determining a maximum percentage of assets invested in a certain asset type and/or region and could be calibrated either at the EU or national level. National exposure limits would be more appropriate for taking into account the different asset structures of insurers across the EU. EU exposure limits may be more difficult to derive but are better equipped to ensure cross-border consistency. Setting exposure limits and integrating them into Solvency II would be considered contrary to its risk-sensitive philosophy and would trigger a review of certain articles, such as Article 133, on the freedom of assets. The limits could be temporary. Exposure limits could be defined at the level of the insurance sector only, but regulatory arbitrage and the evolution of cross-sectoral exposure concentrations should be monitored in order to avoid contagion.

Table 14
Evaluating explicit limits on investment exposures

Criteria	Preliminary evaluation	Explanation
Effectiveness	High	Exposure limits could have a direct impact on the level of asset holdings of insurers and decrease concentrations.
Efficiency	Low	The benefit of creating more diversified, less concentrated investment portfolios would restrict insurers in their final choice of assets/investments. This could have implications for insurers' overall asset return, matching abilities and funding role. It could also lead insurers to dispose of certain assets in anticipation of reaching the limits. The limits could be temporary, include transitional arrangements and/or take into account different types of business models to alleviate some of these concerns.
Ease of operationalisation	Low	A threshold for different investment classes would need to be determined at the level of the national or EU insurance sector. Reconciling explicit exposure limits with the risk-sensitive philosophy of Solvency II would be difficult.

3.2.1.5 Blocking the asset liquidation transmission channel

Option: discretionary powers to temporarily limit the sale of specific assets

Authorities could be given the power to – in exceptional circumstances – temporarily stop the sale of a specific asset class (and its relevant derivatives) by the insurance sector. This would interrupt the transmission channel and could prevent a fire sale of the asset class. Such powers already exist for individual insurers when, in case of a breach of SCR or technical provision requirements, authorities may prohibit the free disposal of assets to protect policyholders from a distressed insurer. From a macroprudential perspective, the (de)activation of the instrument would need to consider the impact of insurers on the market of the targeted asset class. The nature of the instrument may be considered contrary to Solvency II and would therefore trigger a review of different aspects of the insurance regulation. The idea of limiting the sale of an asset class was introduced in France through separate legislation (“Sapin 2” Law). This legislative experience could



be drawn upon when considering a further implementation. Although the option explained here focuses solely on the insurance sector, triggering such power is useful at a cross-sectoral and, in certain circumstances, supranational level to avoid cross-sectoral leakages and ensure fair treatment and a level playing field across all financial sectors.

Table 15
Evaluating discretionary powers to limit the sale of specific assets

Criteria	Preliminary evaluation	Explanation
Effectiveness	Medium	Preventing the sale of assets blocks the transmission channel and the impact on financial markets. Anticipation of the activation could create a self-fulfilling prophecy or shift the problem to untargeted assets. Timing is critical for the success of the instrument.
Efficiency	Low	Stabilising asset markets would generate (significant) losses for insurers prevented from selling the assets. Losses would be even more pronounced if other market players were not targeted simultaneously.
Ease of operationalisation	Low	The appropriate scope of the instrument (e.g. whether to include derivatives) would need to be defined. Guided discretion and monitoring tools should help avoid inaction bias and describe the circumstances under which the instrument is to be (de)activated. Cross-sectoral coordination is warranted.

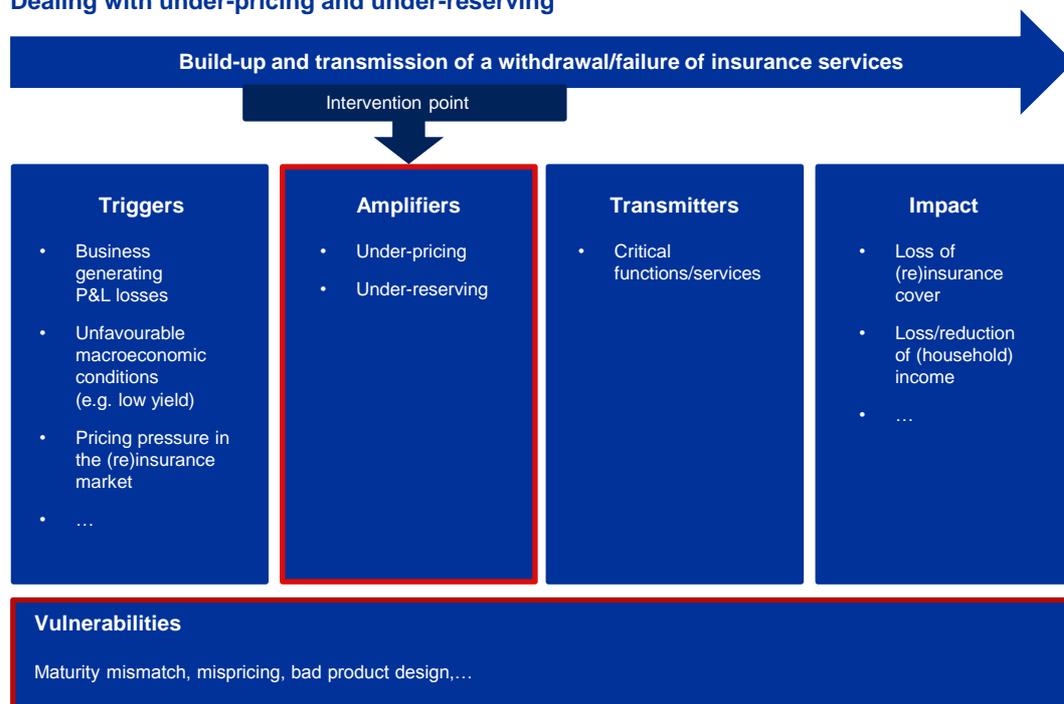
3.2.2 Systematic withdrawal/failure of insurance services

To prevent/mitigate a systematic withdrawal/failure of insurance services, the systemic amplifiers under-pricing (see 3.2.2.1) and under-reserving (see 3.2.2.2) are targeted (see Figure 18). This section focuses on the resilience of the insurance market as a whole, which is only one of the key elements influencing this systemic risk type. As explained in Section 1, this risk is also influenced by access to and the contestability of certain insurance markets, as these factors also determine whether or not a lack of substitutability could arise. Government/supervisory interventions, which may mitigate the impact of this risk, such as a government guarantee on insurance contracts or resolution tools that would allow contracts to be transferred more easily from one company to another or maintain a systemic insurer in operation, are assumed to form part of a RR framework. Additionally, (i) the possibility of the government stepping in to provide certain insurance services, (ii) the power for governments to intervene in the competition policy of a certain insurance market to ensure it does not get overly concentrated and (iii) the creation of an insurance pool for risks that cannot easily be carried by individual insurers (e.g. terrorism or nuclear risks) are not discussed here, as these powers are not within the (sole) remit of the supervisory and/or macroprudential authorities.



Figure 18

Dealing with under-pricing and under-reserving



3.2.2.1 Under-pricing

Option: a maximum interest rate guarantee for life insurance contracts

A maximum guaranteed interest rate could be set for life insurance contracts. This maximum rate could either be defined by the supervisor and/or by means of a formula that, for example, takes into account recent market interest rates and/or the remaining maturity of the contracts. Depending on the local GAAP (generally accepted accounting principles) system, such a maximum guaranteed rate would also apply to the calculation of the premiums or the technical provisions under that system. The aim of defining a maximum guaranteed interest rate would be to prevent insurers from underwriting contracts with unsustainably high interest rate guarantees (at favourable prices) in the hope of gaining market share. It targets under-pricing in this segment of the life insurance business and helps insurers to guarantee the minimum interest rate they have promised. Additionally, such a measure could indirectly help limit the overall interest rate exposure of the insurance sector by reducing reinvestment risk and/or maturity mismatches (if the maximum interest rate fluctuates with the remaining maturity). Higher interest rate guarantees already require higher technical provisions under Solvency II. However, if interest rates were to fall, these technical provisions would rise at precisely the same time, meaning the assets would not necessarily be able to earn the return guaranteed to the policyholders at the initiation of the contract. Therefore, maximum guaranteed rates help limit the impact of such a fall in interest rates. The appropriateness and level of a maximum interest rate may be best agreed at jurisdictional level in order to account for different interest rate levels and legislation across the EU. Several jurisdictions, such as Germany, France,



Austria and Belgium, have experience in using similar measures. The measure would be targeted towards life insurance products only and could therefore adversely affect their competitiveness compared with other savings products.

Table 16
Evaluating a maximum interest rate guarantee for life insurance contracts

Criteria	Preliminary evaluation	Explanation
Effectiveness	Medium	Maximum guaranteed rates only tackle underwriting issues for certain types of life insurance products and would typically not apply retroactively. Insurers would still be able to offer generous profit-sharing based on accounting profits, even when the regulatory balance sheet may give rise to solvency concerns.
Efficiency	Medium	Preventing future underwriting and possible solvency issues could lead to lower interest rates being offered to policyholders. Only unsustainable interest rates should be targeted. A common maximum rate would not differentiate between the risk profiles and business models of insurers.
Ease of operationalisation	Medium	A maximum guaranteed rate could be defined at jurisdictional level by means of a formula, taking account of current/past interest rates and/or by means of a discretionary decision. The interaction between the maximum guaranteed rate, local GAAP and Solvency II calculations may need to be clarified. In case of a discretionary instrument, guidance may be needed to avoid inaction bias.

Option: discretionary intervention powers in cases of market-wide under-pricing

In cases of under-pricing, microprudential supervisors are first and foremost responsible for intervening with regard to individual companies. As an instrument for individual companies, direct intervention powers for life insurance can already be based on Article 209 of the Solvency II Directive, which requires the life insurance premiums of new business to be sufficient to cover all the commitments of the insurer. Similar powers, for all types of insurance contracts, may also typically be used in cases of recovery and/or resolution or when the SCR is (or risks being) breached. Additionally, authorities could be given discretionary powers in cases of market-wide under-pricing. Introducing such a power could be done either directly, by creating the possibility of “pricing” intervention powers with an immediate market-wide impact (e.g. imposing calculation methods or restricting new business if premiums are not sufficient), or indirectly, by introducing the possibility of increasing capital requirements in cases of market-wide under-pricing. These instruments could deter or correct under-pricing and indirectly mitigate the build-up of sectoral vulnerabilities resulting from under-pricing. The extent of the changes to be applied to the regulatory framework would depend on the option chosen. Increasing capital requirements would require more flexibility to be introduced in the current framework (see 3.1.5). In this case, the



framework should be expanded to allow capital levels to be increased following adverse pricing trends. Direct intervention powers would require more far-reaching changes, as Member States cannot require prior approval or systematic notification of premium-setting principles (as set out in Articles 181 and 182 of Solvency II) and competition policies might need to be adapted.¹⁷ Prudential and consumer protection regulation would need to be amended to ensure transparency and safeguards for consumers. Both types of intervention power would also need further development in Solvency II data gathering and indicators to better help authorities detect underpricing within the life and non-life insurance markets at an early stage (see 3.1.2). The powers would be targeted at the insurance sector only, but for insurance products with a savings component there could be leakage to other sectors offering competing savings products.

Table 17
Evaluating discretionary intervention powers in cases of market-wide under-pricing

Criteria	Preliminary evaluation	Explanation
Effectiveness	Medium	Both instruments allow for intervention in cases of under-pricing. Although a capital increase may strengthen the resilience, it may be less effective in affecting the behaviour of (well-capitalised) insurers. For direct price interventions, the impact is more direct but the scope would typically be restricted to new insurance contracts.
Efficiency	Medium (capital increase) Low (direct intervention)	The stabilising benefits of mitigating under-pricing can only be achieved through higher capital requirements for insurers and/or higher premiums for policyholders. The latter is considered more intrusive. Intervention should only occur in cases of under-pricing. The instrument would not differentiate between the risk profiles and business models of insurers.
Ease of operationalisation	Medium (capital increase) Low (direct intervention)	Authorities should use discretion in determining the magnitude of the capital increase or price intervention optimising its effectiveness. Guidance may be needed, e.g. to avoid inaction bias, ensure a level playing field across the EU and know when to (de)activate the instrument. Timely detection of market-wide under-pricing requires certain data and benchmarks to be developed further.

3.2.2.2 Under-reserving

Option: reserving interventions in cases of market-wide under-reserving

In cases of under-reserving, microprudential supervisors are first and foremost responsible for intervening with regard to individual companies. However, when market-wide under-reserving is

¹⁷ For life insurance products, Member States may require systematic communication of the technical bases used to calculate premiums for the purpose of verifying their compliance with national provisions on actuarial principles.



detected, an instrument to deal directly with such issues may be more efficient. Under such (exceptional) circumstances, the instrument could take the form of an intervention setting certain reserving parameters. In Solvency II, this principle is applied for the risk-free discount rate, where the calculation is set by the legislation and the publication is the responsibility of EIOPA. Other reserving parameters may also be set by authorities, such as mortality tables and the minimum level of cost assumptions. When setting these parameters, authorities could try to take product characteristics into account. This type of intervention power does not need to be permanent. The introduction of such a power would require an extension of Solvency II and include the development of data and indicators allowing authorities to better detect market-wide under-reserving at an early stage (see 3.1.2). Such an instrument would target the insurance sector only.

Table 18
Evaluating reserving interventions in cases of market-wide under-reserving

Criteria	Preliminary evaluation	Explanation
Effectiveness	Medium	Reserving interventions would have a direct market-wide impact on the level of the reserves, but they may not solve all instances of under-reserving at the same time.
Efficiency	Medium	The stabilising benefits of mitigating under-reserving can only be achieved through higher technical provisions. However, this should only happen in cases of under-reserving. The instrument would not differentiate between the risk profiles and business models of insurers, but could take into account product characteristics.
Ease of operationalisation	Low	Authorities should use discretion in determining the magnitude of the intervention optimising its effectiveness. Guidance may be needed, e.g. to avoid inaction bias and know when to (de)activate the instrument. Timely detection of market-wide under-reserving requires data and benchmarks to be developed further.



4 Shortlist of additional provisions, measures and instruments

On the basis of the broad set of options analysed in Section 3, a decision rule determines a shortlist of those options the ESRB deems sufficiently promising to warrant further work.

Based on the outcome of the preliminary evaluation, a two-step decision rule helps identify a shortlist of the most promising options. The two steps of the decision rule are: (1) assuming an equal weighting of the criteria, the average evaluation level of an option should be “medium” or above; (2) at least one of the criteria should be scored as “high”. This rule selects those options that have at least average performance across all evaluation criteria while being perceived as highly effective, highly efficient or particularly easy to operationalise. Table 19 shows the outcome of the decision rule applied to the options described in Section 3.

Table 19
Applying the decision rule to the options described in Section 3

Options discussed in Section 3	Step 1: average evaluation level \geq “medium”	Step 2: at least 1 criterion with the evaluation level “high”*
A harmonised EU-wide RR framework	Yes	Yes
Extending Solvency II provisions	No	N/A
Extending Solvency II reporting requirements	Yes	Yes
Backstop capital requirement	Yes	No
Extension of the HLA concept	Yes	Yes
Market-wide capital increases and dividend restrictions	Yes	Yes
Symmetric capital requirements for cyclical risks	Yes	Yes
Liquidity requirements	Yes	Yes
Contractual surrender provisions	Yes	No
Discretionary intervention powers for mass lapses	Yes	Yes
Alignment of bank-like activities	Yes	Yes
Concentration risk capital requirements	Yes	No
Explicit exposure limits	No	N/A
Discretionary power to limit asset sales	No	N/A
Maximum guaranteed interest rate	Yes	No
Discretionary powers in case of underpricing	No	N/A
Reserving interventions	No	N/A

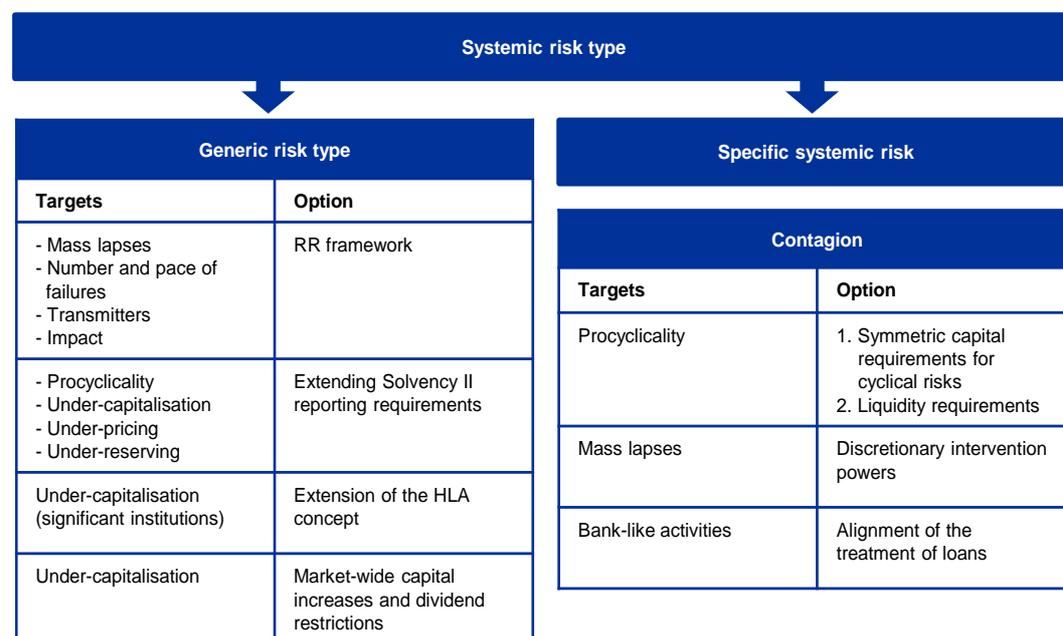
* Step 2 is only applied if the answer to step 1 is ‘yes’



The shortlisted options would address the key systemic risk types by targeting several significant systemic amplifiers, sectoral vulnerabilities and transmission channels.

The shortlisting of certain broad-based powers provides flexibility to also target those systemic amplifiers that may not be targeted by a specific option. For example, the power to impose market-wide capital increases and dividend restrictions could be established so as to have the flexibility to also target specific systemic amplifiers, such as under-pricing and/or common investment exposures. Certain shortlisted options target the same systemic amplifiers but focus on different aspects. For example, liquidity requirements and symmetric capital requirements mainly aim at dampening the consequences of procyclical behaviour. However, both options capture different aspects of this amplifier, i.e. preventing a fire sale of (non-liquid) assets by ensuring sufficient liquidity versus providing incentives for anticyclical behaviour by adjusting capital requirements. As under-capitalisation following systemic risks could be targeted through an entity-based and/or activity/behaviour-based approach, the options of extending the HLA concept and the power to impose market-wide capital increases and dividend restrictions are grouped under a broader heading. With the exception of the symmetric capital requirements for cyclical risks, which partly interact with measures already available in current regulation, in particular the VA and MA, the shortlisted options address macroprudential aspects not captured by the current regulation. Figure 19 is an adaptation of Figure 12 that focuses only on the shortlisted options.

Figure 19
Overview of shortlisted options by systemic risk type



Conclusions

Two key systemic risk types for insurance emerge from analysing different chains of events.

The conceptual framework developed in this report shows what could go wrong for a chain of events to create a systemic impact. Two key systemic risk types for insurance emerge from analysing the commonalities within such chains of events: systematic withdrawal/failure of insurance services and of direct and/or indirect contagion. Macroprudential policy can help prevent and/or mitigate these types of risk by intervening at different points along the chains of events.

Current insurance regulation helps prevent or mitigate the key systemic risk types, but identified gaps call for a broader macroprudential toolkit.

Current regulation helps policymakers prevent or mitigate the key systemic risk types through a set of microprudential provisions, measures available to insurers and instruments that are at the discretion of the supervisor. These provisions, measures and instruments play a useful role in addressing certain systemic amplifiers and sectoral vulnerabilities of the key systemic risk types (see Table 1). As current regulation was not specifically designed to address systemic risks, current provisions, measures and instruments naturally lack the completeness and consistency of a macroprudential framework. For example, they may not be sufficient to prevent a collective build-up of risks/exposures, which are significant amplifiers of the key systemic risk types. In a similar vein, they may not provide sufficient protection against systemic amplifiers, such as lapses and market-wide under-pricing/under-reserving and/or under-capitalisation. They may not apply to all insurers as, for example, is the case for LTG measures that are subject to eligibility criteria. In addition, the qualitative approach of current regulation towards liquidity risk could benefit from the support provided by quantitative requirements.

This report identifies a shortlist of additional provisions, measures and instruments that the ESRB deems sufficiently promising for a broader macroprudential toolkit.

In order to fill the gaps of the current regulation, a broad set of additional provisions, measures and instruments were identified and analysed. These options were selected on the basis of their macroprudential relevance and ability to help prevent and/or mitigate the key systemic risk types for insurance. The options underwent a preliminary evaluation according to three main criteria (1) effectiveness, (2) efficiency and (3) ease of operationalisation. This evaluation, which was based on expert judgement, considers the usefulness of the options from an EU-wide perspective. In addition to the evaluation criteria, two other dimensions were highlighted. These are: (i) cross-sectoral aspects – the degree to which addressing the systemic risks at the level of the insurance sector sufficiently addresses financial stability risks – and (ii) legislative needs – the extent of the legal changes needed to implement an option, including those extending beyond Solvency II, such as business conduct and consumer protection regulation. The shortlist is the result of the three evaluation criteria and a decision rule requiring that an option scores at least ‘medium’ across the evaluation criteria and ‘high’ on at least one of the three criteria.

The shortlisted options (shown in table 20) would form part of a comprehensive regulatory framework.

As part of microprudential regulation, authorities first need to make sure sufficient data are available to monitor systemically relevant developments. This requires a proportionate extension of the current reporting requirements, taking into account the size and risk profile of



insurers. Such an extension should focus on areas not adequately captured in current regulation, such as liquidity risk. In addition, an enhancement of certain existing reporting requirements could help to better detect cases of market-wide under-pricing/under-reserving and to strengthen the framework for comparing internal models. The shortlisted options also confirm the financial stability benefits of a harmonised EU-wide RR framework that provides legal certainty in case an insurer runs into difficulties and that ensures any failure is orderly (ESRB, 2017b; EIOPA, 2017a). Third, as part of a macroprudential toolkit to target systemic risks, the shortlisted options also include the possibility for (i) a power for authorities to impose entity-based (like HLA) and/or activity/behaviour-based market-wide capital increases and dividend restrictions in situations when insurance market developments could generate systemic risk, (ii) symmetric capital requirements for cyclical risks that help dampen procyclical behaviour during downturns and indirectly mitigate the build-up of sectoral vulnerabilities during upturns, (iii) liquidity requirements for insurers with a vulnerable liquidity profile, (iv) a discretionary power for authorities to intervene in exceptional circumstances such as mass lapses and protect policyholders and financial markets from the consequences of a run on one or more insurers, and (v) instruments to target bank-like activities to ensure cross-sectoral consistency of macroprudential policy. With the exception of the symmetric capital requirements for cyclical risks, which partly interact with measures already present in Solvency II, in particular the VA and the MA, the shortlisted options address the macroprudential aspects not captured by the current EU regulation.

Table 20

The shortlisted options of a broader macroprudential toolkit for insurance

Shortlisted option	Macroprudential objective	Targeted intervention points	Rule-based and/or discretionary?
Microprudential Regulation			
Extension of Solvency II reporting requirements	Enhance risk measurement	Procyclicality, common exposures, under-capitalisation, under-pricing, under-reserving	Rule-based
Recovery and Resolution Framework			
Harmonised EU-wide RR framework	Reduce procyclical behaviour, strengthen crisis prevention	Mass lapses, number and pace of failures, transmitters, impact	Expected to include both elements
Macroprudential Toolkit			
Alignment of treatment of bank-like activities, such as loans	Enhance resilience, reduce procyclical behaviour	Bank-like activities such as loans	Both to be considered
Market-wide capital increases and dividend restrictions (entity-based like HLA, activity-based or behaviour-based)	Enhance resilience	Under-capitalisation, exposures/activities contributing to systemic risk	Both to be considered
Symmetric capital requirements for cyclical risks	Enhance resilience, reduce procyclical behaviour	Procyclicality, common exposures	Both to be considered
Liquidity requirements for insurers	Enhance resilience	Liquidity, procyclicality	Both to be considered
Discretionary intervention power in cases of mass lapses	Reduce systemic impact	Mass lapses	Discretionary



Further work is needed to analyse the shortlisted options in more detail. Future work could result in a reassessment of the shortlisted options. Such work should be mindful of international developments and evolutions in current regulation. For example, a further investigation into how to develop entity and/or activity/behaviour-based capital increases could take advantage of the work conducted by the IAIS. In a similar vein, if certain features of the LTG measures were to change in order to better prevent a build-up of exposures in good times, it may not be necessary to design separate symmetric capital requirements for spread risk. The interaction of different shortlisted options can inform future work. For example, more structured reporting would allow for improved monitoring of liquidity risk for insurers, which could inform the design of liquidity stress tests for insurers and help decide whether a buffer is needed and, if so, how to calibrate it. Moreover, future work could consider the pros and cons of a rule-based design versus a discretionary design of certain options. Where a discretionary design is preferred or needed, guided discretion may need to be developed to overcome inaction bias and ensure predictability of policy. For example, the discretionary power in cases of mass lapses could benefit from stipulating the type of exceptional circumstances under which such power would be exercised. Proportionality, including for any additional reporting requirements, and the determination of the appropriate level of thresholds triggering the use of certain provisions, measures or instruments, are also areas for future work. For instance, a liquidity buffer should only apply to insurers with a vulnerable liquidity profile. Similarly, the scope of macroprudential instruments applied to activities in other sectors would only need to be extended to the insurance sector if the policy effectiveness of instruments were otherwise meaningfully reduced.

One of the key elements for future work is the determination of the appropriate level of legislation. Options were shortlisted based on their usefulness at an EU-wide level. The possible implementation of these options at the level of the EU would provide all authorities with the means and flexibility to address a wide range of systemic risks. However, as national insurance markets differ, some provisions, measures or instruments would be more effective and/or efficient in certain jurisdictions than others. These national specificities were not considered in the shortlist in Table 20. As a consequence, the detailed modalities of certain shortlisted options, such as the discretionary power to intervene in cases of mass lapses, may differ between national markets. Additionally, certain options not included in the shortlist, such as a maximum guaranteed interest rate for life insurance or contractual surrender provisions to counteract lapses, may, depending on the characteristics of the national insurance market, still prove to be useful for certain jurisdictions.

This report informs the ongoing discussions and review on Solvency II. This report complements work undertaken by EIOPA and reaches broadly similar conclusions. As the possible implementation of any of the shortlisted provisions, measures and instruments would require legislative changes, it would typically be accompanied by an impact assessment. This could be complemented by further analysis of items such as the impact of cross-sectoral aspects, the assignment of regulatory responsibilities (including clarifying modalities for reciprocity), the extent of the legal changes needed to implement certain provisions, measures or instruments, and the development of appropriate communication channels.



Annex

Cross-sectoral aspects, interconnectedness and exposures of the insurance sector

This annex considers the interactions and interconnections of the insurance sector with other parts of the financial system and how they could create systemic risk.

1. Interconnectedness between insurers and other financial institutions

As part of an integrated global financial system, insurers' direct and indirect connections can provide channels for the transmission of risk. Interconnections are a normal feature of an integrated global financial system and can contribute to risks residing in places that are best equipped to absorb them. Interconnections, both direct, e.g. through credit exposures between institutions, and indirect, e.g. through common or correlated asset holdings, can, however, also lead to the transmission or amplification of risk. This process is commonly referred to as direct or indirect contagion (Clerc et al., 2016). Work by the International Monetary Fund (IMF, 2016) shows that, within Europe and North America, these interconnections are strongest between insurers and banks and asset managers. Across regions, interconnections are strongest between Europe and North America. This work also shows that, while before the global financial crisis insurers were predominantly affected by spillovers from other sectors, their contribution to systemic risk (in particular for life insurers) has increased.

Analysis of insurers' direct exposures to other insurers and other financial institutions shows low interconnectedness in aggregate but indicates that some insurers play a central role. The network of the largest 29 EU insurance groups shows low interconnectedness with banks and other financial institutions, and the network density is low, suggesting that direct contagion through credit and funding channels is unlikely (Alves et al., 2015). However, the analysis highlights the importance of a number of insurance groups that have higher levels of connectivity and proximity to credit events within the network, as well as the importance for financial flows. EIOPA (2018b) illustrates how insurers' investment exposures to banks are substantial in certain countries.

Some insurers are directly interconnected with other financial sectors since they are part of financial conglomerates. There were 84 financial conglomerates in Europe in 2017, up from 75 in 2009 (Joint Committee of the European Supervisory Authorities, 2017). Insurer-led conglomerates are the second most common type of conglomerate after bank-led conglomerates. Bank-led conglomerates often comprise an insurance entity following the traditional bancassurance model. Insurers are also part of conglomerates led by asset managers or pension funds, which have gained prominence over the last decade. The largest financial conglomerates, most of them with an insurance entity, belong to the biggest financial groups in Europe: ten of the 13 EU G-SIBs and three out of five EU G-SIIs are financial conglomerates.

Financial conglomerates are subject to a risk of contagion spreading from one part of the conglomerate to the others. Conglomerates have certain benefits, such as the ability to exploit operational synergies and to reinforce commercial capacities by cross-selling different types of financial products. This comes, however, with additional costs in terms of interdependencies and,



therefore, a higher risk of contagion between the group entities. The intensity of the interconnections within a conglomerate depends on what strategy the conglomerate employs to combine activities in different sectors. There could be financial (e.g. intragroup transactions), operational (e.g. shared support systems and services, such as IT) and commercial (e.g. shared product distribution channels) links. For example, in conglomerates that are bank-led (such as in France), an empirical study using data on the exposures of French financial conglomerates shows that the insurance part is exposed to the banking part of the conglomerate, but not the other way around (Hauton and Héam, 2014). The near failures of the ING Group (bank-led), Aegon Group (insurance-led) and SNS Reaal (symmetric financial conglomerate) based in the Netherlands (IAIS, 2011) are other examples of the potential systemic effects of the near failure of a troubled conglomerate where contagion spreads through the different parts of the financial conglomerate.

Financial conglomerates or complex financial groups may also create incentive problems that may spill over into other parts of the group and the rest of the financial system. This may be the case when different activities have different risk profiles but share the same capital base or if the capital raised by a less risky part is used to back the activities of the riskier parts of the same group or conglomerate (OECD, 2009). The near failure of the American International Group (AIG), an insurance-led conglomerate based in the United States, is the most prominent example of an insurance-led conglomerate that failed owing to its non-core insurance activities, i.e. liquidity issues were generated through its credit default swap (CDS) and collateralised debt obligation activities. Without US government assistance, which totalled a net subsidy cost of USD 15 billion (United States Congressional Budget Office, 2017), AIG insurance subsidiaries would have become insolvent and counterparties in CDS and other securities transactions would have borne significant losses.

Interconnectedness within a financial conglomerate may also propagate systemic crises or shocks in the financial system. An event such as a run on an insurer (i.e. mass lapses) may be transmitted to the banking part of the conglomerate or vice versa, especially if the respective insurance or banking part is material in terms of size.

The degree of interconnectedness is one of the key elements in the global assessment of the systemic importance of insurers. The global financial crisis highlighted the consequences of the close interconnectedness of the financial sector. Consequently, the Financial Stability Board (FSB) placed high importance on the degree of interconnectedness in its global systemically important financial institution (G-SIFI) framework. For example, in the IAIS's assessment methodology for G-SIFIs, the interconnectedness category has a weight of almost 50% (IAIS, 2016b).

There are different ways to measure interconnectedness. Common types of analysis used in the literature include investigations into the network structure (core-periphery, such as Alves et al., 2015), the impact of the insurance sector on the reinsurance sector (Cummins and Weiss, 2014) and the relationships between publicly traded equity returns (Stringa and Monks, 2007). A study released by the French Prudential Supervision and Resolution Authority (Autorité de Contrôle Prudenciel et de Résolution) reviews several strategies to measure interconnectedness (Hauton and Héam, 2014). The study, which uses a unique cross-sectoral network database covering the financial exposures of a sample of 21 French financial institutions, proposes a contagion model as



the most relevant tool for supervisory purposes, while acknowledging that no single measure can summarise all aspects of interconnectedness.

A separate channel of interconnectedness, typical of the insurance sector, is reinsurance.

Reinsurance provides economic benefits and contributes to financial stability by taking on risks that primary insurers do not want to, or cannot, assume. As such, reinsurance is often considered an important risk management technique for insurers. Reinsurance activities create links between primary insurers and reinsurers and between reinsurers and other reinsurers (known as retrocession). On the one hand, these activities help distribute risk across a broader set of institutions, therefore making it more manageable (the “atomisation of risk”). On the other hand, reinsurance is a global business with a limited number of large reinsurers dominating the market. The large size of these reinsurers may, in this case, allow for more diversification (across lines of business and geographical locations, etc.) but makes the market vulnerable to the possible failure of these companies. The ESRB has detailed the different systemic sources that could be created through reinsurance (ESRB, 2015a).

2. Interconnectedness through financial markets

Insurers are linked with the rest of the financial system through their investment activities.

Insurers hold large amounts of debt securities and shares issued by banks and other financial institutions in the EU. At the end of 2017, exposures of insurers to the banking sector represented around 16% of total investments. In 13 Member States, this proportion was above 20% (EIOPA, 2018b). Insurers may contribute to systemic risk through their exposure to the banking sector, including through equity and debt holdings. A banking crisis could, through the behaviour and exposures of insurance companies, e.g. selling their banking exposures, have a further impact on banks’ equity and security values, thereby leading to a further deterioration of bank funding conditions.

In addition, insurers’ exposures to the rest of the financial sector have increased because of their growing participation in capital markets and increased non-core activities (ESRB 2015a). Insurers are exposed to other financial market participants through CDSs and securities lending, which caused major spillovers during the financial crisis (see, for example, Cummins and Weis, 2014; Dungey et al., 2014; Peirce, 2014). They are also exposed through derivatives trades, in particular those in interest rate derivatives (Fiedor et al., 2017; Abad et al., 2016). Moreover, insurers engage in capital markets for risk diversification via credit-linked securities (Baluch et al., 2011). In some cases, these linkages are attributable to the “non-core” or “bank-like” activities of insurers, such as the provision of credit guarantees, asset lending, issuing CDSs, investing in complex structured securities and excessive reliance on short-term sources of financing (Cummins



and Weiss, 2014).¹⁸ In other cases, these derivatives are part of the hedging strategy of the insurance company.

Investment exposures and interconnections make insurers vulnerable to shocks stemming from other financial sectors. Exposures from investment, non-core activities and linkages within financial conglomerates are exposures through which systemic risk may propagate from other parts of the financial system to the insurance sector. The recent global financial crisis was primarily a banking crisis in which the insurance sector was mainly affected through its direct and indirect connections with the banking industry. Nonetheless, the insurance sector recorded write-downs and credit losses of USD 261 billion worldwide (compared with USD 1,230 billion in the banking sector), while for insurers in Europe and the United States the corresponding figures were USD 69 billion and USD 189 billion, respectively (OECD, 2011). In January 2010, four major insurance groups (AIG, ING Group, Ambac Financial Group and Aegon Group) accounted for 54% of all write-downs worldwide (OECD, 2011). In particular, life insurance companies in the United States suffered under the pressure of market valuation on their investment portfolios, coupled with the increased difficulty in hedging their equity-based contracts with guaranteed returns (OECD, 2009). Insurance companies offering financial guarantees also came under rating pressures. Large insurance-dominated financial groups were directly affected through their interconnections with the banking sector or other parts of their group that were engaged in investment-bank-like activities (such as AIG) (OECD, 2009). Non-life insurers were affected by a fall in demand for their products, caused by a general reduction in risk appetite at a societal level, with persistent post-crisis output effects (Kamiya et al., 2014).

Exposures to the rest of the financial sector through securities lending and derivatives trading may also cause insurers to be transmitters of systemic risk. In a similar way to the case of their exposure to the banking sector, insurers may contribute, through equity and securities, to creating systemic risk by reacting to shocks in derivatives and repo markets, especially when large insurers react to such shocks or there are a high number of failures in the insurance sector.

Insurers are exposed to real estate markets through their issuance of mortgage and fire insurance. Consequently, a collapse of the housing market, such as during the recent global financial crisis, may have a direct impact on the insurance sector, in particular on private mortgage insurers and home insurers. For example, mortgage insurers in the United States¹⁹ had the highest direct exposure of the insurance sector to mortgage credit risk and were the institutions most rapidly hit at the onset of the crisis (OECD, 2009). As the financial crisis unravelled, share prices of independent mortgage insurance companies, as well as those of insurance companies that had significant mortgage insurance subsidiaries, plummeted (OECD, 2009). Furthermore, it is estimated

¹⁸ In addition, as a result of increased exposure to man-made catastrophes (such as terrorist attacks) and through the concentration of insurance risks in danger zones, insurers have turned more frequently to capital markets and alternative risk transfer (ART) mechanisms to mitigate the impact of catastrophes on their balance sheets (IMF, 2016). This has increased their links with the rest of the financial sector, including banks, which act as counterparties to such ART investments. However, the amount of such transactions is very low.

¹⁹ The core business of mortgage insurance companies in the United States consists of guaranteeing the value of either individual mortgage loans or a portfolio of mortgages to other financial services companies.



that the crash in the US housing market cost home insurers about USD 1 billion annually in lost gross premiums because of the decline in new home construction (Hartwig, 2008).

Insurers are also exposed to the real estate sector through direct lending, as well as through their direct and indirect real estate investments.

Despite remaining at low levels, lending has become more attractive for insurers compared with other forms of investment, owing to the low-yield environment (ECB, 2017b; DNB, 2016). In some countries, insurers have begun to challenge the traditional role of banks by providing direct lending, especially mortgages (ECB, 2017b). In particular, mortgage lending by insurance companies and pension funds in the Netherlands has reached 28% of total annual new mortgage loans and appears to be growing, albeit slowly (ECB, 2017b).²⁰ Insurers and pension and investment funds accounted for almost 6% of domestic household lending in the euro area at the end of the third quarter of 2016 and their share was highest in the Netherlands (17%), Austria (13%) and Belgium (11%) (ECB, 2017b). This provision of direct lending to the non-financial sector by insurers may also add to the contribution of the insurance sector to systemic risks. Direct lending exposes insurers to credit risk, which may be problematic if insurers are ill-equipped to properly manage, price and mitigate it (ECB, 2017b). In a credit crisis, insurers may therefore contribute to credit contraction in the real economy, particularly in the case of procyclical behaviour and if there is a high degree of common lending exposures. Insurers' investments in real estate are typically low, with total real estate exposures of the EU insurance sector accounting for around 7% of its total assets (EIOPA, 2017c). Price volatility in real estate markets could adversely impact insurers if it occurs in combination with other systemic triggers. For example, the combination of a protracted period of low interest rates and higher volatility in credit spreads and stock and real estate returns can be harmful for life insurers (ECB, 2015). In the event of a real estate crisis, insurers may contribute to systemic risk by selling off their real estate exposures, further disrupting the real estate market. This may be particularly relevant in the presence of pronounced procyclical investment behaviour or a high degree of common exposures. In the EU, the costs in terms of the financial sector of the most recent real estate crises of the 1990s and 2008 are difficult to estimate, but are considered substantial. For example, the two largest insurance companies in Denmark ceased to exist as independent companies in the early 1990s owing to the losses they suffered on their non-insurance-related loan-financed investment and real estate activities (ESRB, 2015b).

3. Insurers' direct links to the real economy

Insurers offer direct services to the real economy through the provision of insurance protection.

Being unable to obtain insurance cover at a reasonable price, for example, because certain functions of insurance are disrupted could make it impossible for certain industries, such as the airline industry or marine transport industry, to operate. The consequences of such a disruption were illustrated by the cases of HIH and UMP in Australia and the temporary unavailability of certain insurance products following the 2001 terrorist attack on the World Trade Center. It has also

²⁰ At the end of 2015, the total mortgage loan portfolio of Dutch insurers was EUR 46 billion, more than double the amount recorded before the crisis (DNB, 2016).



been observed that insurers have collectively withdrawn from covering risks that are considered to have become uninsurable (Chartered Insurance Institute, 2009), thereby reducing or eliminating the insurance cover for specific sets of activities, assets or customers and impairing the provision of insurance services (Bank of England, 2016).

Climate change may be a relevant source of systemic risk, since it may result in under-pricing and a disruption of the provision of services by insurers to the real economy.

The FSB (FSB-TCFD, 2016) and De Nederlandsche Bank (DNB, 2017) distinguish between risks related to the physical impact of climate change (“physical risks”) and risks related to the transition to a lower-carbon economy (“transition risks”). In addition, the Bank of England considers risks arising from parties that have suffered loss or damage and seek to recover losses from other parties who they believe may have been responsible (“liability risks”) (Bank of England, 2015). While the increased occurrence of extreme natural events could be incorporated by insurers into their business plans and underwriting models, high-magnitude natural catastrophes occurring with increased frequency may uncover under-pricing and lead to large and concentrated insured losses. This could lead to the distress or failure of insurers, such as in the case of Hurricane Andrew in 1992, which resulted in the insolvency of several (small and locally active) insurers (Batten et al., 2016). If the occurrence of natural catastrophes of a high magnitude were to increase, insurers may also choose to no longer cover these risks.

4. The insurance sector competing for savings with other sectors

Insurers compete with other providers of financial services, such as banks, investment funds and asset managers, for household savings. Contractual rights arising from insurance and pension-like products represent a significant share of household wealth. At the EU level, this share increased from 34% to almost 40% between 2005 and 2016.²¹

The competition with other providers of financial services may increase in a low-for-long environment, as households may change asset allocation. Bank deposits come with a liquidity premium and are typically guaranteed, which is likely to make them more attractive than other assets as returns on these assets decrease (IMF, 2017). Furthermore, the similarities between unit-linked insurance policies and investment products offered by investment funds and asset managers make these types of investments natural competitors. In some countries, unit-linked insurance products benefit from tax advantages, in which case the volumes sold of these products may vary significantly if tax treatment changes, e.g. if tax advantages are withdrawn or decreased, household demand for savings products offered by asset managers is likely to increase (IMF, 2017). This may be particularly relevant in countries with relatively well-developed retail investment products and may increase in relevance across the European Union as a side effect of the European Commission’s capital markets union initiatives. By providing savings products to households, the contribution of insurers to systemic risk may increase in the event of a financial crisis.

²¹ Data available at: ec.europa.eu.



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Abbreviations

AIG	American International Group
ART	alternative risk transfer
CDS	credit default swap
CII	Chartered Insurance Institute
DNB	De Nederlandsche Bank
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pension Authority
ESRB	European Systemic Risk Board
FSB	Financial Stability Board
G-SIB	globally systemically important bank
G-SIFI	globally systemically important financial institution
G-SII	globally systemically important insurer
HLA	Higher Loss Absorbency
IAIS	International Association of Insurance Supervisors
ICS	Insurance Capital Standard
IGS	insurance guarantee scheme
IMF	International Monetary Fund
LTG measures	long-term guarantee measures
MA	matching adjustment
MCR	Minimum Capital Requirements
NCA	national competent authority
NSA	national supervisory authority
OECD	Organisation for Economic Co-operation and Development
ORSA	own risk and solvency assessment
PRIIPs	Packaged Retail and Insurance-based Investment Products
RR	recovery and resolution
SA	symmetric adjustment of the equity capital charge
SCR	Solvency Capital Requirement
VA	volatility adjustment
VaR	Value at Risk



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