

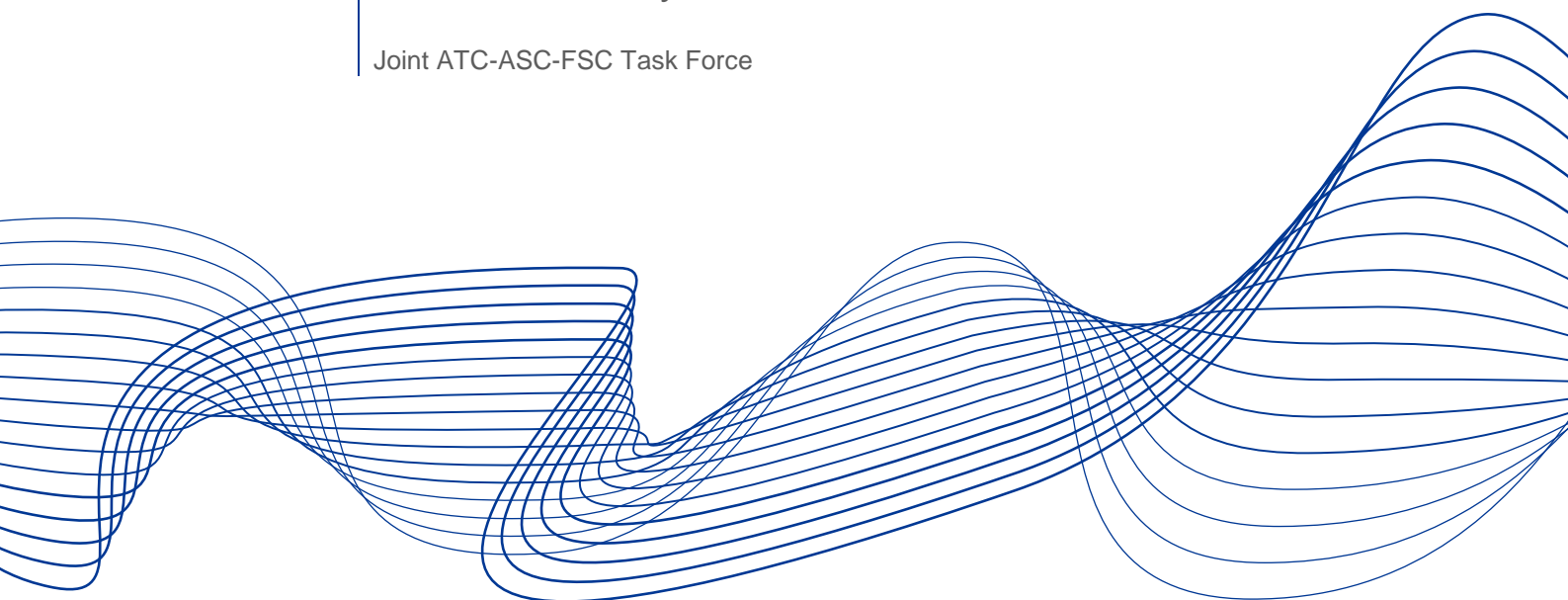
# Technical documentation

## Section C

November 2016

The impact of low interest rates and ongoing structural changes on non-credit institutions: vulnerabilities, systemic risks and implications for financial stability

Joint ATC-ASC-FSC Task Force



**ESRB**

European Systemic Risk Board

European System of Financial Supervision

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## Executive Summary

Non-credit institutions (NCIs) represent an important part of the EU financial system, and hold tens of trillions of euros in total assets. This section covers three main types of non-credit institution: insurers, pension funds, and asset managers. Even though these types of institutions are already quite diverse, for the purpose of this analysis a further distinction is made between life and non-life insurance companies, between Defined Benefit (DB) and Defined Contribution (DC) Institutions for Occupational Retirement Provision (IORPs), and between fund management companies and investment funds.

While a low interest rate environment (LIRE) creates challenges for all types of NCIs, guaranteed-return life insurance companies are particularly affected. In a LIRE investment returns tend to be low, and in that type of environment relatively high interest-rate guarantees on life insurance liabilities<sup>1</sup> weigh on the profitability and solvency of life insurance companies. All things being equal, this could increase the risk of simultaneous failures of life insurance companies, which could be disorderly if it resulted in a taxpayer-funded bail-out and/or widespread negative implications for consumer confidence. National Insurance Guarantee Schemes (IGS) differ widely and are unlikely to be sufficient to deal with such situations.<sup>2</sup>

Additionally, a prolonged LIRE incentivises search-for-yield behaviour by NCIs, creating possible risk management challenges. Search-for-yield behaviour can occur in a number of ways. First, NCIs may look for ways to increase their leverage in a LIRE, both on and off balance sheet. If this does occur, the resulting higher levels of leverage in NCI subsectors are likely to add to the amplification and propagation of financial shocks through the financial system, e.g. in the case of fire sales. Transmission of shocks to the banking sector is then more likely to occur, also because the exposures of NCIs to other parts of the financial system will be substantial. Indeed, in addition to cross-sectoral asset holdings, several NCIs hold significant derivative portfolios for hedging purposes and engage in securities lending activities to boost returns. Second, in a LIRE NCIs may be incentivised to shift to higher-yielding investments that are riskier and/or more illiquid. Such increased risk-taking could easily lead to NCIs participating increasingly in activities previously dominated by banks, also because many banks are scaling back their activities. NCIs may fill the gap in the supply of risk-bearing capital to the real economy, which is in a sense positive, although at the same time it creates potential risk-management challenges, especially if these new activities are beyond the risk-bearing capacity and/or risk-management capabilities of the institutions concerned.

Finally, there are signs that a LIRE will lead to NCIs changing their product portfolios and business models, resulting in a shift of investment risk to retail clients (policyholders and beneficiaries), and leading over time to structural changes in Europe's insurance markets. Low interest rates make the purchase of a guaranteed stream of (retirement) income relatively expensive and other savings products without guarantees become more attractive. In response to the already low interest rates, life insurance companies and DB pension funds have already started to adapt their product mix to the current market environment. In fact, unit-linked insurance contracts are becoming more popular in several jurisdictions, and DC and hybrid pension schemes are gradually replacing DB schemes.

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<sup>1</sup> Due to sizable competition in some markets some high-guarantee products are still sold.

<sup>2</sup> It should be noted that the life insurance sector is highly heterogeneous and that not all companies or all countries face solvency challenges to the same extent.



When households accept contracts carrying more risk, this may lead to increased volatility in household consumption. By contrast, when policyholders are unwilling to take on more risk and choose guaranteed products instead, they will – in a LIRE – be faced with lower returns and, accordingly, lower future consumption, although this will differ between Member States depending on the non-insurance alternatives for retirement income.



## Introduction

NCIs form a large and important part of the EU financial system. Total assets of NCIs constitute approximately EUR 29 trillion, while the size of the EU banking sector is approximately EUR 44 trillion.<sup>3</sup> NCIs are also highly heterogeneous in terms of business models and geographical reach. This part of the technical documentation concentrates on three main types of non-credit institution: insurers, pension funds, and asset managers. For the purpose of analysis these institutions are disaggregated into the following subtypes: a distinction is made between life and non-life insurance companies; IORPs are broadly categorised into DB and DC schemes; and for asset managers we consider fund management companies and certain types of investment funds.

In the context of a LIRE, an important distinguishing characteristic is the duration of NCIs' liabilities. Both life insurance companies and DB schemes are characterised by long-term liabilities. In contrast, non-life insurance companies are not typically characterised by long-term liabilities, and DC schemes' returns vary in line with the performance of the underlying assets. In addition, solvency concerns in the investment funds sector are less prevalent due to a common understanding that investments in funds are not guaranteed.

The structure of the remainder of this report is now explained. Section 2 describes the short-term challenges of a prolonged period of low interest rates and the impact on the solvency and profitability of NCIs, and discusses the crucial role of the solvency regimes in the timing of the impact of a LIRE. Section 3 evaluates changes in the investment behaviour of NCIs in response to low interest rates. Section 4 discusses how a LIRE affects the product portfolios and business models of NCIs in the long run. Section 5 considers trends in market structure and concentration, in particular the ongoing trend of mergers and acquisitions.

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<sup>3</sup> Figure per year end 2014. The value does not account for possible double counting. There is an overlap between, on the one hand, insurance companies and pension funds and, on the other, asset management companies: the former account for more than half of the assets under management (AuM) of the latter.



# Section 1

## Resilience of non-credit institutions

### 1.1 Impact of low interest rates on profitability and solvency

**A prolonged LIRE implies yield curves that are also low for longer-term investments.** In a scenario where interest rates remain low for long<sup>4</sup> the yield curve will be flatter than under a scenario with a gradual reversal of interest rates to pre-crisis levels. For EU insurance companies, some of these yield curves are relevant because they are used to calibrate the risk-free rate published by EIOPA that is used to compute the value of their insurance liabilities. Moreover, yields determine future investment income for fixed-income products.

**For life insurers and DB pension schemes with negative duration gaps, a “low for long” interest rate scenario exposes their vulnerability to low interest rates and could, ultimately, severely strain their solvency positions and profitability.** For DB pension schemes and, typically, for life insurance companies, in some cases the duration of the liabilities is longer than the duration of the assets (as shown in Chart 1 and footnote 12). As a consequence, a scenario of prolonged low interest rates leads to a structurally higher level of liabilities that is not matched by a similarly higher level of asset values. A “low for long” interest rate scenario is therefore characterised by structurally lower solvency positions for DB pension schemes and life insurance companies, if asset-liability mismatches are significant. The weaker the initial capital position of an insurance company, the more likely these negative duration gaps are, ultimately, to lead to actual solvency issues.

DC schemes are also sensitive to a LIRE since it could result in lower returns on assets in the accumulation phase. This could affect pension adequacy if it leads to lower income in retirement. The replacement rates for younger plan members are the most highly exposed to the low-return scenarios.<sup>5</sup> Even plan members close to retirement are vulnerable to a decline in interest rates as this will make it more expensive to convert accumulated wealth into an annuity or will result in lower investment income on assets used for programmed withdrawals.<sup>6</sup>

**Low interest rates impact life insurers across Europe, although the size of the impact and the size of the markets differ significantly between Member States.** The situation of life insurers across Europe is heterogeneous with three countries (ES, IT, UK) characterised by a broad balance between liabilities and assets (in terms of both yields and duration), and other countries (AT, DE, FR, NL, SE) with less balanced positions.<sup>7</sup> Of the markets that are large in absolute size, German and French life insurers have large duration mismatches (see Chart 1 below). For markets that are large relative to national GDP, Sweden, the Netherlands, and Austria also have substantial duration mismatches. The EIOPA 2014 insurance stress test report provides

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<sup>4</sup> As defined in Section A.

<sup>5</sup> The replacement rate here refers to the (expected) pay-out level of a pension program after retirement as a percentage of a worker's pre-retirement income.

<sup>6</sup> See EIOPA IORPs stress test report 2015.

<sup>7</sup> The small duration mismatch for Spanish insurers is mainly due to Spanish-specific regulation. Almost half of the long-term life insurance contracts are managed using ALM-immunisation techniques based on cash flow matching, in which guaranteed returns are based on the yield of matching assets. Undertakings should explicitly identify the assets backing these contracts. The vast majority of the assets are fixed-income bonds held to maturity.

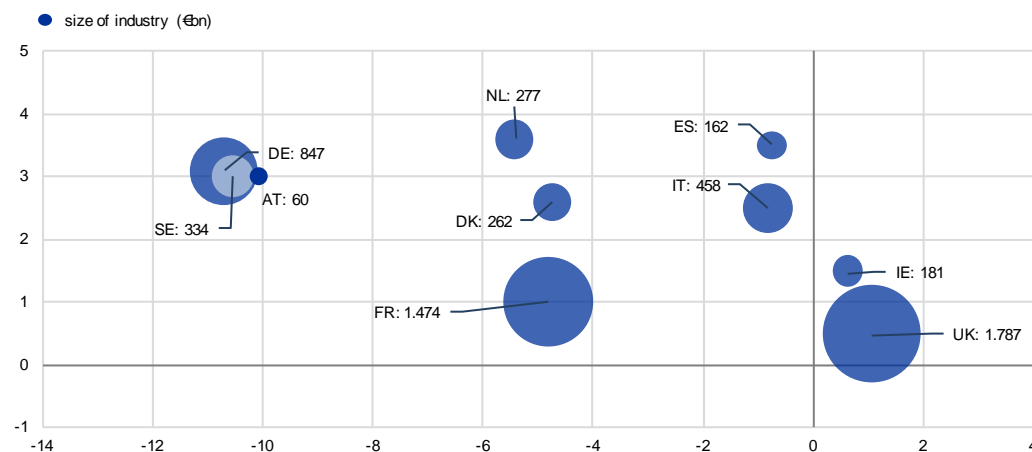


an overview of the aggregated duration mismatches<sup>8</sup> of the different national insurance markets for the sample of stress test participants.

Chart 1

### The duration mismatch and the average guaranteed rate of the life insurance sector in several European countries

(size of industry (assets €billion); x-axis: duration mismatch; y-axis: average guaranteed rate in %)



Data: ESRB (2015), EIOPA (2014)<sup>9</sup>

**In the EIOPA 2014 insurance stress test, a non-negligible part (24%) of EU insurance companies did not meet the 100% Solvency II Capital Requirement (SCR) ratio<sup>10</sup> in the specified prolonged low interest rate stress**, although this mostly concerned smaller insurance companies.<sup>11</sup> The low-yield module of the EIOPA 2014 stress test sought to quantify the potential impact of low interest rates on the overall Solvency II position of EU insurance companies. The median SCR ratio fell 24 p.p. as a result of the stressed scenario, from a level of 186% before stress. The most vulnerable countries include those whose pre-stress capital buffers are relatively low for a large part of the market (GR, IE, PT), and those with high interest sensitivity of own funds (AT, BE, DE, DK, EE, FI, GR, NL, PL, PT, and SE show an impact of at least 10% of own funds after stress), especially in combination with lower initial capital positions. Ceteris paribus, for

<sup>8</sup> The Macaulay durations which were calculated for the scope of the 2014 stress test exercise did not take into account the impact of the optionality aspects of the valuation of the insurance liabilities due, for example, to profit sharing and stochastic surrender behaviour.

<sup>9</sup> The data on average guaranteed rate and industry size are obtained from ESRB Issues Note June 2015. The data on the duration mismatch are obtained from EIOPA: Insurance Stress test 2014, 28 Nov 2014. As shown in the Chart, the EIOPA 2014 stress test report shows a duration mismatch of about 10 years for German life insurance undertakings covered by the stress test. The figures were calculated by EIOPA and are confirmed by the investigations of Moody's Investors Service in 2015. The German Insurers' Association reports a lower figure, however. In this respect, it is noted that the calculations of the EIOPA stress test report were based on Macaulay durations that did not take into account the impact of optionality aspects, e.g. within the valuation of the insurance liabilities, with profit-sharing elements.

<sup>10</sup> EIOPA insurance stress test exercise participants were requested to report on the SCR before the stress scenario materialises and based on a standard formula calculation. Therefore, the figures for the SCR ratio are affected by these two restrictions. The EIOPA 2014 insurance stress test also looked at the impact on the eligible own funds, the impact on the excess of assets over liabilities before and after the specified prolonged low interest rate environment and the cash-flow patterns collected in order to determine the vulnerability of certain countries to that scenario. Since the post-stress SCR ratio was not evaluated in the 2014 EIOPA insurance stress test, the ratio of eligible own funds following the low-yield scenario to the pre-stress SCR was used as a proxy.

<sup>11</sup> Note the Solvency Capital Requirement (SCR) is not the Minimum Capital Requirement (MCR).



countries characterised by negative duration gaps, a discount curve below the one tested in the low yield scenario could lead to a higher number of companies not meeting the 100% SCR ratio requirement than for the 2014 EIOPA insurance stress test. For example, assuming the balance sheet of the companies sufficiently stable, the May 2015 Solvency II risk-free rate discount curve, which was even lower than the curve tested in the low yield module of the EIOPA 2014 stress test, makes the findings on that test to remain very actual. In the 2014 stress test, EIOPA recommended insurance companies to take measures to improve their solvency ratios in preparation for Solvency II. However, these measures might still not be sufficient since interest rates have declined further from the time the abovementioned testing was carried out. In this regard, the forthcoming 2016 EIOPA insurance stress test is expected to give a more up-to-date picture of the vulnerabilities of insurance undertakings in a prolonged low interest rate environment. Moreover, the new stress test also includes a double-hit scenario where, in addition to low interest rates, assets prices are also stressed.

#### **The largest DB pension schemes sectors in Europe are those of the Netherlands and the UK.**

The UK and the Netherlands together comprise, in terms of total assets, about 90% of the EU IORPs market. DB pension schemes in both countries are characterised by large duration mismatches, and are thus vulnerable in a LIRE.<sup>12</sup>

#### **The role of the solvency regime**

**Solvency regimes determine to a large extent when the impact of a LIRE on solvency and profitability is revealed.** When prudential regimes are not fully market-consistent and, as such, not fully sensitive to market price changes, the impact on the solvency ratios becomes visible only incrementally and gradually over time. As a result, deviations from a market-consistent valuation may lead to an underestimation of the risks in the short term, while at the same time causing a drag on future profitability. Nevertheless, market-consistent regimes introduce significant volatility into the regulatory balance sheets of companies and may drive short-term artificial volatility.

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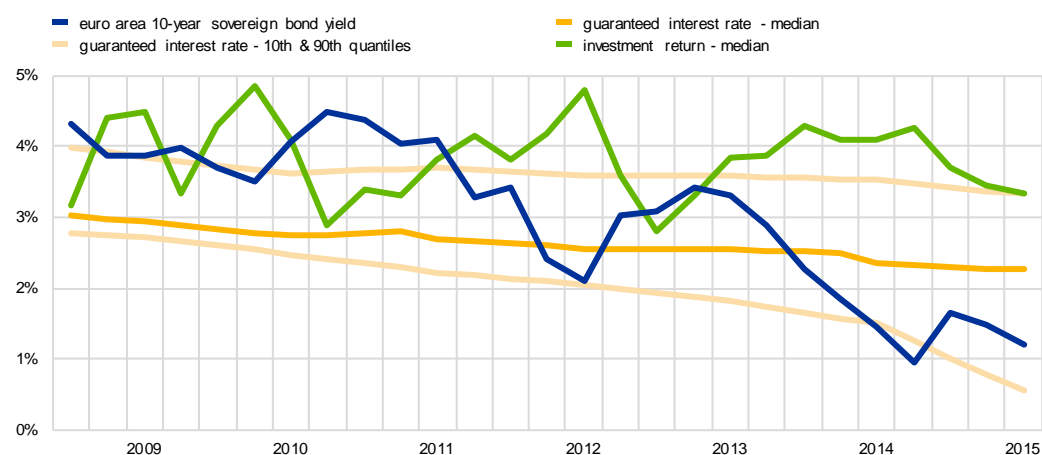
<sup>12</sup> For Dutch IORPs, the average duration of liabilities is 17 years, while the duration of assets is on average only 7 years. Due to the negative duration gap, a (negative) interest rate shock leads to a decrease in the coverage rate. DNB analysed the impact of an instantaneous and parallel downward shift of the yield curve by 100 basis points. Using 2014 data, DNB found that the value of bonds and interest rate derivatives increases by 9% (€94 billion), while pension liabilities increase even more by 17% (€165 billion). As a result, the coverage ratio decreases by 7% in this scenario.





Chart 2

**New life insurance policies' guarantees and the 10-year Government Benchmark bond yield**



Source: EIOPA<sup>13</sup> & ECB, 2015.

**For insurers, the introduction of Solvency II will reveal the impact of a LIRE on insurance companies more directly.**

Under the Solvency I framework, solvency ratios have been quite stable, despite the significant decline in the most relevant swap curves and government bond yields. Given the importance of the interest rate trend in determining the overall financial health of an insurance company, the Solvency I ratio is characterised by shortcomings in directly translating financial market movements. In this respect the new Solvency II regime (which was introduced on 1 January 2016), as a more fair-value based, risk-sensitive solvency regime using a risk-free rate valuation of liabilities, reflects the impact of part of the yield environment more accurately in the solvency ratio of an insurance company.<sup>14</sup>

**As for the management of risk, this becomes clear when the sale of life insurance policies with high guaranteed rates negatively affects future profitability.**

Deviations from a market-consistent valuation framework for current liabilities postpones the impact of lower interest rates on the solvency balance sheet but, regardless of the solvency regime, future profitability always risks being negatively impacted by lower returns. Due to the intense competition between insurance companies, some high-guarantee products are still sold in some markets, despite low yields and the consequent negative margins between investment returns and guaranteed rates. The difference between investment returns and guaranteed rates for new life insurance policies is shown in Chart 2 above.

**Several elements of the Solvency II regime smooth out the impact of continued low rates over time.**

The new Solvency II regime contains several components that are not purely market consistent. Under a “low for long” interest rate scenario these elements postpone the timing of the impact of continued low rates on solvency, with the result that short-term volatility in solvency positions is reduced. The three most important elements that deviate from a framework strictly based on market observables are: (1) the Ultimate Forward Rate (UFR), (2) permanent Long-Term Guarantee (LTG) measures and (3) transitional measures.

<sup>13</sup> The figure is based on a sample of 30 large insurance groups in the EU and Switzerland.

<sup>14</sup> There are indications that the more direct reflection of the low-yield environment under Solvency II leads insurers to reduce their negative duration gap. BIS (2015) reports a shift towards government bonds with longer duration for the insurance sector in Germany during 2014. Similarly, Banque de France (2014) observes a small increase in the duration of French insurers' assets over the last two years.



1. The Ultimate Forward Rate (UFR) determines the forward rate for long-term horizons; as a result the risk-free curve is based on market rates for short- and medium-term horizons (up to 20 years in most member states) and converges to the UFR at long horizons. The calibration in use as of 1 January 2016 seems consistent with the rationale behind the “back to normal” scenario. However, the secular stagnation implicit under the “low for long” scenario is more consistent with a more modest outlook for parameters likely to influence real interest rates. To the extent that market rates are observable far out on the yield curve, they too support the hypothesis that the current (overall) UFR level looks high, as illustrated in Chart 3 below.<sup>15 16</sup>
2. A set of Long-Term Guarantee (LTG) measures aims to counter unintended consequences and incentives resulting from a full market-consistent valuation when applied to long-term business:
  - (a) The volatility adjustment (VA) can adjust the discount curve to reflect the volatility caused by movements in spreads on the asset side which, in a pure market-consistent framework, are not transmitted one-to-one to the liability values. This limits incentives for fire sales in times of crisis.
  - (b) The matching adjustment (MA) aims to recognise the asset (cash flows) liability matching risk management model used by some insurers which limits their exposure to spread-driven volatility (a “buy to hold” strategy which means insurers are exposed to credit risk but not to liquidity and other risks). This measure is subject to supervisory approval and strict criteria (matching, fixity of cash flows, and “buy to hold”).

As these measures are relatively new in some jurisdictions, in order to monitor their impact on a firms' behaviour and on risk management practices, Solvency II has established principles including the disclosure of the impact of the measures as well as the insurance company's hypothetical solvency position in the absence of such measures.

3. Transitional measures in Solvency II allow insurance companies, once approval has been granted by the supervisor, a phase-in period of 16 years to move from a Solvency I valuation to a Solvency II valuation. This implies that during the first 16 years of the new regime it should be noted that the liabilities of insurance companies applying such measures are valued following a principle that is not fully market-consistent. Some of the transitional measures (e.g. transitional measures regarding technical provisions) are capped to ensure that firms using them are at least as strong financially as they were under the previous regimes. Solvency I adopted a minimum harmonisation approach, so the effects of transitional measures will differ between Member States.

In addition, the Solvency II regime provides that a persistent low interest rate environment may be viewed, in certain circumstances, as an exceptional adverse situation. In this case insurance companies, under strict conditions, may be granted an extended recovery period (up to seven years) to restore compliance with the Solvency Capital Requirement (SCR). The extension may

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<sup>15</sup> EIOPA is currently reviewing the methodology used to derive the UFRs. The review will include a public consultation in 2016. EIOPA intends to decide on the outcome of the review and on how and when to implement it in September 2016. There is no intention to change the currently used UFRs before the end of 2016, in order to ensure the stability of the framework for the implementation of Solvency II by insurance and reinsurance undertakings and supervisory authorities.

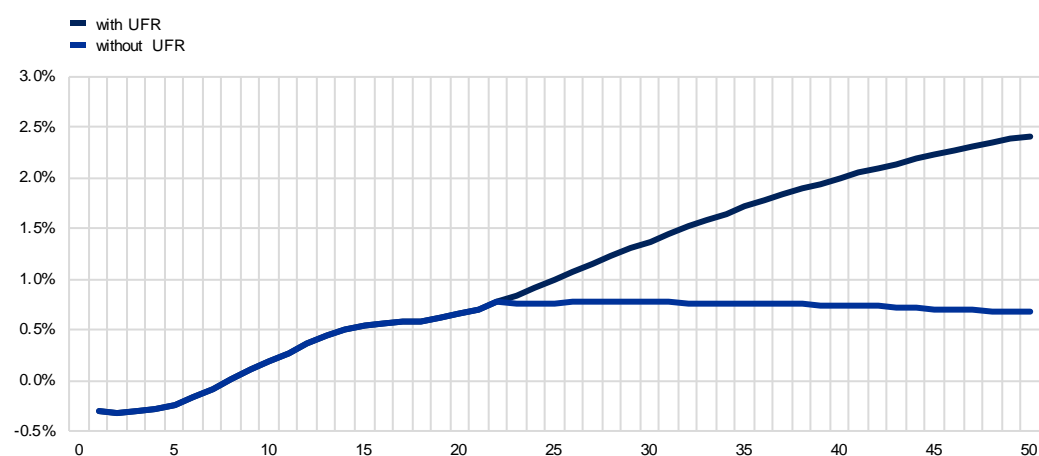
<sup>16</sup> The UFR for the Dutch pension sector was adjusted in July 2015. The adjusted UFR calculation – a moving average of market-based forward rates instead of a fixed forward rate – takes into account actual market rate movements after the last liquid point, while at the same time using long-term averages instead of daily values. The adjustment of the UFR leads to a decrease in the coverage ratio and to an increase in the required contribution rate for new pension accruals. DNB (2015) finds that the average coverage rate of Dutch pension funds decreased by 2.4% in 2015 as a result of the adjusted UFR methodology.



only be granted by the supervisory authorities after EIOPA has acknowledged the presence of an exceptional adverse situation and after all relevant factors have been considered (including the average duration of technical provisions). However, even in an exceptional adverse situation, during the extended recovery period the insurance companies affected are required to submit a progress report to the supervisory authorities every three months. This report must set out the measures taken and progress made to meet the SCR. If no significant progress has been made the recovery period extension is then withdrawn.

Chart 3

### The euro swap curve (without UFR) and the euro Solvency II curve.



Source: EIOPA 2016, Datastream

## 1.2 Implications of simultaneous failure of insurance companies for financial stability

Simultaneous failures of insurance companies could be a source of systemic risk to financial markets and the real economy in a number of ways. Solvency problems can lead to failures if accompanied by other problems such as inadequate risk management or lack of confidence by policyholders. This risk arises particularly in countries where a large number of life insurers have solvency problems and/or protection schemes are inadequate. If only smaller companies that are less important to capital markets fail, spillovers to other sectors will be minor, but the impact cannot be disregarded if large companies also fail or if several smaller companies fail simultaneously. Large (re)insurers failing to meet their obligations could lead to a lack of substitutes in certain classes of insurance that are vital to economic activity. Moreover, financial stability could be disrupted if insurance companies were to stop, on any significant scale, providing funding or lending securities to counterparties. In addition, life insurers in parts of Europe could create disruption and damage consumer confidence if they failed simultaneously under a scenario of prolonged low risk-free rates. Furthermore, in the case of a taxpayer funded bail-out, the impact on consumers could be significant. The 2014 EIOPA insurance stress test reported that several smaller insurance companies would be at risk of not meeting their Solvency SCRs following a crisis. On top of that, risk-free interest rates have fallen considerably below the rates tested in the 2014 stress scenarios.

**At a global level, as from 2013 the FSB and national authorities, in consultation with the IAIS, annually identify a list of Global Systemically Important Insurers (G-SIIs).** G-SIIs are institutions whose distress or disorderly failure, given their size, complexity and interconnectedness, would cause significant disruption to the global financial system and to economic activity. Their failure would probably leave the public authorities with no option but to bail them out using public



funds to avoid financial instability and economic damage. This knowledge poses a moral hazard as it could encourage G-SIIs to take excessive risks that are sub-optimal from a system-wide point of view, since, when taking rational decisions, they may not internalise the negative externalities related to the stability of the financial system as a whole. In order to deal with this risk, policy measures have been identified as part of the framework. For 2015, nine G-SIIs were identified, five of which are European. The G-SIIs will be subject to higher loss absorption capacity (HLA), enhanced supervision and effective resolution, with the timeline for implementation differing for each measure. To provide a foundation for the HLA requirements for G-SIIs, the IAIS was mandated to first develop straightforward, basic capital requirements (BCR) to be applied to all group activities, including those of non-insurance subsidiaries. In November 2015 the IAIS published a consultation paper proposing refinements aimed at developing the G-SII assessment methodology further – this revised G-SII assessment methodology will be applied from 2016. The HLA requirements have been completed, and should be applied from January 2019 to those G-SIIs identified in November 2017.

**At EU level, Solvency II addresses the challenges posed by low interest rates. However, any departure from pure market consistency may make it more difficult to transfer liabilities to other market participants against book value when intervention is required.** In a risk-sensitive regime, based on market-consistent valuations, these challenges and risks are, in principle, captured by the solvency balance sheet and capital requirement delivered by Solvency II. However, the Ultimate Forward Rate (UFR) and Long-Term Guarantee (LTG) measures could have a significant impact on the value of insurers' liabilities. Although EU insurers on the receiving end of the transfer would use Solvency II as well, in some instances, if potential acquirers did not recognise the measures in their own economic valuations, it could become more complicated to transfer the liabilities of insurers to other market participants against book value when intervention is required.

**Typical national Insurance Guarantee Schemes (IGS) are likely to prove inadequate in dealing with simultaneous widespread failures of insurance companies.** Not all European countries provide guarantee funds (e.g. the Netherlands) and existing schemes differ substantially in coverage, scope of protection (eligibility restrictions and protection limits), funding and financial capacity. If a "low for long" scenario emerges and the risk of the simultaneous failure of small and mid-sized insurers materialises, this lack of harmonisation could pose risks from a policyholder perspective, particularly when insurance is provided cross-border, which also requires close cooperation between national supervisors.

**A variety of national resolution tools is in place in the EU, albeit with limited scope and power.** Although some of the resolution tools (e.g. the appointment of an administrator, run-off, portfolio transfer, etc.) have proven to be sufficient to deal with individual small-firm failures, they have not been extensively tested in dealing with complex cross-border groups and are not designed to deal with a sudden deterioration in the viability of larger or multiple firms.<sup>17</sup>

### 1.3 Resilience in a situation of rising interest rates

**The reversal of a low interest rate environment could relieve some of the pressure on the solvency position of life insurers and DB pension schemes.** Rising risk-free rates imply falling

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<sup>17</sup> The ESRB insurance expert group concludes in its final report, presented to and agreed upon by the GB of September 2015: "The insurance guarantee schemes and recovery and resolution arrangements currently in place at national level are unlikely to be fit to handle all of the (systemic risk) scenarios."



asset values for fixed-interest investments. However, in some cases if market-consistent valuation is applied the solvency position of insurance companies and DB pension schemes with a negative duration gap (should this persist) could be expected to improve given the greater fall in liability values.<sup>18</sup> In the case of rising spreads, however, an overall negative impact on the solvency position of insurance companies would be expected (despite the “dampening” effect of some of the LTG measures – see above).

**In addition, rising interest rates could cause a disorderly rotation out of certain types of investment funds, potentially resulting in a loss of market liquidity.** In particular, the expanding universe of bond funds and exchange-traded funds (ETFs) over the last few years induced many institutional investors to treat illiquid bonds as liquid instruments. If interest rates rise and net asset values decline, large-scale redemptions could lead funds to liquidate illiquid assets as investors reallocate their portfolio, driving prices sharply down, and making it more difficult for institutional investors to turn over large positions. Furthermore, the low liquidity could magnify price sensitivity in high-yield investment funds when markets move.

**Rising interest rates after a prolonged LIRE may trigger a rise in surrenders or, in extreme circumstances, an “insurer run”. Although this would not be expected to have a great impact, it is still a risk.** A “back to normal” interest rate scenario after insurance companies have adapted to a prolonged period of low interest rates could trigger a rise in surrenders or an “insurer run”, as policyholders may have a financial incentive to surrender an existing contract with a relatively low guaranteed interest rate in favour new products carrying higher interest rates (see, for example, Feodoria and Förstemann, 2015).<sup>19</sup> Around 50% of the liabilities of large EU life insurers can be surrendered without penalty and another 40% with a penalty of less than 15% of the policy value (based on 2013 data). There are currently cases of life insurers facing structural net cash outflows, for instance in Belgium where it is possible for policyholders to surrender their insurance policies or allow them to lapse. When a large number of policyholders decide to surrender their policies at the same time (lapse risk) this may lead to an exacerbated downward spiral in stock and bond market prices as insurers may have to sell large quantities of assets in order to obtain the necessary liquidity. In extreme cases a “run” may cause life insurers to sell assets for cash in an environment of deteriorating asset prices. However, the penalties (where they exist) and the potential loss of tax benefits constitute substantial impediments to surrender for many policyholders.

#### 1.4 DB Pension schemes (IORPs)

The characteristics and regulatory frameworks within which DB pension schemes operate are heterogeneous across Member States. Significant shortfalls could arise (if not already present) in several Member States in an extended LIRE, according to the EIOPA IORPs Stress Test Report 2015. If these shortfalls eventually crystallise then they will typically result in scheme member benefits being reduced and/or additional costs being borne by employers.

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<sup>18</sup> However, note that life insurers and DB pension schemes that use interest rate derivatives to hedge interest rate risk on their balance sheet may face challenges ensuring they have sufficient liquidity to meet unexpected variation margin calls in the case of an unexpected large rise in interest rates.

<sup>19</sup> For pension funds, a “run” on funds is not to be conceived as a high risk. Pension funds typically do not have a short-term liquidity issue due to a very limited risk of unexpected immediate pay-out to beneficiaries. Pension funds typically have long-run pension commitments which may not usually be redeemed in cash and can only be transferred to other pension institutions under specific conditions.



The impact of an extended LIRE on DB pension schemes could take many years to materialise given the very long timescales that typically characterise pension promises and their regulatory frameworks. This influences the extent to which pension schemes may be considered actually capable of adding to or transmitting business-cycle length macroprudential risks. Nevertheless, some elements of national pension systems may be viewed as systemically important, if only in relation to the part of a relevant Member State's financial system represented by its pension system. For example, applicable central pension guarantee arrangements (if present) might be deemed systemically important since a sufficiently severe stress could lead to their failure and hence to problems elsewhere in the pension system component of a Member State's financial system (and possibly more widely).

Current DB pension scheme regulatory frameworks within Member States do not always appear to designate specific competent authorities with mandates that explicitly cover such risks.



## Section 2

### Investment behaviour

#### 2.1 Impact of low interest rates on investment behaviour

**In the longer term, a prolonged period of low interest rates may affect NCI's investment behaviour** in a number of ways. In particular, a prolonged LIRE may incentivise NCIs to increase their risk appetite if they face rising pressure to search for yield to meet their guaranteed returns or defined benefits. Increased competition and the resulting consolidation in the insurance sector would further facilitate this trend if banks and pension funds were competing in the same product space. This would certainly be the case if this competition was with firms located in jurisdictions with less stringent capital standards.

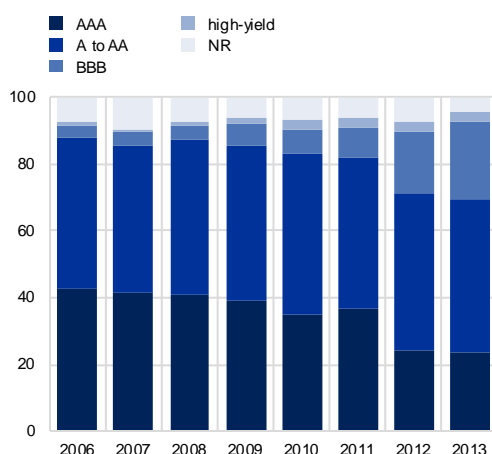
In a prolonged LIRE NCIs may also increase their use of investment strategies aimed at hedging the risks related to interest rates. As highlighted in the EIOPA 2015 IORPs Stress Test Report, some DC schemes tend to hedge the interest rate risk by increasing the duration of fixed-income assets over the life-cycle. However, these duration-matching strategies may not always be successful. The asset price shock scenarios assume big increases in credit spreads on government and corporate bonds, exceeding the decline in the risk-free rate, which would reduce the effectiveness of the hedging. As a result, the value of fixed-income portfolios would decline, with the decrease being more material for portfolios containing long-duration bonds. Under the “low for long” scenario these duration-hedging strategies are more effective, as the yields on government and corporate bonds move in tandem with the risk-free interest rate.

**“Search for yield” investment behaviour may lead to micro and macroprudential concerns if companies’ risk appetites exceed their risk-bearing capacities and risk-management capabilities.** With regard to “risk appetite” and “**risk-bearing capacities**”, life insurance companies may be tempted to take on excessive investment risks in order to maintain, in a LIRE, a desired level of investment returns (a “gamble for resurrection”). Furthermore, due to the usual duration mismatch between assets and liabilities, life insurers may be tempted to invest in assets with increased weighted-average maturities but of lower average credit quality.

With regard to “risk-management capabilities”, “search for yield” risk is prevalent if risk management is not able to cope with complex investments. Investing in high-yield bonds with lower credit quality, in infrastructure, hedge funds, private equity, derivatives, commodities, as well as providing direct credit to the economy in the form of mortgage loans, requires expertise not always available in insurance companies. The development of sophisticated strategies and products in some asset management companies also requires other risk management capabilities from a microprudential perspective, which has different systemic risk implications from a macroprudential perspective. Inappropriate risk management could lead to higher capital requirements, solvency problems and failures whenever financial distress is encountered. Regulators and supervisors should remain vigilant to the risk of a possible “search for yield”, even when there is no clear evidence of any overall material trend.



Chart 4  
Insurance investments in the euro area



Source: BIS annual report, June 2015.

**There are some early signs that the current LIRE might be leading to “search for yield” investment behaviour by insurance companies.**

The BIS 2015 annual report shows a trend towards higher-yielding instruments or asset classes in insurance investments in the euro area (see Chart 4). While the share of investments in lower-rated bonds has increased, this movement has also, to some extent, been the result of rating downgrades. The EIOPA “Low interest rate environment stock taking exercise 2014” concluded that there is not yet any notable overall trend towards higher-yielding instruments or asset classes. On the basis of that survey, less than half of the participating authorities reported an increased share of higher yielding instruments

or asset classes in their jurisdiction, and around a quarter pointed to an increase in their share of higher yielding sovereigns.

As set out in Table 1 below, based on a high-level investigation of the investment behaviour of 15 selected large euro area insurance companies in the period from end-2011 to end-2014, some negative shifts were seen in the rating quality of the government and corporate bond portfolios that could not be immediately explained just by passive investment behaviour. The shifts seen could be interpreted as early signs of “search for yield” behaviour as “AAA” and “A” rated category bonds were replaced by “AA” and “BBB” rated bonds respectively, to an extent which cannot be explained simply by overall market flows (see Table 1 below). On the other hand, it should be noted that these insurers have generally stuck to investment-grade category bonds and have not yet been tempted to actively increase their non-investment grade holdings. Until now, these trends have been moderate, although under the “low for long” scenario they merit ongoing monitoring by the supervisors.

Table 1  
Change in credit quality of EA insurers’ investment portfolio and outstanding credit ratings from 2011 to 2014

	Change in the credit quality of insurers’ investment portfolio	Change in outstanding credit ratings of all EU issuers	
		Corporate	Sovereign
AAA	-16.5%	-2.5%	-8.8%
AA	9.0%	-1.8%	-0.4%
A	-7.0%	-3.5%	-0.3%
BBB	14.0%	4.4%	11.4%
Non-Investment	1.0%	11.8%	4.9%
Unrated	-0.5%		

Source: JPMorgan, ECB, ESMA.

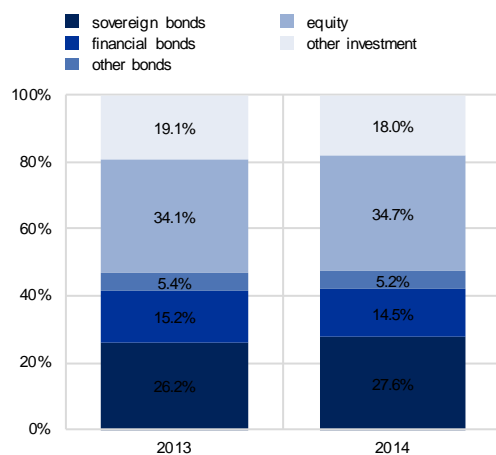
Note: Corporate and government bonds composed almost 90% of the average investment portfolio of EA insurers in 2014. Credit ratings are average of S&P’s, Moody’s and Fitch Ratings.

Going forward, Solvency II’s reporting requirements will provide supervisors with much more detailed information on assets held by insurers, and supervisors’ monitoring of potential “search for yield” behaviour will be further strengthened.





Chart 5  
**Investment Allocation of pension funds in 2014 (in %)**



Source: EIOPA<sup>20</sup>

**For pension funds, the investment mix has been relatively constant in recent years** due partly to strict legal or contractual obligations for pension funds aimed at maintaining stability over time. Chart 5 below shows that the investment allocation of pension funds remained broadly unchanged in 2014.<sup>21</sup> However, there are some early signs of a “search for yield” for more “risky” and “higher yielding” investments in DB pension schemes (currently very low in volume terms). Both trends require close and cautious monitoring.

However, based on EIOPA 2015 IORPs Stress Test Report the aggregated asset mix for the DC sample differs significantly from the DB sample. In particular, the share of equity and property is smaller in DC as the risk is different from that of DB schemes. The share of fixed

income assets is consistently higher for all categories of DC members in terms of years to retirement as well as the weighted average, than the aggregate share observed in the DB schemes. This difference is accentuated for those DC members who are closer to retirement.

**In addition to “search for yield” behaviour, there are also incentives to actively take on illiquid assets, which could lead to increased illiquidity risk if liabilities are relatively more liquid, as well as increased uncertainty in valuations.** In recent years, the need for more

infrastructure investment in Europe has been at the centre of the policy debate about promoting long-term economic growth. Insurers and pension funds could be well positioned to provide funds for infrastructure investment, given the long-term nature of their liabilities. Indeed, EIOPA has recently advised the European Commission<sup>22</sup> to change its treatment of high-quality infrastructure assets under Solvency II. Even if allowed by the regulation, such investments would not be riskless for life insurers without a “buy to hold” strategy, as they would have to bear a liquidity risk if an unexpected spike in interest rates led to margin calls and fire sales. In that situation, life insurers whose portfolio consists mostly of redeemable contracts could come under pressure, being more vulnerable to lapse risk.

**Investment funds, especially money market funds, have incentives to adopt riskier investment strategies.** Yield compression in a “low for long” environment would create incentives to increase the average maturity of assets in order to maintain returns. Moreover, there are incentives to invest in less liquid assets or assets of lower credit quality as these theoretically provide higher returns. Investment funds such as bond funds, which invest in long-term assets, are not immune from such pressures, and high-yield bond funds that offer different risk/return profiles, but also face higher liquidity constraints, are particularly at risk. The large outflows experienced by

<sup>20</sup> The UK figure used for the calculations of these figures relates only to DB and HY schemes.

<sup>21</sup> OECD also indicates that total investment by pension funds in OECD countries in “other assets” has remained more or less stable over the last few years.

<sup>22</sup> The European Commission has asked EIOPA to perform a study on the regulatory treatment of infrastructure investments and securitisations with a view to investigating the capital requirements under the Solvency II standard formula. For securitisations, EIOPA proposes a more favourable treatment in terms of spread risk charges for high quality securitisations. These changes could eventually impact the appetite of insurers to invest in these asset classes in a positive way.



US high-yield funds since the beginning of 2016 illustrate the vulnerability of these entities to developments related to the interest rate environment. Empirical evidence<sup>23</sup> shows that bond funds rely partly on interest rate hedges to increase returns. Therefore, a highly volatile environment associated with “low for long” rates, as experienced in recent quarters, could impact their investment behaviour and lead funds to increase their reliance on derivatives. Managers of money market funds, in particular Constant Net Asset Value (NAV) funds, may also seek to alter their investment strategies if there is insufficient yield to support their current revenue structures.<sup>24</sup>

## 2.2 Impact of low interest rates on shadow banking activities

**A “search for illiquidity” may push NCIs into investment activities previously dominated by the banking industry.** These areas include the origination of mortgages, the financing of infrastructure loans and asset-backed securities (including mortgage-backed securities). These asset classes may have attractive characteristics for insurers, in particular long-term (predictable) cash flows which can be used to match the long-term liabilities of insurers. The extent to which NCIs will actually start investing more in these asset classes will depend on several factors, such as the existence of a government guarantee, the predictability of cash flows and regulatory treatment.<sup>25</sup>

**Moreover, institutional investors may favour alternative investments in a LIRE, and asset managers have an incentive to increase the range and complexity of products on offer, in order to compete for consumers.** Investment opportunities in alternatives can, for example, offer return enhancements to investors. Such alternatives include illiquid investments in private equity, absolute-return fixed-income instruments, private credit and synthetic structures. The development of alternative investment strategies is also an area of increasing concern: leveraged ETFs, for example, or ETFs tracking alternative indices (“smart beta”) create additional complexity for investors and greater exposure concentration, possibly entailing a change in the nature of risks, especially when sold to retail investors. A prolonged LIRE may also result in the growth of specific hedge fund strategies, such as volatility trading, which can amplify market movements. While it still remains a fairly small part of investors’ allocations, the market for alternative funds has seen exponential growth in both assets under management and the number of funds in recent years.<sup>26</sup>

## 2.3 Implications for the real economy and financial stability

**“Search for yield” and “search for illiquidity” investment behaviour by NCIs in a LIRE may increase the supply of long-term capital to the real economy and lead to a rise in non-bank lending.** With relatively low spreads in traditional liquid fixed-income markets, investments in funds and companies that provide credit to companies may offer attractive returns to institutional

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<sup>23</sup> See Technical Appendix D, Annex 3.

<sup>24</sup> A possible explanation is that money market funds have a limited capability to adopt more risky investment strategies, as they should fulfil e.g. WAM and WAL requirements.

<sup>25</sup> The European Commission has asked EIOPA to perform a study on the regulatory treatment of infrastructure investments and securitisations with a view to investigating the capital requirements under the Solvency II standard formula. For securitisations, EIOPA proposes a more favourable treatment in terms of spread risk charges for high quality securitisations. These changes could eventually impact the appetite of insurers to invest in these asset classes in a positive way.

<sup>26</sup> For example, according to ETFGI the 5-year compounded annual growth rate of smart-beta ETFs’ assets under management was 39.3% as at end-2015, compared with 18.6% for ETFs’ tracking market capitalisation indices (<http://etfgi.com/news/detail/newsid/758>).

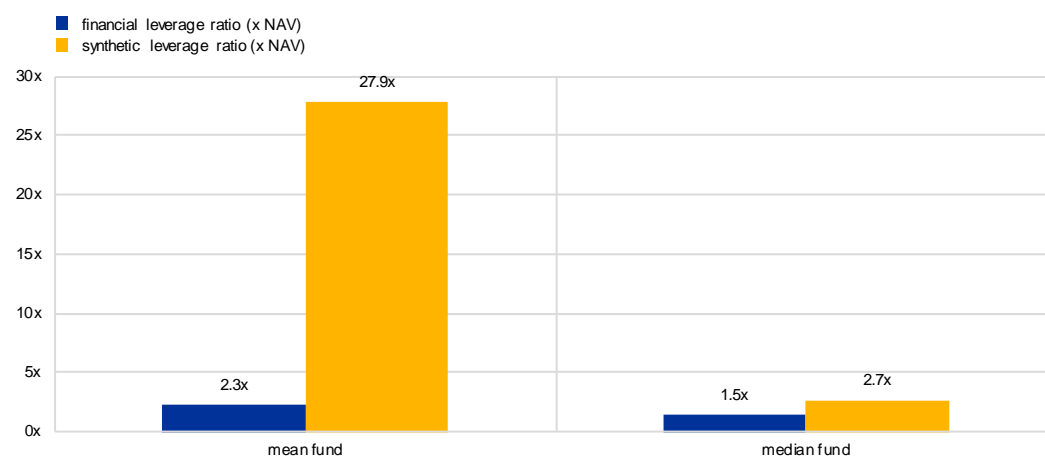


investors. Since European banks may continue to retreat from certain activities, partly due to recent regulatory changes, there is an opportunity for a wide range of non-bank institutions to act as credit intermediaries. Although increased reliance on capital market financing should be beneficial to the EU, it is a potential source of concern in the case of shadow banking entities such as alternative investment funds, financial vehicle corporations specialising in securitisation, and securities and derivatives dealers. An example of bank disintermediation is lending to non-publicly traded SMEs through private debt and loan funds. These fund activities include direct loan origination, loan participation, distressed debt and subordinated lending (e.g. mezzanine lending) funds. They offer high returns as compensation for risk, illiquidity and complexity. The idiosyncratic nature of the underlying risks is deal-specific rather than market-wide, thus offering investors lower cross-asset correlation and market beta.

**Moreover, a LIRE creates incentives to increase leverage, which can amplify and propagate shocks through the system.** The lower collateral haircuts associated with a low interest rate environment may facilitate higher leverage within regulatory limits. For example, hedge funds rely substantially on collateralised borrowing/lending and derivatives trading to implement leveraged investment strategies. Collateral flows from hedge funds to the main EU broker-dealers are in excess of EUR 700 billion (ESRB, 2014). In a LIRE higher asset valuations may lead to lower collateral haircuts, which contributes to increasing leverage, especially within entities that tend to re-pledge collateral, such as hedge funds. This enables hedge funds to boost returns at the cost of magnifying losses, amplifying shocks and transmitting these through the wider financial system.

**In particular, synthetic leverage is a source of concern due to potential financial stability implications.** Derivatives are cross-sectoral instruments and banks and investors may trade with some highly interconnected shadow banking entities with substantial synthetic exposures, as illustrated in Chart 6 below. In a LIRE, key concerns relate to the large notional exposures required for hedge funds to generate significant returns from interest rate derivatives, and more broadly to increased volatility hedging which requires the use of options. Both of these aspects are bound to increase the pro-cyclicality of the financial system, either due to the risk of potential fire sales to meet margin calls, or due to automatic sales triggered when volatility or price thresholds are crossed.

**Chart 6**  
**Financial and synthetic leverage of hedge funds operating in the UK**



Source: Financial Conduct Authority

**More generally, the interconnectedness of NCIs with other parts of the financial system could propagate shocks or destabilise price dynamics.** Although the interconnectedness of



insurance companies and pension funds remains lower than in other parts of the financial system, crossholdings between asset managers, banks and insurance companies provide a transmission channel for shocks to propagate throughout the system. This is especially so for investment funds and banks, each of which holds EUR 4 trillion of the assets of the other. The growth of the asset management industry may also increase “step-in risk”, i.e. the risk of banks providing financial support without contractual obligations to non-bank entities in times of stress, mainly for reputational reasons (BIS, 2015).



## Section 3

### Business models and strategy

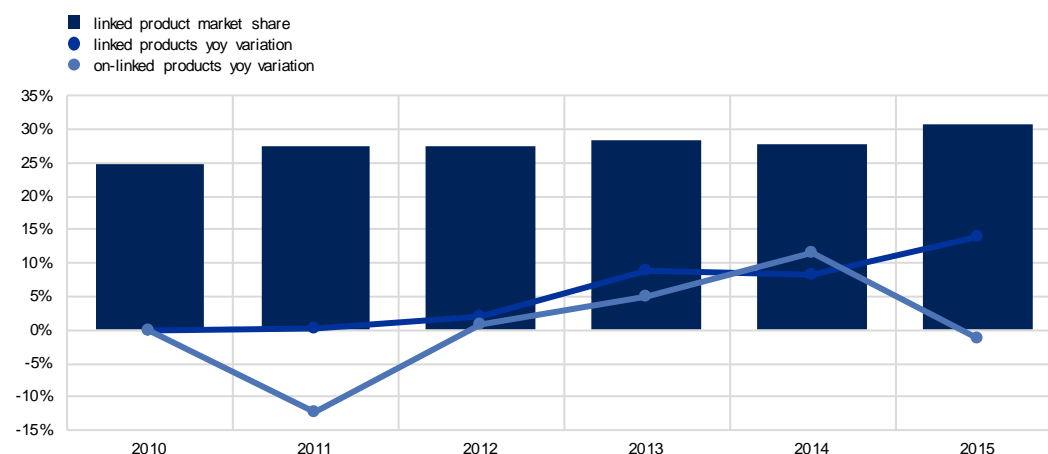
#### 3.1 Impact of low interest rates on business models

**Changes to product portfolios and business models result in the shifting of risk from NCIs to policyholders and beneficiaries.** In the longer term, a prolonged period of low interest rates may affect the product portfolio and business model of NCIs. A trend towards DC schemes, under which members bear the investment risks, and hybrid schemes, which combine elements of both DB and DC schemes, has been seen for many years in many countries. This is because sponsors are seeking to limit the cost of providing pension benefits, as well as their exposure to risks in general. A similar trend is under way in the insurance sector: the majority of insurers are reducing the guarantees offered in new contracts and/or focusing on the sale of products without guarantees, or unit-linked products where the risk is borne by the policyholder. Also, in a number of cases the sale of certain guarantee products has entirely ceased. In several Member States, however, the insurance product mix remains fairly stable due to consumer preferences and competitive forces.

In those cases negative margins between returns on investments and (higher) guarantees on products will put further pressure on life insurers' balance sheets. While traditional (non-unit linked) products still dominate in the euro area market, an increase in the supply of (unit-linked) products without guarantees has started to emerge over the last few years.

Chart 7 shows that the growing trend towards unit-linked products has been most pronounced in the last year, especially if compared with the downward trend recorded by non-unit linked products.

Chart 7  
Market share and yoy variation of unit-linked products



Source: EIOPA 2015 (sample of large insurance groups from AT, FR, DE, IT, NL and UK).

**Life insurance undertakings and regulators are acting differently towards existing business and new business.** With regard to new contracts, there is a general trend across pension funds and insurance companies towards lower levels of guarantees as well as a lower incidence of guarantees. This is partly mandatory, as in several Member States the maximum level of guarantees that life insurance companies can offer is linked to, or limited by, the effective yield on the national sovereign (10-year) bond rate. Solvency II also requires additional capital, to reflect the extra risks involved if insurance contracts offer guarantees.



In 2015, EIOPA carried out a survey in order to obtain an overview of possible future regulatory trends for the maximum guaranteed rate in a Solvency II environment. The results show that the situation varies across countries, depending on whether individual countries apply a system which sets a maximum guaranteed interest rate, and whether or not the system will continue to exist under the Solvency II regime.<sup>27</sup>

In some cases there are strategies in place to stop the sale of certain guarantee products. Revision clauses for guarantees, market value adjustment clauses in the case of lapse or surrender, and/or clauses shortening the duration of new contracts have also been adopted.<sup>28</sup>

Finally, as has already been mentioned, many life insurers have focused their new business efforts on lower-risk and less capital intensive unit-linked policies or other hybrid contracts with lower guarantees than in the past (for example, a 90% return-of-capital guarantee, along with a low level of annual minimum returns).

When dealing with existing business there is less room for manoeuvre due to legal constraints related to contracts already sold. The main actions in this area have been aimed at reducing profit shares, setting up preventive reserve funds/additional technical provisions<sup>29</sup>, campaigning for policyholders to switch to new product conditions or other types of products, and renegotiating contract terms for existing business, where feasible. These last actions could have contributed to the increase in the sale of unit-linked products recorded in 2015.

### 3.2 Implications for the real economy

**The trend described above towards new financial products with lower levels of guarantees may lead to an increase in the supply of risk-bearing capital to the real economy.** A shift in the product mix towards contracts in which the risk is borne by policyholders, members and beneficiaries (e.g. unit-linked, DC and investment funds) may change the investment behaviour of NCIs. In the case of lower levels of guarantees or in the absence of guarantees to policyholders, the demand for fixed-income products like government bonds could be expected to diminish. Consequently, insurers might be more inclined to move into riskier assets which could lead to an increase in the supply of risk-bearing capital to the real economy. For example, Banque de France (2014) shows that the investment behaviour of insurers differs between contracts with guarantees and unit-linked contracts. For unit-linked contracts, the asset allocation was tilted more towards riskier assets.

Such shifts in asset allocation may be the result of a “search for yield” not only by NCIs themselves, but also by their policyholders; a “search for yield” by the latter may be down to substitution effects in consumer demand. The purchase of a guaranteed stream of (retirement) income is expensive in a period of low interest rates, which makes other retirement savings products relatively more attractive.

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<sup>27</sup> EIOPA Financial Stability Review December 2015.

<sup>28</sup> EIOPA: A macroprudential approach to the low interest rate environment in Solvency II (March 2016). <https://eiopa.europa.eu/Pages/News/EIOPA-macroprudential-approach-to-the-low-interest-rate-environment-in-Solvency-II.aspx>

<sup>29</sup> E.g. the German local GAAP, which is otherwise based on historical cost, contains a provision to use a lower discount rate for in-force business. This rate is derived from the ten-year average of risk-free rates and has been declining steadily for a couple of years. In effect, Germany's life insurers had to reserve a total of over 4% more than before this provision (YE 2015).



The shift from traditional insurance products to more “financial” products could imply inefficient risk-taking capacity since individual policyholders are not as well placed as large insurers to manage and absorb market risk (see also the chapter “Risk Assessment”). If policyholders are willing to accept contracts with more risk, this could lead to an increase in the volatility of consumption. Conversely, if policyholders are not willing to bear more risk and continue to choose guaranteed products, they will probably receive returns that are much lower than those for products issued previously, which may also negatively impact future consumption.



## Section 4

# Market structure and concentration

While the non-banking sector could certainly increase in size and importance due to a prolonged low interest rate environment, its overall structure is not likely to change. However, there could be a trend at European level towards a greater share for segments that are less exposed to the low-yield environment.

The foremost financial stability issue in this respect is the potential emergence of new “too big to fail” actors due to increased market concentration.

**A continued depressed investment return outlook will probably accelerate the merger and acquisition (M&A) activity that was seen in 2014 and 2015.** As high capital reserve levels, increased price competition, and stagnant organic growth continue to dampen insurance company returns, strategic buyers are expected to turn to M&A (inorganic growth) to expand capabilities and markets. Economies of scale are a way to achieve lower costs.<sup>30</sup> The disposal of legacy and non-core business is expected to accelerate due to the capital inefficiency of these activities once the regime is in force. Furthermore, a prolonged LIRE will put increasing pressure on small and mid-sized insurers, driving further consolidation – this particularly concerns life insurers with relatively high levels of guarantees. The costs of administering legacy portfolios, especially on a unit cost basis, will probably eventually make a large number of businesses and segments uneconomic as these books run off and total assets fall year on year. Private equity, as a new source of capital, will introduce a further dynamic to future M&A activities. In 2014 a total of almost 360 completed deals were reported worldwide. In general, there are more deals for life than for non-life insurance companies and there tend to be fewer acquisitions in Europe and North America, while mergers in the Asian Pacific region were on the rise from 2008 to 2014 (Swiss Re, 2015).<sup>31</sup> The total number of institutions in Europe decreased from 1971 to 1760 between 2012 and 2014.

A deeper analysis is needed to assess whether or not this development has already led to a significant market concentration. For Germany's life insurance industry, for example, a Herfindahl index, a commonly accepted measure of market concentration, of below 800 still indicates low market concentration. The same could be said for the European insurance sector as a whole.<sup>32</sup>

**The IORP sector, given its nature and legal structure, does not carry out M&A activities, although there is, however, evidence of market consolidation** in the EEA, and in the UK in particular.<sup>33</sup> These consolidations are triggered not by a LIRE but instead by recent pension

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<sup>30</sup> Fenn et al. (2008) examine 14 major European countries from 1995 to 2001 and find large-scale economies ranging from 40% for the smallest life insurers to 10% for larger firms. Bikker (2016) finds similar-scale economies in the Netherlands for life.

<sup>31</sup> Recent examples are L&G and Canada Life, where the European Commission has approved the acquisition of Legal & General International Limited of Ireland and the life insurance portfolio of Legal & General Deutschland by Canada Life of the UK. The UK life insurer Aviva took over Friends Life. Anbang, a (Chinese group) acquired the NL Insurance undertaking Vivat (a subsidiary of the Dutch banking conglomerate SNS REAAL). On the reinsurance front, the XL Group acquired Catlin in 2015 and ACE acquired Chubb. The announced offer from Zurich to acquire RSA did not materialise in the end. PZU, however, acquired a bank.

<sup>32</sup> For an analysis of concentration in the UK insurance market, see [Bank of England](#).

<sup>33</sup> In the UK, it was effectively impractical to merge unrelated occupational pension schemes (IORPs) until fairly recently. In nearly all situations, schemes could only be sponsored by employers from the same corporate group. However, this requirement has now been relaxed. A number of organisations have established, or are establishing, “master trusts” that can legally consolidate occupational pension provision across unrelated sponsors. A similar development has been seen in the Netherlands, where new legislation allows multiple company pension funds to merge (with separate balance sheets) in a so-called APF (wet Algemeen Pensioenfond) as of 2016.





reforms such as so-called “auto-enrolment”, persistent market challenges (e.g. increasing pressure on non-profitable businesses and the need for efficiency gains through economies of scale), and regulatory changes making such consolidations more practical. The recent EIOPA market development report on occupational pensions showed a number of (further) opportunities for market consolidation and economies of scale in CY, IE, and the UK (EIOPA, 2015). For DB pension funds, there is also some evidence of pension obligations being shifted to insurers through pension buy-outs.

**For investment funds, low interest rates may drive structural changes and boost consolidation, although M&A activity is not expected to be the main driver of this.** Low yields put pressure on profit margins as these are typically a small proportion of investment returns. However, European asset managers could opt for strategies that are less drastic than M&A activities, such as cost cutting or reducing the total number of funds, to cope with margin pressure in an increasingly competitive market. This also stems from the fact that the European investment fund market still has a large institutional component, namely insurance and pension fund assets. Nevertheless, there is still room for selective M&A deals among European asset managers, particularly where institutional investors are increasingly trying to move from traditional markets into alternative investments, private equity and real estate. These deals may, in fact, be focused on, although not limited to, smaller, specialised asset managers seeking to add to existing products, competences and distribution channels.



## Section 5

### Risk assessment

In order to avoid any overlap with other sections of the technical documentation, the risk assessment and policy proposals regarding leverage and liquidity risk for asset managers and investment funds are addressed in Section D, while the assessment and proposals regarding interconnectedness are addressed in Section E.

#### 5.1 Risk of widespread solvency problems for life insurance companies

##### **Life insurance companies could be severely impacted by a low interest rate environment.**

These companies could face solvency problems and it is difficult to earn sufficiently high returns on investments in a LIRE. This is a problem for business models with substantial duration or cash-flow mismatches and long-term liabilities with relatively high guarantees. As outlined in Section 2.1, the 2014 EIOPA Stress Test showed that in a prolonged low interest rate environment a significant number of insurance companies could face SCR shortfalls.

**Life insurance companies will be affected primarily if their business models include a high proportion of guaranteed products and other interest-rate sensitive products.** It should be noted that the EU life insurance sector is heterogeneous and that not all companies or countries face solvency problems to the same extent. However, when the balance sheet of a life insurance company has a large negative duration gap or substantial cash-flow mismatches, its own funds are characterised by high interest rate sensitivity. The 2014 EIOPA Stress Test provides an indication of which countries' insurance sectors would be most affected. Vulnerable life insurers are those with long-term guaranteed returns in Austria, Germany, the Netherlands and Sweden (in these countries the duration of liabilities exceeds 15 years). In addition, life insurers whose own funds are characterised by high interest rate sensitivity (at least 10%) are vulnerable, for instance, due to their comparatively large duration gaps (Austria, Denmark, Estonia, Finland, Germany, the Netherlands, and Sweden).

**The revelation over time of the impact of low interest rates on solvency ratios is crucially determined by solvency regimes.** Regulatory frameworks may smooth the effect of low interest rates on solvency ratios over time. Although they may be market consistent under Solvency II, solvency ratios may continue to deteriorate in the future given falling interest rates under the "low for long" scenario, due to the use of "transitional measures". However, the application of these transitional measures may help to prevent abrupt shocks from LIRE, allowing life insurers to gradually accommodate consecutive increases in the value of the technical provisions over time.

**Overall, there is a minor risk of cross-sectoral spillovers.** First, the financial distress of insurers may cast doubt on the financial stability of the insurance sector, affecting public confidence in the soundness of the financial system. Insurance companies may fail if it transpires that an orderly resolution or takeover by larger entities is not possible. This could affect the real economy and the role of insurers in providing savings products to households. Moreover, in some countries insurers' financial distress could have a direct impact on their creditors and consumers. As a result, consumers might move their savings from life insurers to banks or other financial sectors through investment funds. Finally, cross-border spillovers may arise within insurance groups with foreign subsidiaries, affecting countries where such subsidiaries have a significant market share.



## 5.2 Risk of widespread (disorderly) failures of life insurance companies

**Disorderly failures of life insurance companies are a major risk since policyholders could lose a significant part of their investment, or public subsidies might have to be used to compensate for these losses.** In the case of lower solvency ratios, life insurance companies are more likely to run into financial distress and, for example, be unable to meet their obligations in the end, which could lead to more failures. Failures are considered disorderly when policyholders lose a significant part of their investment or when those losses can only be avoided through public subsidies. A failure is more likely to be disorderly in character if intervention is not planned proactively. Under Solvency II, the valuation of liabilities is closely dependent on (for example) the level of the Ultimate Forward Rate (UFR). This rate reflects the long-term character of insurers as institutional investors and its stability prevents excessive volatility in the valuation of liabilities. However, any departure from a purely market-consistent approach could increase the complexity of a risk transfer and the price that market players would be willing to pay in the event of a transfer of liabilities. Guarantee schemes, if needed to compensate policyholders, may not be able to cope with the volume of claims or the level of funding needed if several life insurance companies fail simultaneously in a Member State. In that case either public subsidies will be required or policyholders will bear losses.

**The severity of the risk is low if only a number of smaller entities are at risk of failure, while it is likely to increase if larger insurance companies are also at risk or many entities are at risk of failure simultaneously.** The 2014 EIOPA Stress Test reported that mainly the smaller insurance companies were at risk, although risk-free interest rates have fallen considerably since then. The most vulnerable countries are those characterised by a large number of life insurers with solvency problems and protection schemes that are either absent or insufficiently equipped to deal with these problems.

**Cross-sectoral spillovers will be minor if only smaller companies fail, since they have less relevance for capital markets, although spillovers may be of medium dimension if large companies also fail.** The impact on households could be significant in the case of a taxpayer funded bail-out. Insurance companies' links to other financial sectors and the real economy are mainly domestic, although cross-border spillovers could occur if, at group level, foreign subsidiaries have a significant share of the market.

## 5.3 Risk of widespread failures of DB pension funds

**Pension funds' vulnerabilities are mainly linked to duration and cash-flow mismatches.** In this respect vulnerabilities are similar to those of insurance companies. However, DB pension funds are not as evenly distributed across the EU as insurance companies and vulnerabilities have only been identified in a few Member States. Furthermore, national measures have been taken in these Member States to address risks, and economy-wide pension protection schemes in some Member States serve as an important risk-mitigating factor.

**In the long term, under a prolonged low interest rate environment, pension funds with defined benefits may end up with insufficient funds to fulfil promises.** Only a few countries have significant levels of defined benefit pension funds, or DC schemes that provide partial



guarantees.<sup>34</sup> The EIOPA IORPs Stress Test for 2015 shows that economies are vulnerable in different ways. In some jurisdictions pension fund shortfalls are covered by support from the sponsoring employer while in others shortfalls lead to reductions in pension benefits. Furthermore, the EIOPA IORPs Stress Test shows that countries with national regulatory frameworks that do not reflect market conditions may hide pension fund vulnerabilities. This could be the case if the national frameworks do not use appropriate discount rates, or do not account for risks such as market risk, operational risk or counterparty risk. However, EIOPA also notes that while market-consistent valuation methods give a more realistic view of prospective liabilities, it is important to bear in mind that the payments and outflows of pension liabilities are very long term in nature, which allows for substantial recovery periods and adjustment mechanisms.

The risk's overall severity (relative to other risks discussed) is viewed as medium since such failures will typically take a long time to materialise, the risks are limited to only a few Member States, and there are national mechanisms in place to address shortfalls so that funds do not 'fail'. At the same time, the impact should not be underestimated. For example, in the Netherlands it is becoming increasingly likely that pension funds will be unable to fulfil obligations given solvency ratios that are too low and, as a consequence, will reduce benefits that impair the (future) income of members and beneficiaries.

**There is significant potential (longer-term) interaction with the wider economy.** First, reducing pension benefits may impair consumer confidence. Second, in some Member States with significant DB pension systems, the extra costs of honouring promises in a LIRE largely fall on the sponsoring employer. If the burden on sponsors is not managed adequately, high costs for sponsoring employers may affect the real economy by constraining the sponsors' cash flows. However, national prudential regimes may dampen the impact of this on sponsoring companies by allowing extensive recovery periods. The EIOPA Stress Test concludes that further work is needed to acquire a deeper understanding of the impact of future contribution increases on sponsors and the real economy.

#### 5.4 Excessive risk-taking (“search-for-yield” behaviour) by NCIs

**In a prolonged period of low interest rates NCIs (especially DB pension funds and life as well as non-life insurance companies) may be inclined to increase their risk tolerance to preserve investment returns beyond risk-bearing and management capacities.** In this respect, a shift to riskier but higher-yielding investments or to less liquid long-term investments may take place. In addition, if low interest rates put the profitability of traditional activities under pressure, NCIs may be inclined to increase non-traditional investments such as credit intermediation. Examples of non-traditional investments and non-insurance activities by insurers are derivatives trading, short-term funding (maturity transformation), and financial guarantee and mortgage guarantee products.

**The continued issuance of guaranteed-rate products by insurance companies will put severe pressure on the profitability of NCIs, thereby increasing incentives that encourage “search for yield” behaviour.** The negative trend in the average credit quality of outstanding EU securities often contributes to (at least) a (passive) deterioration in the investment portfolio quality of NCIs. A trend towards non-traditional investments could potentially be amplified by regulatory

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<sup>34</sup> Deemed to be outside the scope of this analysis are Member States that have significant book reserve DB pension systems (involving DB pension promises that are honoured by direct payments from employers' balance sheets rather than from an IORP) or qualitatively similar state pension arrangements, since these types of pension systems are thought by many to fall outside the financial system.



arbitrage aspects if capital costs and regulatory restrictions on providing loans were lower for insurers or other NCIs.

**Spillovers are likely to affect banks and non-banks due to increased interconnectedness.** At the same time, retail investors and households might be affected more than institutional investors due to the limited disclosure of increased risk exposure by NCIs. Distress from spillovers could involve the whole EU and especially countries where many life insurers write cross-border business. Also, an increase in investments by EU NCIs in emerging markets could propagate spillovers beyond the EU. Distress within insurance groups may affect subsidiaries abroad, especially in cases where subsidiaries hold a significant market share. Finally, excessive risk-taking may enhance the risk of widespread failures of life insurance companies.

## 5.5 Shift of investment risk to policyholders

**A shift of investment risk to policyholders will lead to more volatile household income.** If interest rates stay low, life insurance companies and DB pension funds may continue to change their product portfolio and business models, resulting in a shift of risk to policyholders and beneficiaries. Low interest rates make selling a guaranteed stream of (retirement) income relatively expensive, and selling other products without guarantees more attractive. It should be noted that household consumption may be more volatile if households are willing to accept contracts with riskier features. Furthermore, a low-yield/low-growth environment leads to a lower level of income for future retirees generated from insurance and pensions products. Eventually this may result in lower consumption.

**If NCIs move away from products with guarantees their risk profile will benefit. On the other hand, mis-selling risks could increase if insurance companies do not ensure that risks are adequately communicated to consumers.** Mis-selling risks, stemming from financial products that do not properly match consumer risk profiles, could cause reputational risk. Policyholders often find innovative products more complex and more difficult to understand and, as a consequence, appropriate consumer awareness and information is important. Countries in which households depend, to a large extent, on funded pension provision (as opposed to pay-as-you-go public schemes) or insurance saving products offering guarantees, are most vulnerable in this respect. Given the mainly domestic nature of insurance contracts, the impact would be mainly at country level rather than EU level.



"Low for long" scenario

Risk		Parts of EU financial system		Potential spillovers and interactions			Amplifying / mitigating mechanisms		Final assessment
Risk narrative	Assessment of severity (high / medium / low)	Most vulnerable entities / activities **	Most vulnerable countries	Potential cross-sectoral spillovers	Potential cross-border spillovers	Potential interaction with other risks	Identified vulnerabilities / aggravating factors	Factors mitigating the risk	Overall assessment of severity
Risk of widespread solvency problems for life insurance companies	Medium to high	Life insurance companies characterised by substantial duration or cash-flow mismatches combined with high proportion of guaranteed products and other interest rate sensitive products	Countries where high, long-term guarantees and large duration mismatches play an important role for life insurers	Minor to intermediate	Minor	Abrupt yield reversal	The timing of the impact of low interest rates on solvency ratios is crucially determined by solvency regimes. Typical regulatory frameworks smooth the effect of low interest rates on solvency ratios over time	Reduction of the level of guarantees for new products sold and more prudent asset-liability management	Possible future policy actions
Risk of widespread (disorderly) failures of life insurance companies	Low to medium.	Life insurance companies with low (fully phased in) solvency ratios without adequate protection schemes	Countries in which a large number of life insurers have solvency problems and/or protection schemes are insufficient	Minor to intermediate	Minor		The Ultimate Forward Rate (UFR) reflects long-term character and avoids excessive volatility, but also poses risks since it can create a gap between the economic value and the regulatory value	Reduction of the level of guarantees in new products sold and more prudent asset-liability management taking effects of the UFR and transitional measures explicitly into account	Possible future policy actions
Risk of widespread failures of pension funds (unable to fulfil promises)	Medium	Defined benefit pension promises	Countries with significant pension assets as a percentage of household financial assets in DB schemes and also in DC schemes that provide (partial) guarantees	Minor. Confidence channel (mainly)	Minor, as few specific cross-border schemes	Significant potential (longer-term) interaction with wider economy given role played by sponsoring employers in DB pension systems and possible fall in (future) income of beneficiaries	Largely the same as for insurance companies: duration and cash-flow mismatches in combination with high guarantees.  Also for pension funds, the timing of the impact of low interest rates on solvency ratios is crucially determined by solvency regimes	Existence of economy-wide pension protection schemes in many (but not all) Member States	Warranting policy actions
Excessive risk taking (search-for-yield behaviour) by NCI's.	Medium	Life insurance companies and DB pension funds where investment returns are already below or close to the guaranteed rate and open-ended funds including constant NAV money market funds and high-yield bond funds	Countries where life insurance companies have a high dependence on guaranteed rate products; large DB pension fund schemes; large MMFs.	Spillovers likely to affect banks and non-banks due to increased interconnectedness	(Substantial?) Possibly the whole region	Potential effect on the risk of widespread failures of life insurance companies	Continued high dependence of insurance companies on guaranteed rate products will put severe pressure on the profitability of NCI's, thereby increasing incentives for search-for-yield behaviour	Improving risk management capacities	Possible future policy actions



Shift of investment risk to policyholders will lead to more volatile household income.	Medium	Policy holders of beneficiaries in countries where pension funds or life insurance companies have low solvency ratios	Countries in which households depend, to a large extent, on funded pension provisions or insurance saving products offering guarantees	Minor	The impact is mainly at country level (no cross-border spillovers)	For NCIs, moving away from products with guaranteed features will benefit their risk profile	Mis-selling risks, stemming from financial products that do not match consumer risk profiles properly, may cause reputational risk	Raise consumer awareness and improve information	Possible future policy actions
Shocks and contagion from shadow banking sector to rest of the financial system.	Medium	Activities: securities lending; margin finance; derivatives trading; securitisation Entities: UCITS using complex investment strategies (in particular bond, highly leveraged hedge funds	Countries where the financial system is relatively more reliant on non-bank credit intermediation	Substantial cross-sectoral spillover across market participants. Exposures likely to be concentrated in large umbrella groups	All EU countries potentially affected	Potential effect on the risk of widespread failures of life insurance companies and pension funds	Lack of transparency in some markets or types of transactions; limited disclosure of ultimate entities bearing risks; large reliance on repo or money market funding; expansion of derivatives trading activities; limited availability of high-quality collateral	Diversification of funding sources; backstop or support from umbrella entities with deep pockets may limit scope for failure of small AM or shadow banks and reduce run risk; improved collateral management	Possible future policy actions



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## Members of WS3

The members of WS3 are:

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(Chair, DNB)

**Giovanni Di Balsamo**  
(ESRB, secretary)

**Mara Aquilani**  
(IVASS)

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(Banco de Portugal)

**Christian Peter Weistroffer**  
(ECB)



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Postal address 60640 Frankfurt am Main, Germany  
Telephone +49 69 1344 0  
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