

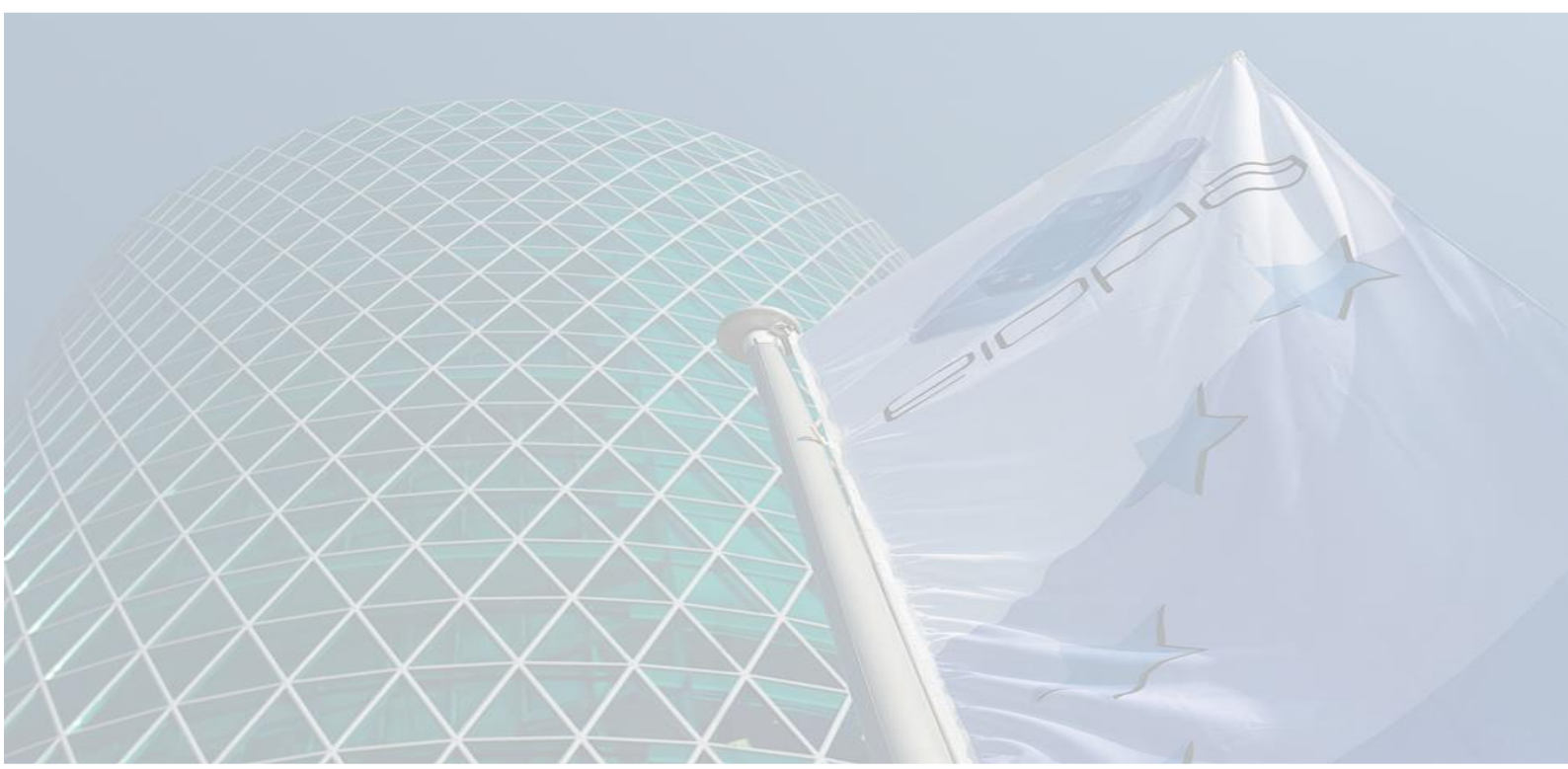


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EIOPA-FSC-16-010/2016

# Financial Stability Report

June 2016



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## ***Foreword by the Chairman***



The current macro-economic and financial environment remains extremely challenging for the insurance and pension fund sectors. Although it is generally assumed that yields will remain low for the foreseeable period of time, the ongoing debate on whether the present levels represent the new “normal” or the gradual move back to the long-term averages should be expected, is still non-conclusive. Nevertheless, a moderately prevailing view among economists and analysts point out that the so-called “low for long” scenario is more likely than a gradual increase of interest rates to the previous levels.

It is clear that insurers and occupational pension funds (IORPs) need to use robust risk management practices to deal with the ongoing challenges. In the insurance sector, not all institutions are equally affected by the low interest rate environment due to diverging market conditions, different product or business lines, maturity of liabilities and varying levels of guaranteed interest rates. For already several years, EIOPA has been devoting a lot of attention to these risks, monitoring the implications of such an environment and recommending concrete actions from supervisors and the industry.

Regarding the IORPs sector, the results of the first EIOPA pensions stress showed that a prolonged period of low interest rates will pose significant future challenges to the resilience of defined benefit schemes. The absorption of these shocks depends heavily on the time element for realising liabilities and the mitigation and recovery mechanisms in place in each country. While pension plan liabilities have a very long-term nature, it is important that supervisory regimes are prepared to deal with these stresses in a transparent way, be it through appropriate recovery periods, the role of pension protection schemes, increased sponsor’s contributions and/or benefit adjustment mechanisms. Furthermore, EIOPA will do further work to analyse how prolonged adverse market conditions will affect the sponsors’ behaviour and the possible consequences for financial stability and the real economy.

As part of the policy responses to the current environment, EIOPA issued an Opinion on a common framework for risk assessment and increased transparency for IORPs.

On the insurance side, to follow on the current risks, EIOPA will conduct the 2016 European insurance stress test. EIOPA will focus on two specific risks to the industry: the prolonged low interest rate environment and the double hit scenario assuming an

abrupt reversal of risk premiums combined with low risk free rates. The double hit scenario has been developed and operationalised in cooperation with the European Systemic Risk Board (ESRB). In order to include a higher number of small and medium sized insurers, the participation target in each country was increased from 50 to 75 per cent share of each national market in terms of gross life technical provisions.

The Solvency II regime came into force on 1st January 2016. Insurance and reinsurance undertakings across the EU are now subject to a harmonised, sound, robust and proportionate prudential supervisory regime, for which they have been preparing during the last few years. Under the new regime EIOPA has an important role in order to monitor and ensure the consistent and convergent application of Solvency II.

Solvency II is by construction a micro-supervisory regime but it also contains some elements that were designed to limit procyclicality and deal with system-wide risks. Looking forward, within the Solvency II review process we have to carefully analyse the way the current anticyclical tools work in practice and assess if further macro-prudential tools are needed in order to achieve an adequate balance between risk-sensitiveness and procyclicality. Moreover, it is fundamental that the potential macro-prudential tools are integrated in a consistent way within the Solvency II framework in order to ensure a common risk basis to address individual, system-wide and systemic elements.

Finally, in line with the EIOPA long-term strategy to stimulate the discussion on all relevant issues related to European insurance and occupational pension sectors, this report includes a special thematic article investigating the impact of mergers and acquisitions in the European insurance sector. It is extremely important to trigger and further enhance constructive discussions and cooperation among supervisors and academia on areas of common interest, further enhancing risk assessment and efficient supervision.

## ***Executive Summary***

In 2016 the macroeconomic environment has continued to be weak. Although the ECB still pursued its path of monetary stimulus, low crude oil prices put further downwards pressure on inflation expectations implying a continuation of the current low yield environment in the short to medium-run. This poses increasing reinvestment risk for the European insurers and pension funds. Additionally, geopolitical risks, the situation in emerging markets as well as Greece or a potential outcome of the EU Referendum in the United Kingdom contribute to further uncertainties. In this environment where government bonds yields remain very low and economic growth in Europe is fragile and heterogeneous, a double-hit scenario (decreasing assets' value and sustaining value of liabilities) cannot be ruled out. Moreover, as technological innovation progresses in a fast pace, the insurance sector increasingly faces higher competition. The industry is still lagging behind in the digital consumer experience while innovative business models based on technology - commonly known as InsurTech - emerge. This development also implies that companies are more and more exposed to cyber-attacks as well as new market opportunities to provide insurance protection against these new risks.

On average EU gross written premium growth (GWPs) has persisted through 2015, although growth was higher for non-life insurers than for life insurers. In the life sector the developments in the national markets were clearly challenging and not uniform: some countries were clearly growing, whilst others reported premium declines. Increasingly new products are on offer with for example reduced average guaranteed rates to make sure that yields promised are more aligned with yields that are obtained in the market. Declining profitability indicators such as the investment return or the return on equity (ROE) show how insurers are already affected by the low interest rate environment. Although Solvency I ratios have dropped in many countries in 2015, in preparation of Solvency II, some companies have taken measures to underpin their capital position.

The reinsurance market continues to suffer from an oversupply of capacity owing to the absence of large losses and alternative capital inflow. The price decline slowed down in 2015, but prices have not yet found their floor. On average, reinsurers maintained a strong level of capital through the end of 2015 and into 2016, helped by the lack of significant catastrophe activity in recent years and the availability of substantial capital market capacity.

The ongoing low interest rate environment continues to generate challenges to the European occupational pension fund sector as well. Cover ratios, based on preliminary data, seem to have dropped among the reporting countries for 2015 creating additional pressure to the sector. EIOPA's IORPs (Institutions for Occupational Retirement Provision) stress test in 2015 revealed that the sector is vulnerable to a persisting low yield environment, especially if it is complemented with sharp increases in risk premiums. However, EIOPA recognises that in many instances these risks would only materialise over a number of years. The recent exercise further underscored that current heterogeneous national prudential regimes are often not entirely sensitive to market price changes. This might lead to an underestimation of risks and makes it difficult to assess the impact on schemes across countries on a consistent basis.

The EIOPA risk assessment further confirms the low interest rate environment as a main concern among national supervisors. Unsurprisingly, the key risks and challenges classified as the most imminent in terms of their probability and the potential impact remain broadly unchanged, both for the insurance and pension sector. The investment portfolio remains focused on fixed-income instruments although some minor shifts towards other asset classes can be seen. These changes could signal the beginning of a changed portfolio composition that might evolve over time as a response to the low yield environment and also reveals a potential for excessive "search for yield" behaviour. Hence, national supervisors need to closely monitor this development to ensure that all risks are properly managed. It applies especially to life insurers with their long-term liabilities towards policyholders that are particularly affected by low yields and need to find assets providing returns corresponding to their commitments towards policyholders.

The report consists of two parts – the standard part and the thematic article section. The standard part is structured as in previous versions of the EIOPA Financial Stability Report. The first chapter discusses the key risks identified for insurance and occupational pension sectors. The second, third and fourth chapter elaborates on these risks covering all sectors (insurance, reinsurance and pension). The fifth chapter provides the final qualitative and quantitative assessment of the risks identified. This assessment is done in terms of the scope as well as the probability of their materialization using econometric techniques and qualitative questionnaires. Finally, the thematic article elaborates on the impact of mergers and acquisitions on European insurers using data on equity prices.

## About EIOPA Financial Stability Reports

Under Article 8 of Regulation 1094/2010, EIOPA is, inter alia, mandated to monitor and assess market developments as well as to undertake economic analyses of markets. To fulfil its mandate under this regulation EIOPA performs market intelligence functions regarding its supervisory universe, develops a market surveillance framework to monitor, and reports on market trends and financial stability related issues. The findings of EIOPA's market development and economic analyses are published in the Financial Stability Report on a semi-annual basis.

The relevance of the (re)insurance industry in the financial arena increased in the last decade. The volume of the assets of insurance undertakings and occupational pension funds makes them important investors in the financial market providing risk sharing services to private households and corporates and acting as investors, mostly with a long-term focus. Their invested assets aim to cover liabilities towards policyholders or members of pension schemes to which long-term savings products are offered, for example in the form of life assurance or pension benefits. Aside from offering savings products, (re)insurance undertakings provide risk sharing facilities, covering biometric risks as well as risks of damage, costs, and liability.

Financial stability, in the field of insurance and pension funds, can be seen as the absence of major disruptions in the financial markets, which could negatively affect insurance undertakings or pension funds. Such disruptions could, for example, result in fire sales or malfunctioning markets for hedging instruments. In addition, market participants could be less resilient to external shocks, and this could also affect the proper supply of insurance products or long-term savings products at adequate, risk-sensitive prices.

However, the insurance and pension fund sectors can also influence the financial stability of markets in general. Procyclical pricing or reserving patterns, herding behaviour and potential contagion risk stemming from interlinkages with other financial sectors, are examples that could potentially make the financial system, as a whole, less capable of absorbing (financial) shocks. Finally, new financial based products incremented the level of interconnectedness of (re)insurers with the other player of the financial market and needs to be duly reflected in any financial stability analysis.

The Financial Stability Report elaborates on both quantitative and qualitative information from EIOPA's member authorities. Supervisory risk assessments as well as market data are further core building blocks of the analysis.

### First half-year report 2016

EIOPA has updated its report on financial stability in relation to the insurance, reinsurance and occupational pension fund sectors in the EU/EEA. The current report covers developments in financial markets, the macroeconomic environment, and the insurance, reinsurance and occupational pension fund sectors as of 29th April 2016 if not stated otherwise.

# **PART I**



## ***1. Key developments***

The European macroeconomic environment has remained challenging since the last review in December 2015. Although the overall economic growth in Europe is positive, the outlook has deteriorated pointing out that growth is not robust yet and above all heterogeneous with peripheral countries still struggling to recover from the latest crisis. A slow reduction of the unemployment rate contributes positively to support domestic consumption. On the other hand, geopolitical risks have risen in the past few months. Challenges in Greece remain and a potential outcome of the EU Referendum in the United Kingdom could temporarily lead to uncertainties and volatilities in financial markets and challenge the European economic and political integration. Moreover, further potential terrorist attacks in Europe and the Syrian civil war, instrumental to the refugee crisis, might contribute to the overall European fragile economic environment. Additionally, risks from emerging markets driven mainly by China could deteriorate the global economic outlook. Chinese financial markets have been volatile in the past few months with spillover effects on the global economic environment. Other emerging countries like Brazil and South Africa have been facing negative economic consequences of falling commodity prices like oil which recently reached a very low (see Box 1) leading to the downgrade of the sovereign rating of Brazil. As a consequence, the likelihood of re-pricing of risk premia in global financial markets has further increased.

These external factors concur to worsen the already low growth environment and keep inflation low. In order to revamp the EU economic condition, the ECB proposed a robust and extended stimulus plan. The plan is based on an accommodating monetary policy and non-standard intervention enforced by the purchase of sovereign and recently corporate bonds of the EU area. Besides the potential expected positive impact on the real economy, ample source of funding concurs to keep yields in Europe close to historical lows enhancing "search for yield" behaviour and increasing the valuation risks. The effect on the market of the asset purchase program of corporate bonds by the ECB is still to be evaluated.

Against this background the main challenge for the EU (re)insurers and pension funds remain the low interest rates in a weak macroeconomic environment. Life companies with long-term liabilities and with a relevant portion of guaranteed return products are struggling to maintain a reasonable level of profitability and to match the obligation towards policyholders. As a consequence companies are exposed to reinvestment risk and possible excessive risk taking. Furthermore, high volatility and increasing risk

premiums in combination with low risk-free rates makes the insurance industry prone to the so called double-hit scenario.

In addition to the traditional risks, two other emerging elements represent both a threat and an opportunity for the insurance sector: the cyber risk and the InsurTech wave. Whilst posing a severe and increasing threat to the financial system<sup>1</sup>, cyber risk also offers new business opportunities for insurers at the same time.

### ***1.1. Low yield environment***

Low interest rates will remain a risk in the long run as inflation expectations have fallen sharply in recent months on lower crude oil prices. Furthermore, the ECB continued its path of monetary stimulus.

***Low yields and reinvestment risk are still on the spot.*** After a temporary increase of medium to long-term yields in October 2015 (Figure 1.1a), the trend has revised downwards once again. Short- and medium-term yields turned negative over a short horizon, reaching their lowest historical levels ever. Forward rates suggest even lower levels in the future (Figure 1.1b). Given the accommodative monetary policy in Europe (and a lowering of the ECB policy rate in March), a prolonged low yield environment can be anticipated.

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<sup>1</sup> Cyber risk has been gaining momentum with dramatic pace. In less than five years, it surged into the first top risks of global risks for business rankings (World Economic Forum).

Figure 1.1a: EUR swap curve (in per cent)

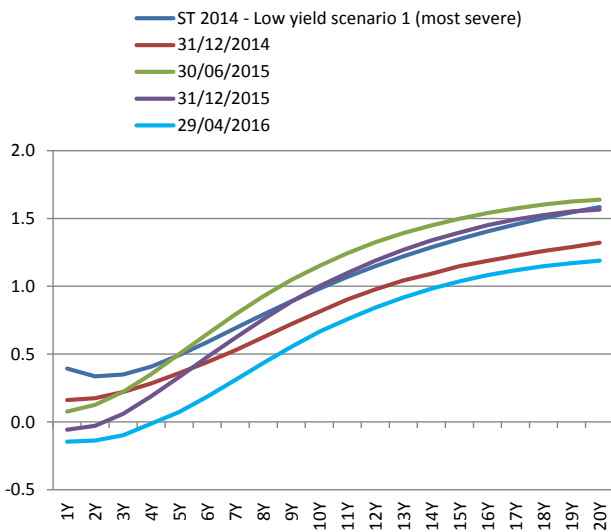
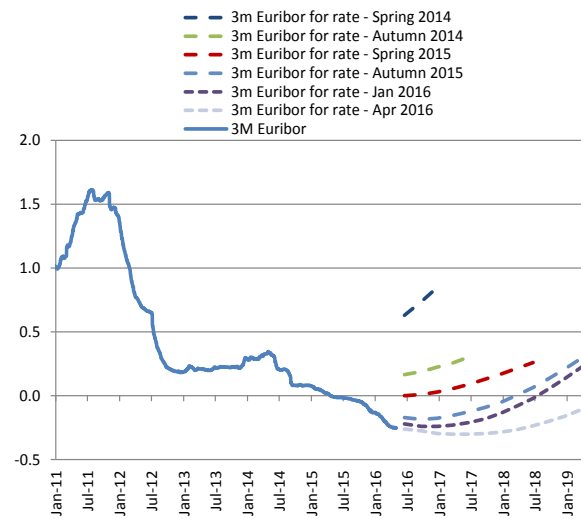


Figure 1.1b: 3M EURIBOR (in per cent)



Source: Bloomberg - Final observation: 29/04/2016

**Government bond yields remain at very low levels.** After the turbulence (increase in yields) caused by the situation in Greece in June and July 2015, euro area government bond yields have further temporarily dropped (Figure 1.2). The interest rate volatility remains high for 10-year government bonds involved in the (Quantitative Easing) QE program. Figure 1.3 shows how the effect is particularly significant for the higher graded countries' bonds as for example in Germany, Netherlands and France where the robust demand in combination with a reduced availability of securities on the market amplify fluctuations.

Figure 1.2: 10-year government bond yields (in per cent)

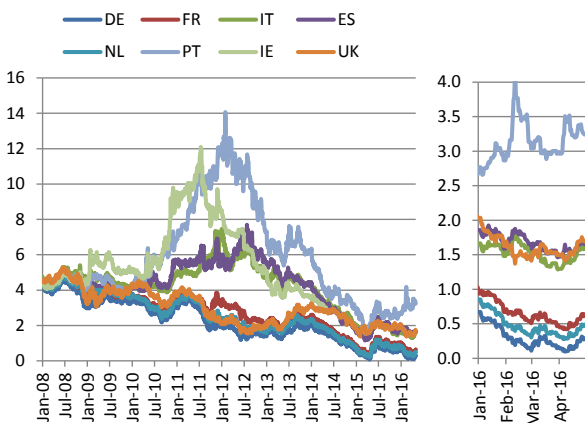
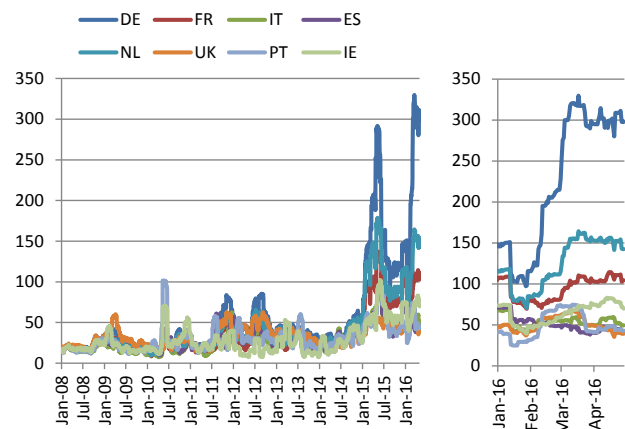


Figure 1.3: 10-year government bond 30-day volatility (in basis points)



Source: Bloomberg; Last observation: 29/04/2016

**Similarly, Euro area corporates yields (financials and non-financials) remain at very low levels** (Figure 1.4 and Figure 1.5). Increasing risks in emerging markets is narrowing geographic diversification for investments (e.g. the recent downgrade of Brazil below investment grade). Recently, corporate bonds have been included in the asset purchase program of the ECB. Effects in term of price and volatility of the securities shall be scrutinised in the future.

Figure 1.4: Corporate bond yields and EMU and US Indices (in per cent)

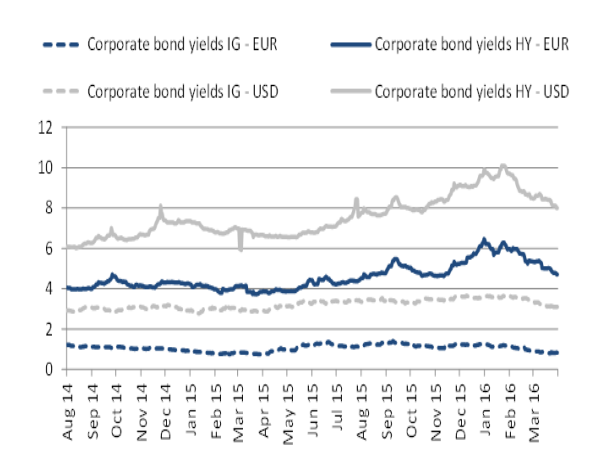
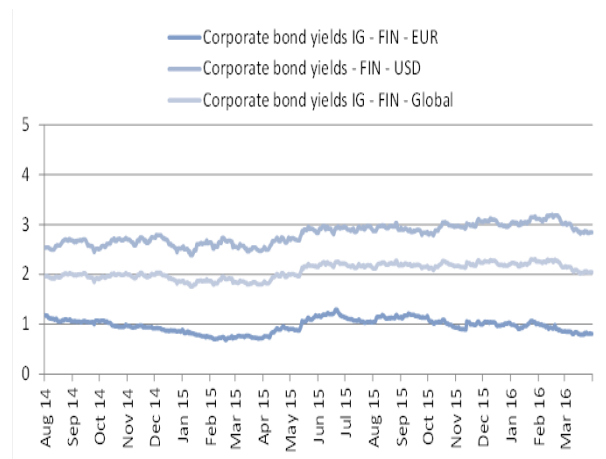


Figure 1.5: Corporate financial bond yields and EMU, US and Global Indices (in per cent)

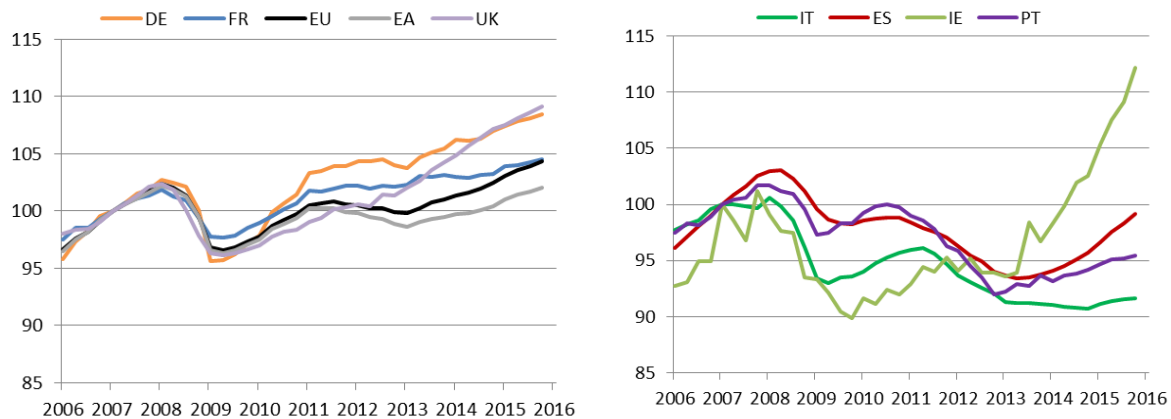


Last observation: 29/04/2016

Furthermore, excess of liquidity in the market leads to reduced sovereign bond yields which might not be in line with what credit risk fundamentals suggest. At the same time, the reduced availability of high-graded bonds will likely feed back into increases in bond prices and lower yields (Figure 1.4 and 1.5).

**The economic growth development remains weak and very heterogeneous in Europe.** Although overall slight positive economic growth can be observed, some countries still struggle to reach their pre-crisis levels (Figure 1.6). The latest economic outlook further suggests that growth is not robust yet with EU peripheral countries facing many structural issues including inflexible labour markets.

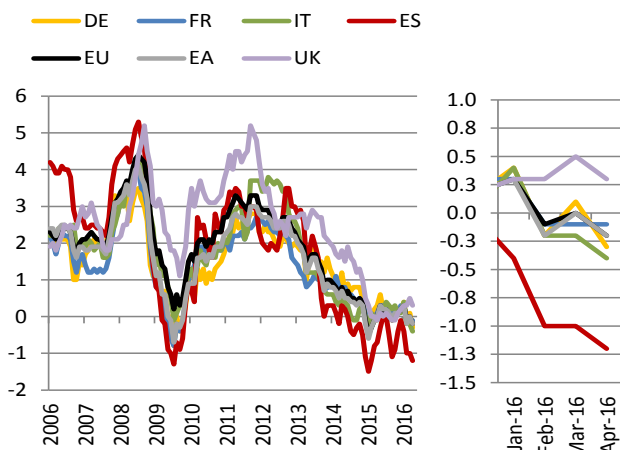
Figure 1.6: Real GDP development (index 2007Q1=100)



Source: Eurostat and EIOPA calculations - Last observation: Q4 2015.

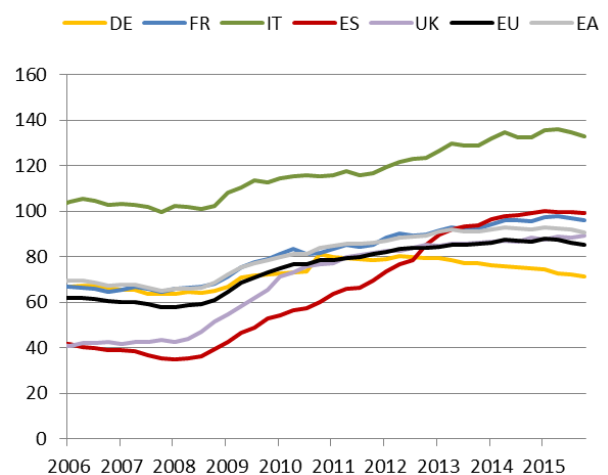
**A strong deflation pressure in the euro area has re-emerged.** The inflation rate across the EU countries remains low but is somewhat positive for some countries (Figure 1.7). Supported by the ECB's stimulus (Box 1) inflation rates have started to pick up slowly in most countries of the euro area. However, a debt overhang (Figure 1.8) and continuing uncertainty about the future development of some EU members, as well as geopolitical risks keep the average euro area rate at 0.03 per cent for Q1 2016, far below the target of 2.0 per cent.

Figure 1.7: Inflation rate (in per cent)



Source: ECB and Eurostat - Last observation: April 2016

Figure 1.8: Public Debt (as a per cent of GDP) - Countries



Source: Eurostat - Last observation: Q4 2015

### ***Box 1. Oil Prices and their potential impact on the European Economy and the Insurance Sector***

Low oil prices contribute mainly positively to the real economy by supporting consumer demand in developed markets, but also represent a potential threat to the insurance industry.

As the world's largest oil-importing region, the EU's oil import dependency rate is about 88.4 per cent.<sup>2</sup> In addition, due to its relative price flexibility, Europe is the region with the highest ratio of crude oil prices to domestic retail prices. This means that the fall in world crude prices translates into a substantial decline in petroleum prices at the retail level compared to other regions, thereby directly having an impact on demand channels. Such channels also lead to more purchasing power for consumers and lower the costs for transport and heating. Consequently, it increases profit margins for business. However, the repricing of gas and oil companies leads to higher refinancing costs. It also fuels volatility on equity and bond markets and increases credit risks.<sup>3</sup>

Consequently, the insurance sector is directly impacted by low oil prices. Although the share of this kind of investments is not large enough to be considered a high threat for the insurance sector in Europe, it limits the scope of alternatives of return even more within an already scarce environment. Moreover, the perspective of a persistent low oil price scenario triggers postponements and annulments of investments in projects related to exploration and energy production, which might reduce the demand for insurance coverage, affecting profitability. In addition, due to the dropping prices, many energy companies may want to (re)negotiate a cheaper alternative for their coverage. Through the rising claims on motor insurance, the cheaper oil also increases the pressure on the non-life sector. However, these effects might be partially offset by higher disposable income of households and other sectors implying a higher demand for insurance coverage. In the medium to long run, the potential increase in mergers and acquisitions among energy companies could impact premiums negatively, due to the reduced demand for insurance. Under these circumstances, the energy sector might become less

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<sup>2</sup> Source: Eurostat (2013).

<sup>3</sup> In Europe, twenty of the biggest banks own energy loans of nearly USD 200bn.

and less attractive possibly encouraging insurers to step out of the energy-related business eventually.

## 1.2. Credit risk

### ***Yields of Credit Default Swaps (CDS) remained at comparatively low levels.***

This development indicates some financial risk among major insurance and reinsurance companies (Figure 1.9 and 1.10), even if in comparison with the last financial crisis, CDS yields were much higher. Since the beginning of 2016, returns in all segments are mostly negative.

Figure 1.9: 5-year CDS - Insurance (in basis points)

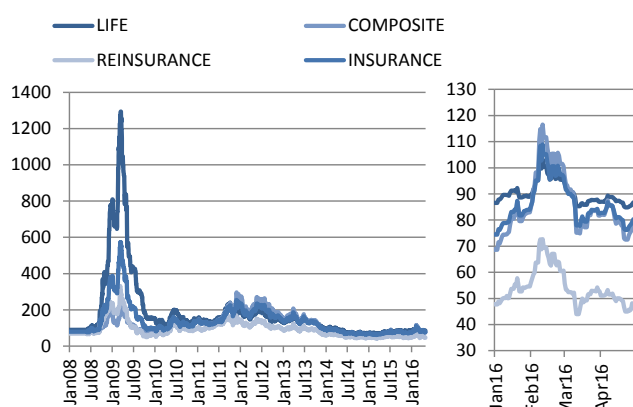
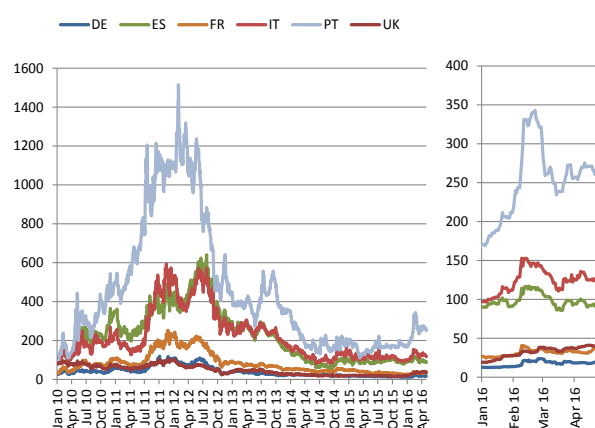


Figure 1.10: 5-year CDS - Sovereign (in basis points)



Source: Bloomberg. Last observation: 29/04/2016

Source: Bloomberg. Last observation: 29/04/2016

## 1.3. Digitalization, InsurTech and cyber risks

As technological innovation progresses in a fast pace releasing new business opportunities and new business entrants; consumers have more alternatives while the insurance sector faces stronger competition. Although this should be seen as an opportunity for insurers, it implies also risks. The industry is still lagging behind in the digital consumer experience while innovative business models based on technology - commonly known as InsurTech - emerge. This makes the need of modernisation imminent and crucial for insurance companies. As the migration towards highly integrated systems occurs, companies may also become more exposed to cyber-attacks.

***So far, most insurers put a focus on optimising existing tools instead of significantly reviewing and transforming their business models.*** However,

technology is likely to cause a profound change in the industry in the coming years by disrupting traditional business models.

***Box 2: Technological threats to the traditional business model of the insurance sector***

One of the most imminent threats enabled by technology to the traditional business model of insurers is the disintermediation process. Players operating in different markets with substantial data assets and more frequent consumer connections are entering in the insurance business and offering integrated solutions through their ecosystem, namely exploiting the extensive knowledge of consumers for instance via e-commerce, banking and e-travel.

Other innovative alternatives are new insurance distribution methods and peer-to-peer insurance. One example of a new distribution method is pooling users with similar needs and negotiating insurance deals to each group according to their specific needs. The system is usually highly automated and makes intensive use of social media.

Peer-to-peer insurance consists of consumers with similar needs supporting each other whenever there is a claim. In general, there is a connection via a website that offers a diversified range of providers, which covers any amount that exceeds the coverage in case of big claims. In the case that claims are not submitted, the members get part of their money back at the end of the policy contract. The more people are connected, the less cover the insurance provider issues and the higher the payback can be. This system does not only encourage improved behaviour but also avoids frauds.

On the one hand the increased competition pushed by new technologies is providing impetus to the evolution of the traditional business model in the insurance industry. On the other hand, this transition requires time and implies potential reduction of profits driven by higher acquisition costs and reduced fee-based income.

Digitalisation is a unique strategic opportunity for insurance companies as it does not only substantially increase the productivity by automatising processes and decreasing costs, but also improves connections with customers, offers new



products, integrates and manages data. Internet of Things (IoT)<sup>4</sup> and Big Data<sup>5</sup> are revolutionary trends that can provoke a deep transformation in the sector. The big amount of data and its interconnectedness builds a powerful ecosystem that is able to change the nature of management, risk modelling and reduces frauds significantly. The traditional risk assessment is based on an actuarial approach, heavily relying on past events to statistically estimate new events. By estimating new structure models that aggregate new sources of information, one can explore the driving factors of certain events and its consequences, providing more precise risk assessments. Moreover, the prevention loss can be substantially increased by implementing IoT. The idea is to connect everyday objects through internet devices and have access to data that they emit. By detecting certain risks earlier, for instance signs of fire, the costs of claims can be mitigated. Fraud can also be avoided and the claim procedure is quicker as the information is sent directly to the insurer. Smart insurance contracts also diminish the level of bureaucracy, cut costs, protect companies against frauds and increase the efficiency of the claim procedures by automating the insurance policy.

On the other hand, the more exposed the industry is to digitalisation, the more it is vulnerable to cyber incidents if the security system does not follow the same level of sophistication as its innovations. Cyber risk continues to pose a threat to the financial system. It has been gaining momentum with dramatic pace. In less than five years, it surged into the first top risks of global risks for business rankings<sup>6</sup>. As the insurance sector aims to enter into a digitalization area, migrating towards highly integrated systems and big data storage, it also gains more visibility as a target to cyber-attacks. Cyber incidents are particular dangerous because of its risk multiplier effect: they are not only a risk itself but also one of the causes of other top business risks, such as business interruption, supply chain risk and loss of reputation. The financial loss can be irreversible especially in the latter case. Besides those risks, it can also trigger solvency issues by the high legal costs involved in case of data breach with notifications, litigation

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<sup>4</sup> The Internet of Things (IoT) has been defined as a global infrastructure [...], enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies ( <http://www.itu.int/en/ITU-T/gsi/iot/Pages/default.aspx>).

<sup>5</sup> Big data is high-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making, and process automation. ( <http://www.gartner.com/it-glossary/big-data/>)

<sup>6</sup> [http://www3.weforum.org/docs/WEFUSA\\_QuantificationofCyberThreats\\_Report2015.pdf](http://www3.weforum.org/docs/WEFUSA_QuantificationofCyberThreats_Report2015.pdf) (World Economic Forum)

and solution, as well with fraud. The major cases of data breaches reported by insurance companies have been designated as short-term cyber attacks intended to compromise a system, steal and abuse specific information. One emerging trend seen as a safer alternative for some companies when implementing digital innovations in the near future is the use of blockchains<sup>7</sup>, especially to empower smart contracts.

Hence, cyber insurance represents both a threat and an emerging opportunity to the sector. Cyber coverage products are still relatively new in the market, and unlike other types of insurance, there is no standard methodology for pricing and there are usually several restrictive conditions within the policies. This risk management factor is an additional threat to the industry and implies higher premiums than other liability risks, which is one of the main barriers for the consumers.

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<sup>7</sup> A Blockchain is a cryptographed decentralized data structure that records events shared and validated by different counterparties. It is considered a very safe and transparent system. Once entered, information cannot be erased.

## ***2. The European insurance sector***

The current low interest rate environment suggests that profitability and sustainability of insurers holding high portions of guaranteed products are under severe pressure. Historically, insurance companies were in a position to buy long-duration bonds offering yields sufficiently high to cover their guaranteed rates to policyholders. In an attempt to meet these guaranteed rates, some insurers will be more inclined to some "search for yield" via riskier investments. Such behaviour is more likely to affect insurers offering high guaranteed returns. The problem is not the search for yield per se, but that insurance companies could take on too much risk, beyond their risk-bearing capacity ("excessive search for yield behaviour"). Being locked into unprofitable long-term contracts and promising to pay high rates of return, far above what insurers can earn at a time of very low and close-to-zero interest rates, might lead to such search for yield or search for duration behaviour, for example via investments in infrastructure or new energies. Hence, national supervisors need to closely monitor these cases to ensure that all risks are properly managed.

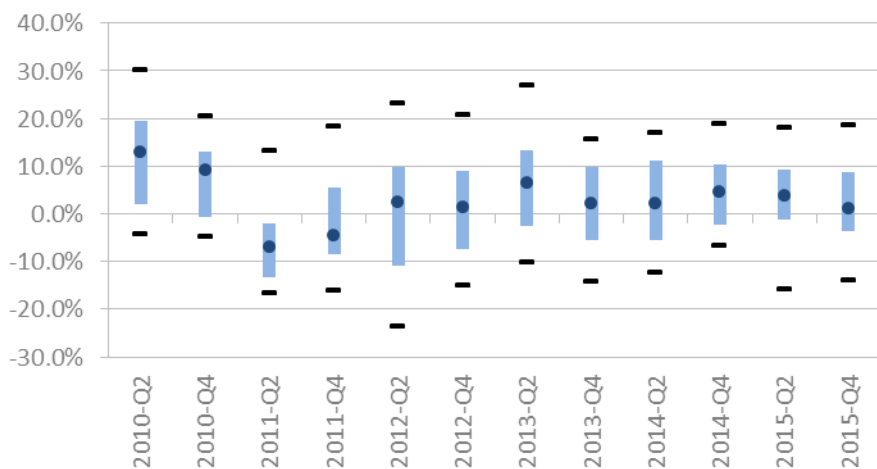
### ***2.1. Market growth***

Premium growth continues to be very heterogeneous and stronger for non-life insurance in Q4 2015. In times of low yields, slacking life premium volumes prove to remain a big challenge for the business models of some insurance undertakings.

#### ***LIFE INSURERS***

***The overall growth rate of gross written premiums (GWP) continues to be positive for the median company of the sample*** (Figure 2.1). A lot of dispersion can be observed though: whilst the 90th percentile reported strong growth, with premiums growing by 18.5 per cent in Q4 2015, the 10th percentile continued to be negative, with a negative growth rate of 13.9 per cent in Q4 2015 (compared with 15.9 per cent in Q2 2015).

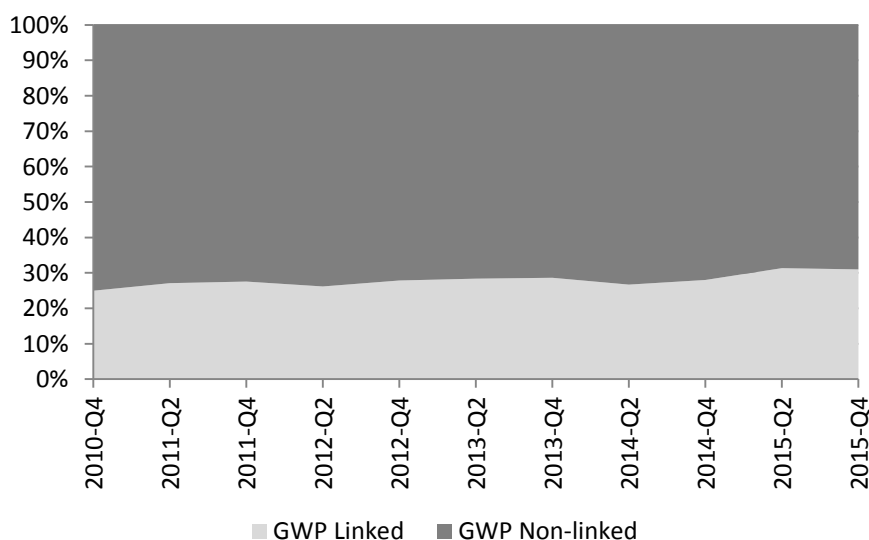
Figure 2.1: Gross written premiums - Life (year-on-year growth in per cent; median, interquartile range and 10th and 90th percentile)



Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)

**For life business, premium growth was highest for unit-linked products** (Figure 2.2). This trend has confirmed more recently. A couple of new developments can be seen: for example, single premiums (that were eventually transferred into pension products) contributed to premium growth on the life insurance side. The deteriorating market environment and a high unemployment rate had on the other hand also a negative impact on life insurance products' demand.

Figure 2.2: Gross written premium, share of linked vs. non-linked products (in per cent)



Source: EIOPA (sample based on 15 large insurance groups from AT, FR, DE, IT, NL and UK)

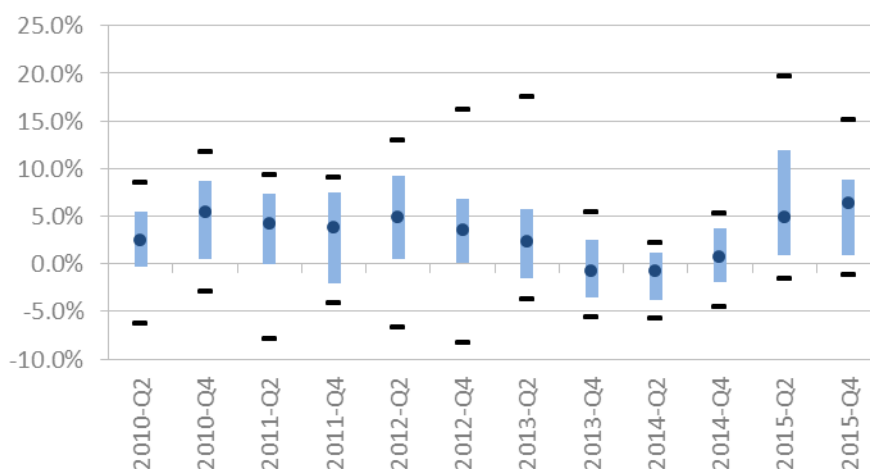
**Efforts are already made to limit the impact of low rates.** For example, biometrical products such as term life insurance or disability insurance are increasingly sold within many European countries in Q4 2015. Also, products with more flexible guarantees that are lower and often not "fixed for life" are on the rise. A shift of commercial activities from the traditional long-term life savings business to the more short-term life protection business or the non-life business altogether can also be seen. It was already witnessed that life insurance premiums decreased for some countries due to increased premium taxes and the non-renewals of contracts which reached the end of their beneficial fiscal treatment. More recently, also group life contracts seem to be impacted and showed some decline in premium growth.

**These trends are an indicator that insurers try thoroughly to strengthen their risk profile.** Insurers have demonstrated their willingness and ability to share adverse experiences with policyholders in spite of the potential commercial consequences. Consequently, insurers are more inclined to move to more risky assets such as stocks and investment funds, which could lead to an increase in the supply of risk-bearing capital for the real economy on the one hand. On the other hand this behaviour is often accompanied by additional challenges for insurers' risk management capacities. Overall, it should be mentioned that all efforts observed are characterised by "slow adaptations" rather than "drastic movements".

### **NON-LIFE INSURERS**

**The overall growth, previously observed, in premiums continued in Q4 2015** (Figure 2.3). This is also due to mandatory, but often very competitive business lines such as motor third party liability business.

Figure 2.3: Gross written premiums – Non-Life (year-on-year growth in per cent; median, interquartile range and 10th and 90th percentile)



Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)

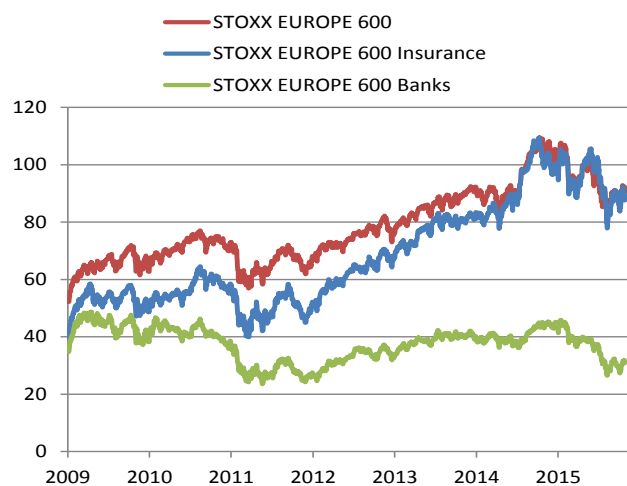
**If low interest rates persist long enough, certain types of insurance products may experience profound changes, possibly leading to sector consolidation.**

Cost cutting in turn may lead to a wave of consolidation to achieve economies of scale. As increased price competition, and stagnant organic growth continue to dampen insurance company returns, more mergers and acquisitions might be expected to build up capabilities and markets (see thematic article at the end of this report).

## 2.2. Profitability

**In the current low yield environment maintaining profitability is getting more and more difficult as confirmed by market returns** (Figure 2.4).

Figure 2.4: Market Returns (Index: 2007=100)



Source: Bloomberg; as of 29/04/2016

***Despite some measures to limit guarantees for new products in the last couple of years, the legacy portfolio still represents a substantial amount of liabilities.*** Life insurers carry in general a somewhat higher risk than the corresponding non-life sectors due to the mismatch between assets and long-term life insurance liabilities, including guarantees on inforce life insurance contracts. Hence, an appropriate asset liability management is needed. Especially, life insurers with high guarantees to policyholders that reside in countries where these guarantees are rigid (and sometimes even valid for future premiums), are at particular risk. This is amplified for contracts that have a long time to maturity embedded within them. These contracts are often also highly exposed to longevity risk.

***Both return on equity (ROE) and investment returns dropped in Q4 2015.***

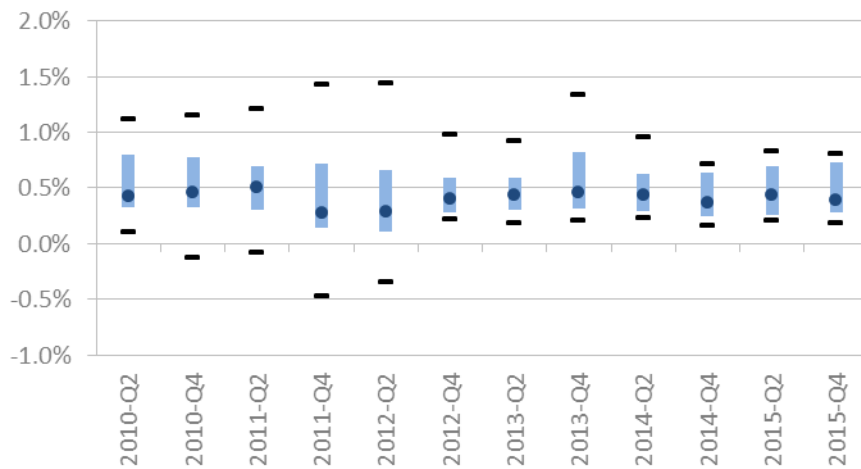
Furthermore, additional monitoring is warranted to check whether the risk profile of investment portfolios will change and if, to which degree and at what pace. After all, the long-term sustainability of high-yield investments in such a market environment is questionable as long-term investors such as (re)insurers have difficulties in reinvesting assets at a reasonable level. Also, non-life insurers' business models might be impacted in this low-yield environment when lower investment returns cannot counter-balance potential underwriting losses as was often observed in the past. Pressure on motor insurance profitability is currently reported in a number of countries as the cost-competitive nature of motor insurance makes it challenging to generate substantial profits.

***Further changes in product portfolios and business models may lead to a shifting of risks towards policyholders.*** In some countries, for example, a new generation of products with changed guarantees such as reduced or zero guarantees provides an innovative and forward-looking answer to the challenges posed by the low interest rates.

## ***LIFE INSURERS***

***Return on assets (ROA) continues to be low*** (Figure 2.5). The average return on assets remained 0.4 per cent in the life business.

Figure 2.5: ROA – Life (in per cent; median, interquartile range and 10th and 90th percentile)

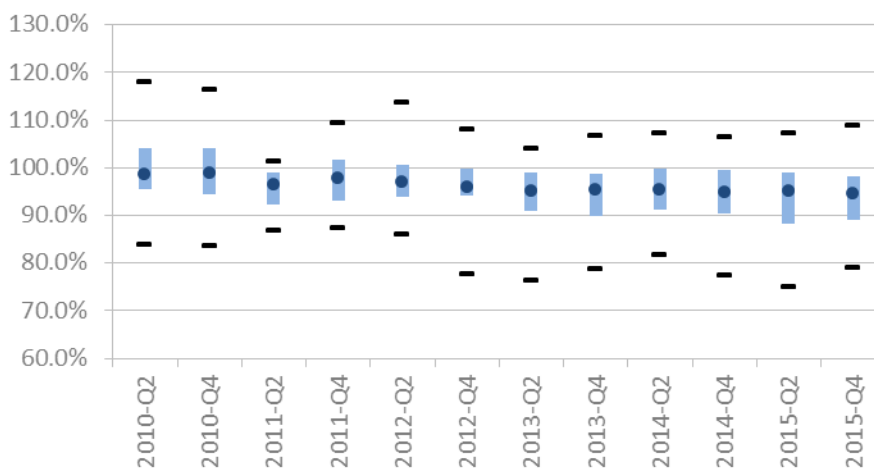


Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)

### NON-LIFE INSURERS

**In the non-life business the combined ratio (CR) remained broadly unchanged (Figure 2.6).** It was 94.6 per cent for the median company in Q4 2015, compared to 95.0 per cent in Q2 2015. Pressure is currently arising from motor insurance business which is highly competitive. It remains challenging to generate profits on this book, as a CR of over 100 per cent in some countries suggests. Hence, rate increases can be seen in some cases. However, increased claims provisions due to deteriorating claims experience are often offsetting the positive impact of these rate increases.

Figure 2.6: Combined Ratio – Non-Life (in per cent; median, interquartile range and 10th and 90th percentile)



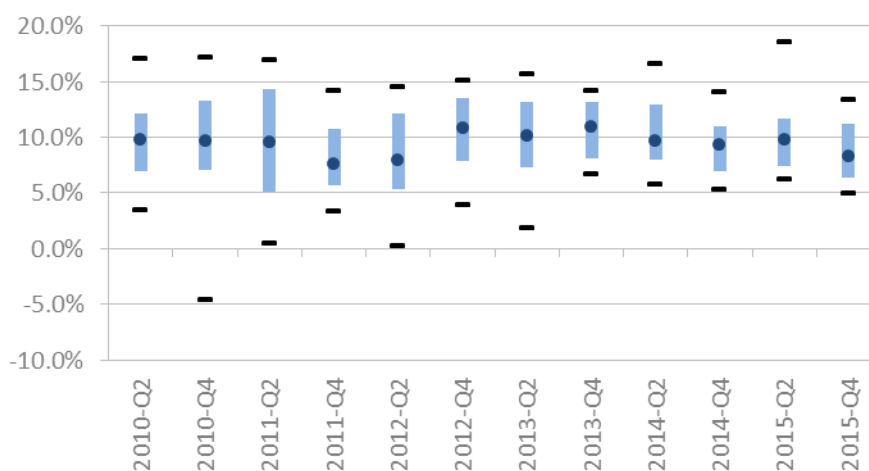
Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)



## LIFE AND NON-LIFE INSURERS

**The ROE has deteriorated in Q4 2015 (Figure 2.7).** The distribution shown reveals a broad-based deterioration in profitability. For the median company, it dropped to 8.3 per cent in Q4 2015 (from 9.8 per cent in Q2 2015), while for the 10th percentile it fell to 5.0 per cent from 6.3 per cent during the same time. For the 90th percentile on the other hand, the ROE is still a high 13.4 per cent although it has also fallen from 18.4 per cent in the same period.

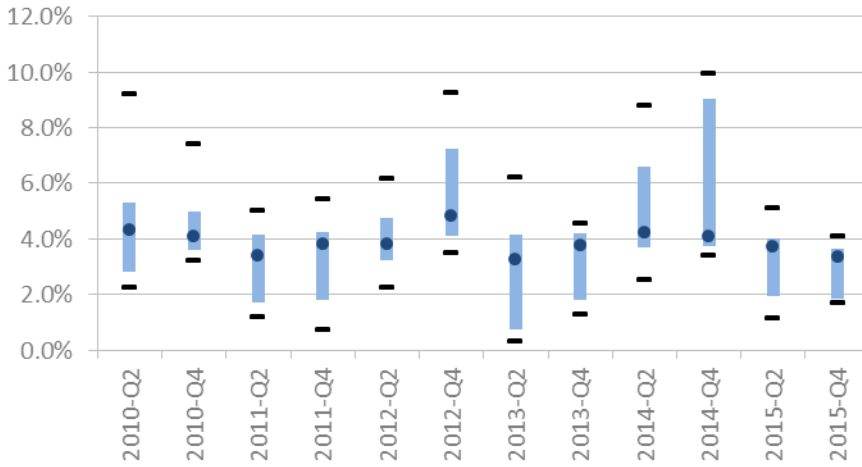
Figure 2.7: ROE – Life and Non-Life (in per cent; median, interquartile range and 10th and 90th percentile)



Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)

**Investment returns also experienced markedly lower returns for the median company during the last half of 2015 (Figure 2.8).** The return on the investment portfolio has suffered from high volatility and lower prices on the worldwide stock markets. Following the uncertain and difficult market environment, some companies already implemented and continued to focus on efficiency management and cost-cutting schemes. These measures aim mostly to modernise the overall infrastructure (also to comply with Solvency II requirements) or to realise lower costs in the future through benefits of digitalisation. Still, it remains to be seen, whether these efforts are sufficient to offset the lower investment returns. Under continuing similar circumstances, it can be expected that more companies will have to follow this trend in the near future.

Figure 2.8: Investment Returns - Life and Non-Life (in per cent; median, interquartile range and 10th and 90th percentile)

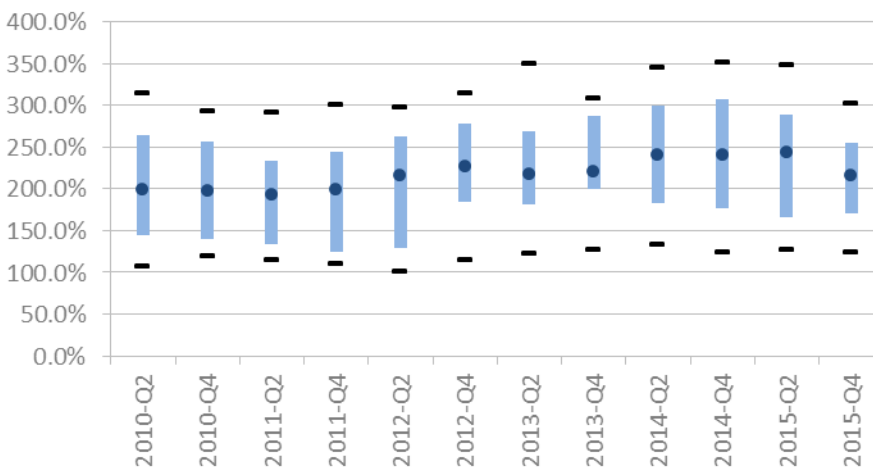


Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)

### 2.3 Solvency

**Under the Solvency I framework, that was in place until the end of 2015, total solvency ratios have declined for the whole European insurance sector** (Figure 2.9). Solvency I did not fully take into account the importance of the evolution of interest rates in determining the overall financial soundness of an insurance company. Furthermore, the Solvency I ratio is characterised by shortcomings in directly translating financial market movements. The Solvency I ratio has declined from 244.2 per cent in Q2 2015 to 215.5 per cent for the median company in Q4 2015. The decline is partly due to a decreased dispersion within the sample.

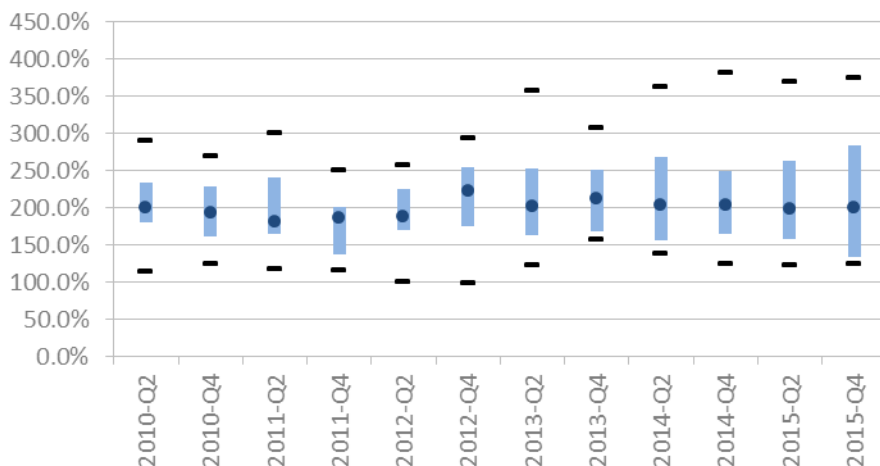
Figure 2.9: Solvency I ratio - Life and Non-Life (in per cent; median, interquartile range and 10th and 90th percentile)



Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)

**For life insurers, the Solvency I ratio dropped to just below 200 per cent for the median company in Q4 2015** (Figure 2.10). On the other hand, the Solvency I ratio is far higher for the 90th percentile.

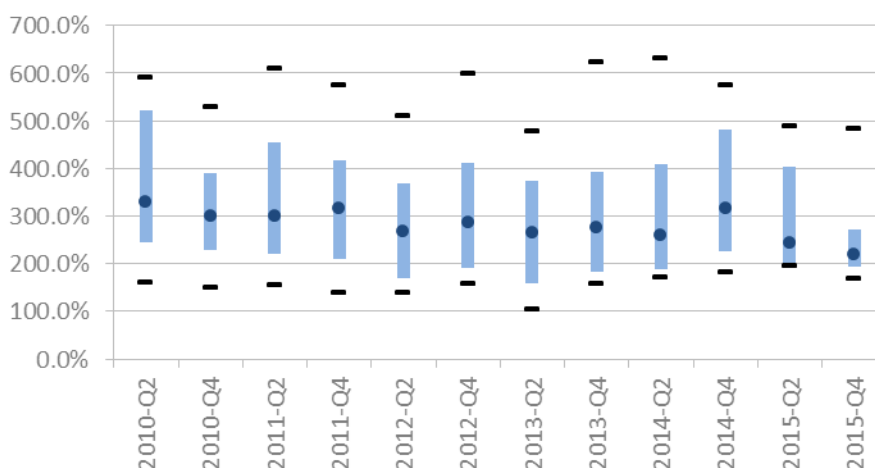
Figure 2.10: Solvency I ratio - Life (in per cent; median, interquartile range and 10th and 90th percentile)



Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)

**For non-life insurers, the Solvency I ratio for the median company also dropped to 220 per cent in Q4 2015** (Figure 2.11). Solvency I ratios for non-life insurers are in general higher than for life insurers.

Figure 2.11: Solvency I ratio, Non-Life (in per cent; median, interquartile range and 10th and 90th percentile)



Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland)

**In preparation of Solvency II, some companies have taken measures to underpin their capital position.** Solvency II, a more fair-value based, risk-sensitive solvency regime, will reflect the impact of the low yield environment more accurately. It will hence contribute to better risk management practices with a positive impact on

the resilience of the European insurance sector in the medium to long-term. Solvency II takes a forward looking approach and requires companies to take remedial action if their business model is becoming unsustainable by, for example, increasing provisioning and avoiding dividend payments.

## **2.4 Regulatory developments**

***The new Solvency II regime came into force on 1st January 2016.*** Insurance and reinsurance undertakings across the EU are now subject to a harmonised, sound, robust and proportionate prudential supervisory regime, for which they have been preparing the implementation during the last years.

Under the new regime EIOPA plays an important role in monitoring and ensuring the consistent and convergent application of Solvency II. EIOPA's opinion on the application of a combination of the methods to the group solvency calculation, which has been issued as of 27th January 2016, could be referred to as a concrete example of this new role. The opinion intends to ensure convergent supervisory practices with respect to insurance groups allowed to calculate the group solvency with a combination of method 1 (consolidation method) and method 2 (deduction and aggregation method), in particular regarding the application of the tier limits to own funds.

***On 1st April 2016 the amendment of the Solvency II Delegated Regulation with respect to the calculation of regulatory capital requirements for several categories of assets held by insurance and reinsurance undertakings has been officially published.*** The amendment introduces a differentiated treatment (i.e. a lower risk calibration) for investments in infrastructure projects that meet a series of qualifying criteria designed to identify safer, higher quality investments. Subsequent changes will be adopted with respect to the Implementing Technical Standards on the templates for the submission of information to the supervisory authorities, in order to ensure that supervisors collect all the relevant information concerning these assets. Further amendments are envisaged in order to adopt a similar approach regarding the treatment of infrastructure corporates. For that purpose, the European Commission has requested EIOPA to define criteria or classifications to identify safer debt or equity investments in infrastructure corporates, to advise on appropriate calibrations for such investments and to provide a rigorous framework for insurers performing due diligence.

***On 8th January 2016 EIOPA has released the first official monthly publication of the risk free interest rate term structures to be applied by all insurance and reinsurance companies in the calculation of their technical provisions.***

EIOPA already began with the publication of the risk-free interest rate curves in 2015 during a preparatory phase, intended to test the methodology applied and identify the necessary refinements before the full implementation of Solvency II.

***The Insurance Distribution Directive (IDD) was adopted on 20th January 2016.*** This new directive updates the previous legislation in the area (Insurance Mediation Directive, 2002) and complements other rules on the sale of investment products (MiFID II) and packaged retail and insurance-based investment products (PRIIPS), taking into account the importance of ensuring effective consumer protection across all financial sectors as underlined by recent financial turbulence. It aims to strengthen policyholder protection (and the confidence of consumers) and to create a level playing field between insurance distributors across the EU.

### **3. The global reinsurance sector**

The ongoing challenging economic environment also increases the profitability pressure in the reinsurance market that continues to suffer from an oversupply of capacity. Reinsurers remain to be well capitalised.

#### **3.1. Market growth**

**The demand for reinsurance is subdued, but the reinsurance capacity remains high.** This reflects a longer-term trend for primary insurers to retain more risk on their balance sheets. Competitive markets as well as low investment returns have forced insurers to be increasingly price sensitive, whilst their risk management capabilities have also developed over time.

Some limited increases in demand for reinsurance may occur following the implementation of Solvency II in Europe. Also proposed changes to the A.M Best rating methodology could impact reinsurance buying as insurers seek to optimise the management of their solvency position and their credit rating.

**Thus, overall, the general environment remains largely unchanged.** Renewal rates continued to soften in 2015. At the January 2016 renewals, rate declines of between 5 per cent and 10 per cent were witnessed. Reinsurers experienced the fourth consecutive year of rate deterioration. In particular, property catastrophe reinsurance rates have declined by 30 per cent during the last two years.<sup>8</sup> In addition to rate reductions, the terms and conditions for reinsurance placements improved for ceding insurers e.g. expanded hours clauses, broadened terrorism coverage, improved reinstatement provisions. On the other hand, the upcoming June/July renewals predict some rate softening for the property catastrophe market.

**Altogether, the competitive pressure in the reinsurance sector will increase further.** The combination of the continuing capital-inflow into the reinsurance market, benign catastrophe activity and increasingly low investment returns due to the ongoing challenging economic environment increases the profitability pressure in the reinsurance business. Moreover, the ability to release reserve from previous years appears to have been diminished, whereas the long-term business is getting less profitable or even unprofitable as the high interest rates calculated in previous rates

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<sup>8</sup> ARTEMIS-Website: <http://www.artemis.bm/blog/2016/02/25/profitability-a-challenge-despite-reinsurance-rate-stabilisation-morgan-stanley/>

are difficult to earn. Against this background getting risk-adequate prices at the upcoming renewals is crucial for the reinsurance companies.<sup>9</sup>

**2015 was once again very benign in terms of natural catastrophe losses, which remained significantly below long-term averages.** Overall losses from natural catastrophes totalled USD 90bn (2014: USD 110bn), of which roughly USD 27bn (2014: USD 31bn) was insured. Both the overall losses and the insured losses were considerably below the inflation-adjusted, long-term average of the last 10 years (USD 180bn, USD 56bn) and even of the last 30 years (USD 130bn, USD 34bn). The number of fatalities increased in 2015 to 23.000 (2014: 7.700), which is still far lower than the ten-year average of 68.000 and the 30-year average of 54.000.

*Table 3.1: The five largest natural catastrophes until October 2015, ranked by insured losses (in USD billion)*

	Event	Region	Overall losses	Insured losses
16.02.-25.02.2015	Winter storm	USA, Canada	2.8	2.1
23.05.-28.05.2015	Severe storms	USA	2.5	1.4
07.04.-10.04.2015	Severe storms	USA	1.6	1.2
30.03.-01.04.2015	Winter Storm Niklas	Europe	1.4	1.0
12.09.-08.10.2015	Wildfires	USA	1.3	0.96

Source: Munich Re, NatCatSERVICE

As in the previous year, 2015 was characterised by weather-related events, which caused some 94 per cent of the loss-related natural catastrophes. Also the hurricane season in the North Atlantic was again quiet, only four tropical cyclones reached hurricane strength (average 7.6). No major hurricane made landfall in the USA, the tenth year running that this has not happened.

The costliest natural disaster event for the insurance industry came from the severe winter weather in the USA and Canada. As in the previous year, the winter in the northeast of the USA was exceptionally cold and snowy. In Boston, almost three

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<sup>9</sup> Under many forms of reinsurance and insurance, the payment of a claim reduces an aggregate limit by the amount of the claim. Provision is sometimes made for reinstating the policy limit to its original amount when the original limit has been exhausted. Depending on policy conditions, it may be done automatically, either with or without premium consideration (i.e. a reinstatement premium), or it may be done only at the request of the insured in return for an additional premium.

metres of snow fell over the winter months – an absolute record. The direct overall losses from the harsh winter in the USA amounted to USD 4.6bn, of which USD 3.4bn was insured (2013/14: USD 4.4bn, insured losses USD 2.5bn). The most costly snowstorm occurred at the end of February 2015 causing insured losses of USD 2.1bn.

The single most severe event in Europe was winter storm Niklas, which swept across large areas of central Europe and damaged a large number of buildings and vehicles. The overall economic loss was USD 1.4bn, of which around USD 1.0bn was insured.

The costliest natural catastrophe in terms of overall economic losses was the devastating earthquake in Nepal, which took place on 25th April. Some 9,000 people lost their lives and 500,000 were made homeless. The overall losses amounted to USD 4.8bn, of which only USD 210mn was insured, which equals 4.4 per cent of the overall loss. The losses accounted for almost a quarter of Nepal's annual gross domestic product.

Catastrophe losses appear to remain low during first quarter of 2016, based on preliminary data.<sup>10</sup> However, an unusually cold winter again hit the USA, leading to major transportation disruption and business closures in major metropolitan areas.<sup>11</sup> The winter storm from mid-January was rated as the fourth-largest winter storm in the Northeast and Mid-Atlantic. It is expected that the overall economic losses are likely to exceed USD 2.0bn, whereas the insured losses were projected to reach well into the hundreds of millions. The devastating wildfires in Canada could be one of the costliest natural disasters in Canadian history although the total losses can only be estimated at the time of writing, ranging from about USD 5bn to USD 9bn<sup>12</sup>.

### **3.2 Profitability**

The reinsurance market continues to suffer from an oversupply of capacity owing to the absence of large losses and alternative capital inflow. The rate of price declines reduced in 2015, but reinsurance prices have not yet found their floor. Despite this, a benign catastrophe environment has helped reinsurers generate relatively strong profits in the face of these rate declines. However, also low investment yields and

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<sup>10</sup> AON Benfield: April 2016 Market Outlook.

<sup>11</sup> AON Benfield: January 2016 Global Catastrophe Recap.

<sup>12</sup> <http://www.cbc.ca/news/business/fort-mcmurray-wildfire-insurance-rates-1.3573895>



ongoing pressure from alternative capital continues to impact the profitability of reinsurers<sup>13</sup>.

### **3.3. Solvency**

Global reinsurance capital remained abundant at the end of 2015. It totalled USD 565bn at the end of 2015 (unchanged from Q3 2015 but a reduction of 2 per cent since the end of 2014 (USD 575bn)).<sup>14</sup> A number of large traditional reinsurers have also been reducing capacity on offer to certain peak perils, as they seek to remain disciplined on price.<sup>15</sup> The strong position of capital allows insurers to increase net retentions. On average, reinsurers maintained a strong level of capital through the end of 2015 and into 2016, helped by the lack of significant catastrophe activity in recent years and the availability of substantial capital market capacity.

### **3.4 Alternative capital vehicles**

***In contrast alternative capital continued to grow, albeit at a slower pace than in previous years.*** It now represents in total over 12 per cent of the reinsurer capital.<sup>16</sup> At the end of October 2015 total alternative capital amounted to USD 69bn. This was largely comprised of collateralized reinsurance transactions (USD 32.8bn) and outstanding Insurance-Linked Securities (ILS) (USD 23.9bn). The total outstanding ILS amounted to USD 26bn (2014: USD 22.9bn) by the end of December 2015. Third party capital is expected to continue to enter the market as large pension funds and hedge funds search for ways to diversify their portfolios while chasing for higher return. Previously anticipated drops for alternative capital vehicles were therefore not confirmed<sup>17</sup>.

Furthermore, investors' acceptance of indemnity-based triggers has increased and spreads have tightened between indemnity and other trigger types. This will raise the

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<sup>13</sup> Under many forms of reinsurance and insurance, the payment of a claim reduces an aggregate limit by the amount of the claim. Provision is sometimes made for reinstating the policy limit to its original amount when the original limit has been exhausted. Depending on policy conditions, it may be done automatically, either with or without premium consideration (i.e. a reinstatement premium), or it may be done only at the request of the insured in return for an additional premium.

<sup>14</sup> AON Benfield: Reinsurance Market Outlook January 2016, page 2.

<sup>15</sup> Artemis-Website: <http://www.artemis.bm/blog/2015/07/02/reinsurance-rates-stabilising-at-renewal-ils-discipline-contributes-willis-re/>

<sup>16</sup> AON Benfield: Reinsurance Market Outlook January 2016, page 2.

<sup>17</sup> Artemis Website.

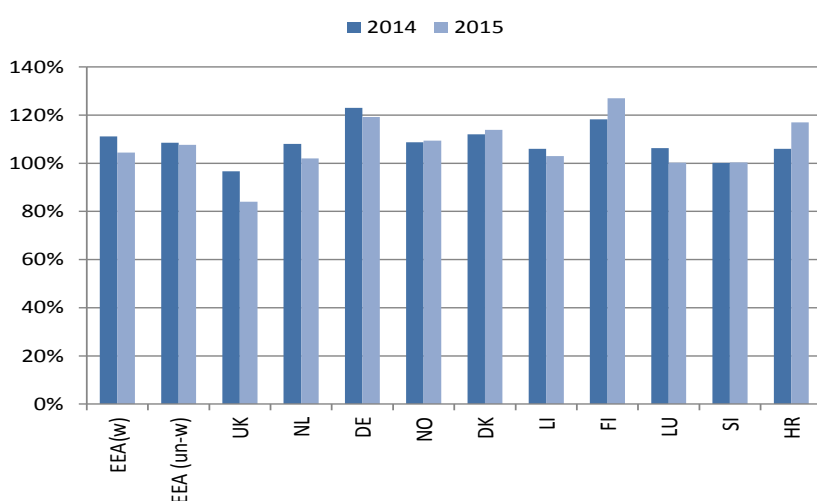
attractiveness of ILS further for both new and repeat sponsors, which are expected to issue into the ILS market not only to diversify and complement overall reinsurance purchases, but also to benefit from the alternative competitive pricing and broadening indemnity coverage.

## 4. The European pension fund sector<sup>18</sup>

### **The ongoing low interest rate environment continues to generate challenges to the European occupational pension fund sector.**

Traditional Defined Benefit plans (DB), which make up approximately 75 per cent of the sector in terms of assets, are affected by such developments. This type of plan provides employees with a defined level of pension, although market developments may affect funding levels, which may have impacts on sponsors and/or members depending on how risks are shared across the parties. DB funds in many countries are long-term investors, whose liabilities have a longer duration than their assets, potentially leading to long-term asset-liability mismatches that sometimes can be greater than those experienced in the insurance sector. In the course of 2015, lower interest rates had a further negative effect on cover ratios for most of the countries of the sample.

Figure 4.1: Cover ratios (in per cent)



Source: EIOPA

Notes: Both the weighted and un-weighted averages for the cover ratio are calculated on the basis of the 10 countries that provided data and are depicted in the chart. The weighting is based on total assets. Cover ratios refer only to DB schemes. Due to different calculation methods and legislation, the reported cover ratios are not fully comparable across jurisdictions. Data for 2015 is preliminary and subject to major revisions. FI did not participate in the stress test but provides Eiopa with data.

**Cover ratios for DB schemes further decreased from 111 per cent in 2014 to 104 per cent in 2015** (Figure 4.1). The un-weighted average cover ratio decreased from 109 per cent to 108 per cent for the same period.

<sup>18</sup> All data employed in this section refers to IORPs pension funds.

Cover ratios<sup>19</sup> below 100 per cent are a concern for the future of the sector in the existing low interest rate environment. Countries within the EU have different approaches to deal with low cover ratios. In a few countries, for example, there is full sponsor support available whilst in others guarantees on DB plans exist. In a number of countries also pension protection schemes are put in place which provides insurance for some or all of the promised benefits. Finally, changes in the value of the future benefits may take place. These value changes may become necessary in order to tackle the future consequences of the low cover ratios and the viability of the schemes, if they persist for a long period. These measures also involve transfers of risk over time as well as across the different entities such as the IORP sponsors, members and beneficiaries and pension protection schemes.

If full sponsor support is in place, the question will arise as to whether the sponsors can cover for the future losses. Sponsor support can be effective in many cases. However, in the event of an extreme risk reversal scenario, there is the risk that sponsors will not be (at least not fully) in a position to cover the cost, particularly if the scenario endures over the longer-term. An alternative way to deal with the issue of low funding is to adjust future benefits of the members and beneficiaries to the new economic environment. Currently in some countries adjustments are taking place but this has negative long- term implications to the future income of households. In most of the cases these adjustments affect new contracts or contributions.

Until 2015, in the absence of a harmonised market-based valuation reporting regime for pension fund liabilities, it was difficult to assess the impact on schemes across countries on a consistent basis. Consequently, in countries, where national prudential regimes were not sensitive to market price changes, risks may have been underestimated. EIOPA's first stress test exercise on the occupational pensions sector identifies these vulnerabilities. A common methodology was applied in this stress test to tackle the issue of heterogeneity in reporting regimes of different member states.

#### ***4.1 EIOPA IORPs stress test 2015***

The aim of the 2015 EIOPA IORPs stress test was to test the resilience of defined benefit (DB) and hybrid pension schemes against adverse market scenarios and increases in life expectancy. Additionally, a satellite module on defined contribution (DC) schemes was included, which modelled the outcomes on example DC scheme

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<sup>19</sup> Defined as net assets covering technical provisions divided by technical provisions

member based on different future investment return scenarios, consistent with the DB stress test assumptions. Both models were based on 2014 year-end data.

Overall, the stress test exercise assessed the potential impact on IORPs under a set of severe stress scenarios and was designed for countries where the IORPs sector exceeded EUR 500mn in assets. In total 17 countries participated in the stress test.<sup>20</sup> For the majority of the countries, the target of market coverage of over 50 per cent (in terms of total assets or, where relevant number of scheme members) was achieved.

For the DB part, EIOPA decided to conduct its stress test exercise both on the basis of current national prudential standards and on the Common Methodology that was developed. This Common Methodology was included in the exercise in order to enable comparison of IORPs across Member States on a like-for like basis, by applying common valuation bases and allowing for more consistent EU-wide comparisons.

#### *a) DB stress test results*

The impact of two instantaneous adverse market scenarios<sup>21</sup> and one instantaneous longevity scenario on DB schemes was evaluated against the baseline (i.e. the situation before stress) with respect to the national balance sheet (NBS) as well as the Common Methodology.

Under the NBS methodology insufficient assets covering funding requirements under both baseline and stress scenarios imply a potential financial burden for a sponsor, where sponsor support exists, or benefit reductions of members and beneficiaries with potential negative implications for the overall financial stability (Figure 4.2<sup>22</sup>).

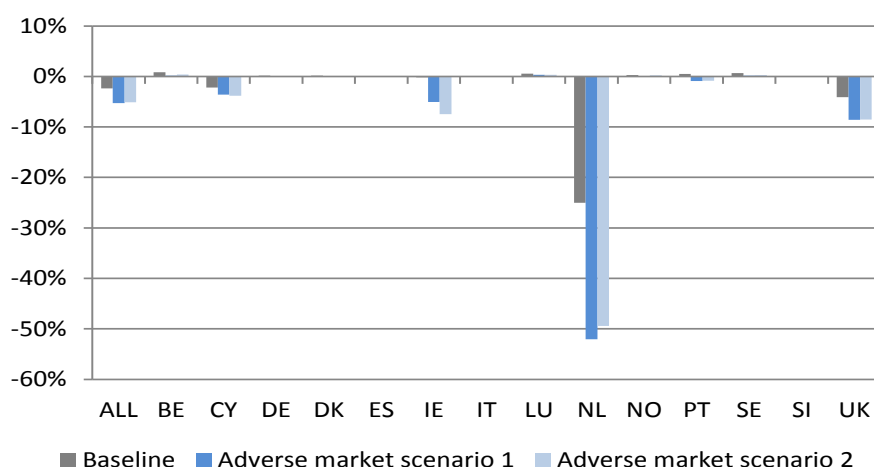
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<sup>20</sup> AT, BE, CY, DE, DK, ES, IS, IE, IT, LU, NL, NO, PT, SE, SI, SK and the UK

<sup>21</sup> These scenarios are further described in the material published on [EIOPA's website](#) together with the IORPs stress test specifications.

<sup>22</sup> The relatively high impact for the NL is partly driven by the size of its IORPs sector and its regulatory framework. The NL has a large IORPs sector as it has built up pension assets in the second pillar over the last few decades. Furthermore, the funding requirement for Dutch IORPs equals 127 per cent of liabilities, valued on a market consistent basis. Moreover, benefit reductions are allowed only as an ultimate solution. This means that benefit reductions are not possible if the funding ratio is above 100 per cent and legally enforceable sponsor support is only available for some individual IORPs. Benefit reductions are therefore only allowed as part of a recovery plan and can be smoothed over time.

Figure 4.2: Surplus (deficit) over the national funding requirement before and after stress, per Member State (in per cent of nominal annual GDP, NBS approach)



Source: EIOPA

Note: The results do not only depend on the scenario, but also on the national regulatory framework.

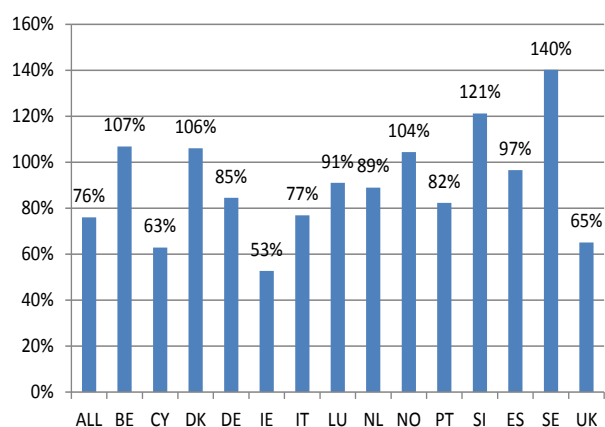
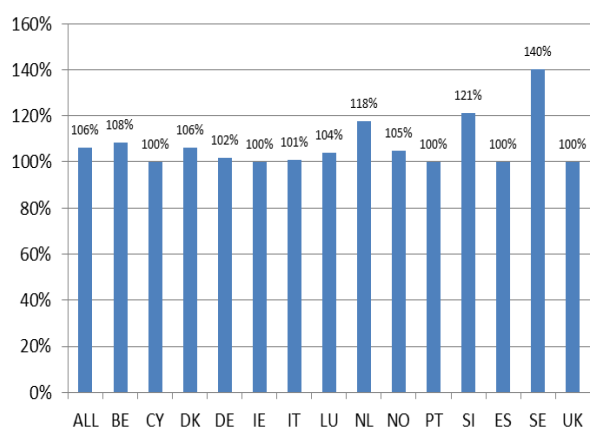
In case of a funding ratio below 100 per cent, the potential financial burden and therefore also the potential default of some sponsors depends on the size of the funding shortfall relative to the strength of the sponsor as well as the timeframe of when the deficit would need to be balanced by the sponsor, as in many Member States IORPs could use substantial recovery periods. However, the results also reflect the fact that national valuation methods, national regulatory frameworks as well as the size of the IORPs sector differ considerably among Member States. The national valuation does not allow more consistent cross-country comparisons although it does reflect the position which IORPs would actually face in practice.

The Common Methodology allowed a consistent cross-country comparison using common assumptions and recognised sponsor support, pension protection schemes (PPS) and benefit adjustment mechanisms, in particular using the balancing item approach which imposes a balancing of the deficit situations. However, it should be noted that the Common Methodology is not in place for European IORPs and hence national funding requirements are not based on it. According to the Common Methodology, all participants valued the technical provisions discounting at the risk free rate (RFR)<sup>23</sup>, and took account of any available benefit adjustment mechanisms, sponsor support and pension protection schemes (PPS).

<sup>23</sup> This corresponds to 'Level A' from the technical specifications.

Funding ratios using the Common Methodology base line differ a lot from those under the national balance sheet baseline scenario, both with and without sponsor support (Figure 4.3 and Figure 4.4). With sponsor support the average funding ratio is 106 per cent whereas it drops to 76 per cent without sponsor support. This implies a deficit of EUR 428bn for the sample that participated in the stress test.

Figure 4.3: Aggregate assets over liabilities based on Common Methodology approach (in per cent) Figure 4.4: Aggregate assets (excl. liabilities based on Common Methodology sponsor support) over liabilities (before in baseline using the balancing item benefit reductions) on Common Methodology in baseline (in per cent)



Source: EIOPA

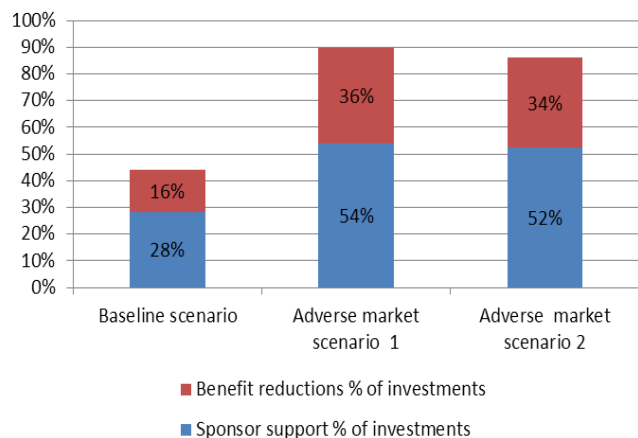
However, these results should be interpreted with caution. Even in the event that funding requirements were fixed at 100 per cent of the liabilities (as determined by the common methodology), it could not be concluded that an aggregated shortfall of EUR 428bn exists that needs to be funded immediately.

In a hypothetical scenario in which the excess of assets over liabilities of certain IORPs could be used to offset the deficit of other IORPs, this shortfall would be the aggregated amount of security and adjustment mechanisms that the participating IORPs would depend on. Since the compensation is not possible, EUR 428bn is still a prudent estimation of the total amount required to rebalance the underfunded IORPs in the stress test sample. This can be done either by quantifying the present value of the adjustments needed in the benefits or by quantifying the support required from sponsor's balance sheets in the years to come until the benefits have to be paid.

The reliance in the baseline scenario on sponsor support and benefit reductions to balance the funding ratios in the near future becomes much more severe under stressed circumstances.

**According to the estimates in the stress test, the impact of the two adverse market scenarios would imply approximately a doubling of both benefit reductions and sponsor support as a share of total investments** (Figures 4.5).

Figure 4.5: Impact of adverse market scenarios on sponsor support and ex-post benefit reductions (in per cent of total investments, Common Methodology)



Source: EIOPA

### b) DC stress test results

The DC satellite module included 64 IORPs from nine European countries with total assets of almost EUR 83bn. This represents around 17 per cent of the total DC IORPs assets in these countries. The DC sector in all participating countries was greater than EUR 500bn.

For the DC module, the impact on balance sheets was not assessed as in the case of the DB stress test. Instead the impact on expected retirement benefits for three representative plan members (35y, 20y and 5y before retirement) was investigated under five scenarios: two shock scenarios and one longevity scenario (all three in line with the DB module) plus two additional low return scenarios (not in DB module).

The two shock scenarios in the DC part would affect the pension member profiles with a fall in asset prices and declining interest rates. The time to retirement is a key driver of the impact: the closer to retirement, the higher the accumulated pension wealth and the less time remains to recover from the shock. In essence, these plan members will be the most sensitive to a fall in asset prices. The decline in interest rates is assumed also to result in lower investment returns on assets. This has the largest impact on representative members farthest away from retirement, as it affects



a larger part of their life-cycle. In the two low return scenarios, young plan members were more heavily impacted than the plan members closest to retirement in all the countries as young members will be affected by the low returns for longer.

## 4.2 Latest market developments

**Total assets held by occupational pension funds in the EEA (European Economic Area) increased by 14 per cent in 2015 following a more moderate growth of 11 per cent in 2014.** A large part of this increase is attributed to the exchange rate fluctuations between the EUR and the GBP. It should also be taken into account that UK assets are proportionately large in relation to the aggregate. The EA (euro area) growth rate of total assets has been at 2 per cent in 2015, significantly lower than 2014, when an increase of 15 per cent was reported (Figure 4.6)). This figure describes better the situation given the persistent low interest rate environment and the low performance of the equity markets over the second half of 2015 as described in chapter 1.

The UK and the Netherlands account for most of the European occupational pensions sector (about 86 per cent of total assets for the sample used in this report, see Table 4.1). Cross-country differences are mainly driven by the relative share of private and public provisions of pensions based on countries' legislations and state supports. Pension funds under Pillar I are not covered in this chapter.

*Table 4.1: Total assets per country as a share of total assets reported for 2015 (in per cent)*

UK	NL	DE	IT	ES	NO	IS	AT	SE	PT	DK
52.14%	34.18%	5.45%	3.34%	1.07%	0.91%	0.61%	0.57%	0.54%	0.49%	0.23%
LI	FI	LU	SK	GR	SI	PL	LV	RO	HR	HU
0.15%	0.12%	0.05%	0.05%	0.033%	0.018%	0.012%	0.010%	0.007%	0.003%	0.0001%

Source: EIOPA

Note: For many countries 2015 figures are preliminary and subject to major revisions. Penetration rates for GR, HR, RO, PL and HU are lower than 1 per cent.

**The average penetration rate of the occupational pension fund sector remained at the same level in 2015** (Figure 4.6). This ratio is calculated as the total size of assets over GDP. It gives an indication of the relative wealth accumulated by the sector. In most of the countries penetration rates did not change significantly (Figure 4.7).

Figure 4.6: Total Assets (LHS: in EUR billions, RHS: in per cent)

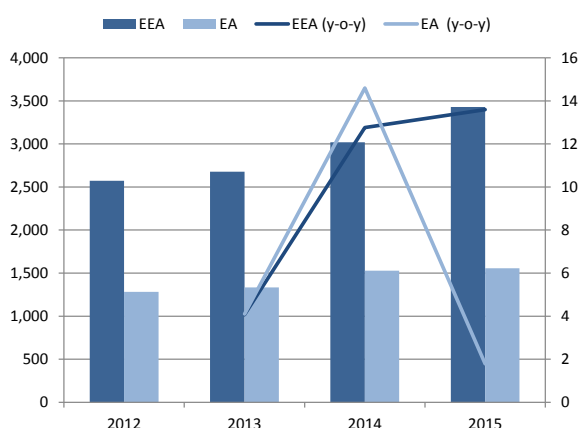
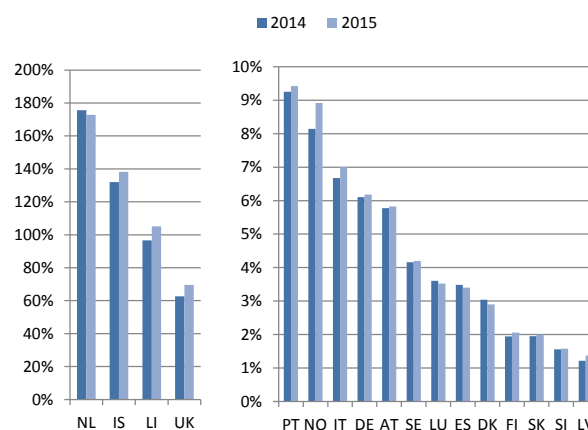


Figure 4.7: Penetration rates (total assets as per cent of GDP)



Source: EIOPA

Note: For many countries 2015 figures are preliminary and subject to major revisions. Penetration rates for GR, HR, RO, PL and HU are lower than 1 per cent. For the UK penetration rates refer to DB and HY sectors only.

### 4.3 Investment allocation and performance of the sector

**The investment allocation of pension funds (in EA and EEA) has remained broadly unchanged in 2015.** Debt and fixed-income securities account for the highest share. The total exposure to sovereign, financial and other bonds added up to approximately one third of total assets in 2015. Due to the long-term horizon of investments of pension funds, equity also represents a higher share of investments in the pension fund sector than in the insurance sector (Figure 4.8 and Figure 4.9).

The investment mix is relatively constant over time and across countries. In some countries, this is due to strict legal or contractual obligations for pension funds that aim to maintain stability over time. A shift towards fixed-income investment continues in the UK, albeit at a slower pace than in previous years. A few other countries also reported increased investment allocation to equities due to the low interest rates. The monitoring of this trend is recommended as, in case it persists, it has increased exposure of the sector to market risk.

Figure 4.8: Investment Allocation in EEA (in per cent)

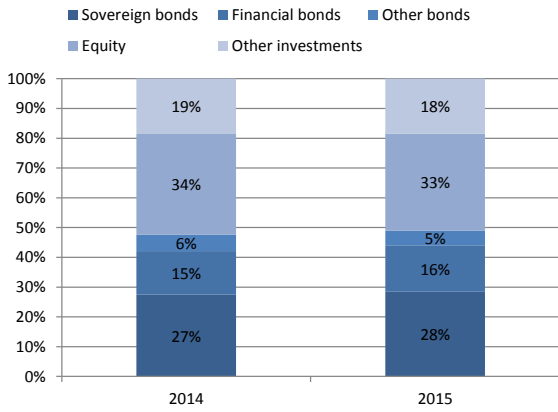
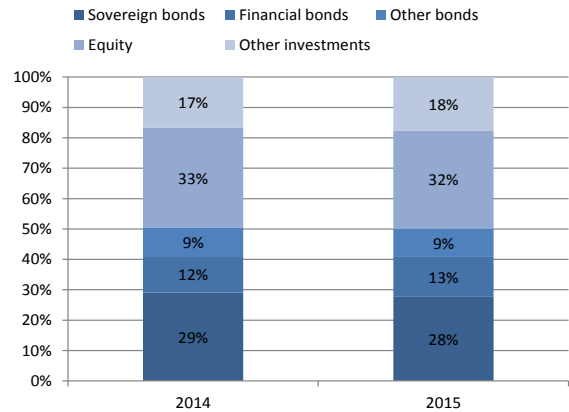


Figure 4.9: Investment Allocation in the EA (in per cent)

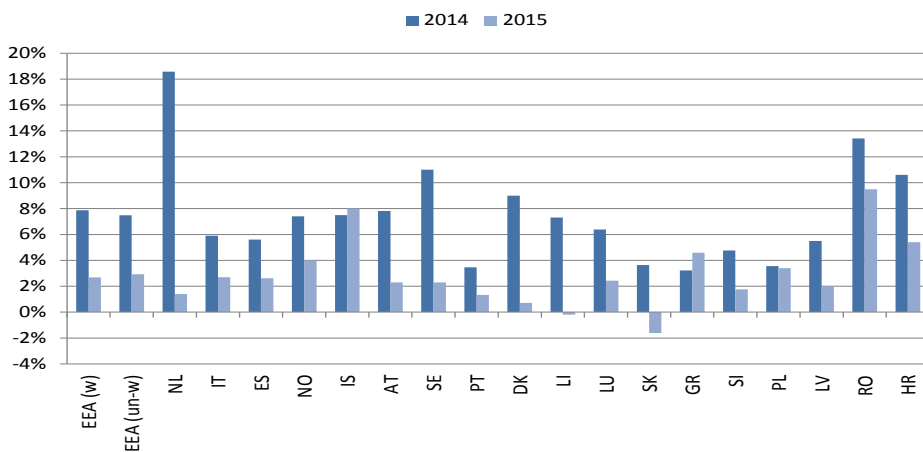


Source: EIOPA

Note: Data is preliminary and subject to revisions. Data on NL include DB schemes and for the UK DB and HY schemes only.

**The average rate of ROA has significantly dropped from 8 per cent to 3 per cent in 2015** (Figure 4.10). This can be attributed to the low performance of the equity and fixed income markets during the second half of 2015. Additionally, the current low yield environment also puts additional pressure on the overall performance of occupational pension funds.

Figure 4.10: Rate of ROA (in per cent)



Source: EIOPA

Notes: Both the weighted and un-weighted averages for the EEA are calculated on the basis of the 18 countries that provided data and are depicted in the chart. The weighting is based on total assets. Data for 2015 is preliminary and subject to major revisions. For a few countries including the UK returns are not yet available. Consequently the weighted average is likely to be revised by the end of the year.

## 5. Risk assessment

The chapter is devoted to analyse the risks affecting the insurance and pension fund industry and their impact on them both from a qualitative and a quantitative perspective. In detail, the chapter elaborates on the effect of the prolonged low yield environment both on the asset allocation and on the profitability of insurers. The evolution of the GWPs along with the cross country contribution is described. The section concludes with an assessment of the evolution of the interconnections between insurers and the rest of the financial service industry.

### 5.1. Qualitative risk assessment

A qualitative risk assessment is an important part of the overall financial stability framework. Unsurprisingly, based on the responses of the Spring Survey among national supervisors, the key risks and challenges classified as the most imminent in terms of their probability and potential impact remain broadly unchanged. The survey clearly suggests increased risk of the impact of the low interest rate environment especially for the life insurance and pension sector as well as increased equity risks for both the insurance and pension sectors over the last six months (Figure 5.1, 5.2 and 5.3). A prolonged period of low rates will be particularly challenging for both insurers and pension funds and will affect both DB and DC schemes.

Figure 5.1: Risk assessment for the insurance sector

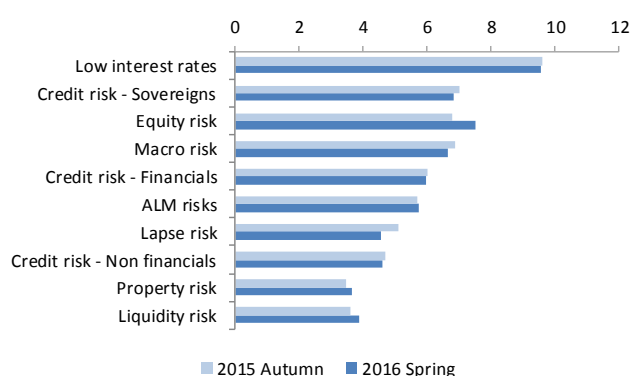
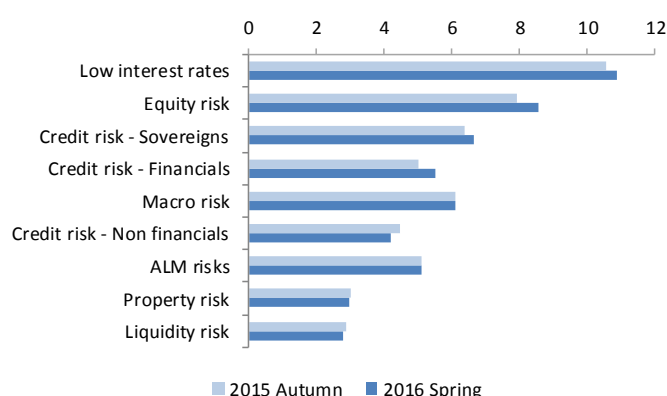


Figure 5.2: Risk assessment for the pension funds sector

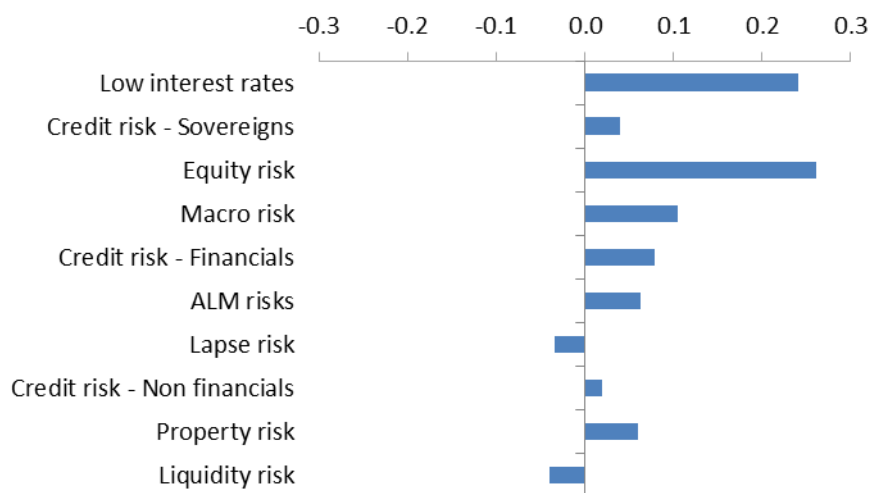


Source: EIOPA

Note: Risks are ranked according to probability of materialisation (from 1 indicating low probability to 4 indicating high probability) and the impact (1 indicating low impact and 4 indicating high impact). The figure shows the aggregation (i.e. probability times impact) of the average scores assigned to each risk.

Figure 5.3. Supervisory risk assessment for insurance and pension funds - expected future development

Note: EIOPA members indicated their expectation for the future development of these risks. Scores were provided in the range -2 indicating considerable decrease and +2 indicating considerable increase.



**Investment portfolios remain largely unchanged and concentrated on fixed-income instruments.** However, in order to reduce Solvency II requirements and to face the ongoing low interest rate environment, some undertakings also adopted a form of de-risking policies. Some, for example, increased their exposure to "AAA"-rated counterparties, whilst others decreased their equity exposure. In addition, others implemented hedging strategies using derivatives.<sup>24</sup> Some tendencies for infrastructure investment categories can be seen although the overall proportion of such investments is still limited.

Q4 2015 data regarding the average composition of the investment portfolio (Figure 5.4a and 5.4b) allows appreciating the different asset allocation between life and non-life insurers. Non-life insurers have nearly three quarters of their portfolio invested in fixed-income portfolios; life insurers invest more in equities (14 per cent as opposed to 7 per cent for non-life insurers) and also rely more heavily on investment funds (11 per cent vs. 1 per cent for non-life insurers). The different portfolio composition is likely due to the products they offer, whereas life insurers often face high financial guarantees.

<sup>24</sup> Equity hedging can entail using options and futures on indices and individual securities, whereas bond hedging uses instruments such as interest rate options and swaps as well as credit default swaps.

Figure 5.4 a): Average composition of the investment portfolio of the Life insurance sector Q4 2015

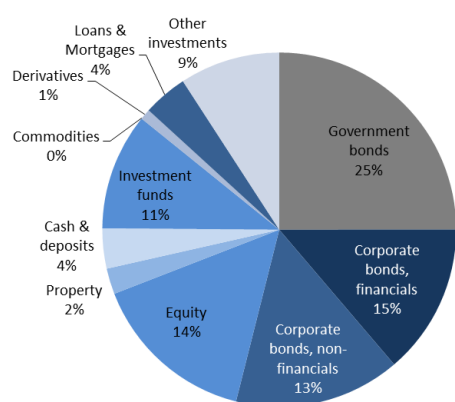
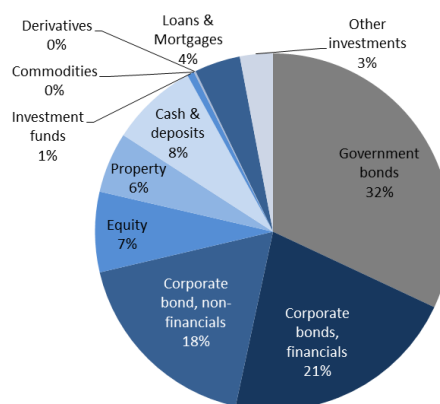


Figure 5.4 b): Average composition of the investment portfolio of the Non-Life insurance sector Q4 2015

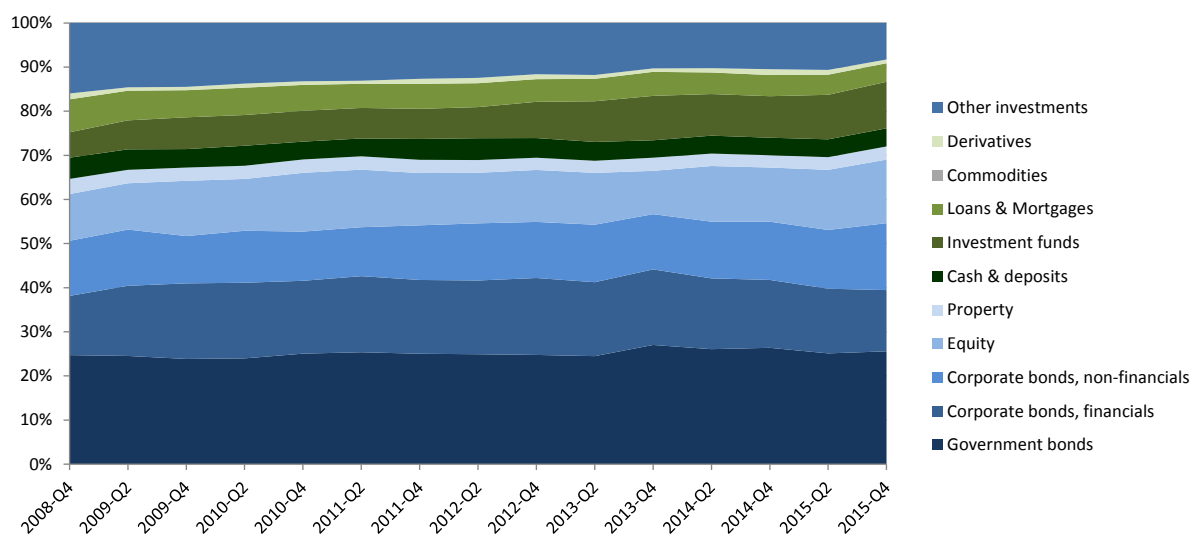


Source: EIOPA.

Note: The estimation for the insurance figure is based on a sample of 32 large insurers.

Figure 5.5 shows that government bonds account for at least 25 per cent of the investment portfolio. In the last two years, corporate bonds report a moderate shift from financial to non-financial companies: they moved respectively from 17 per cent to 14 per cent and from 13 per cent to 15 per cent of the total investments. Equities report a positive growth rate from 2013 onwards. The change in the regulatory framework and the search for yield behaviour are the main triggering events for the reallocation of the investments. The need of increased cash-inflows and income should be read in the light of the new Solvency II framework that distinguishes between the investment concentration. At this stage none of the two triggers can be ruled out and the evolution of the investments shall be further scrutinized to assess the potential deterioration of the quality of the assets held by insurers.

Figure 5.5: Evolution of the investment portfolio of the insurance sector over time (in per cent)

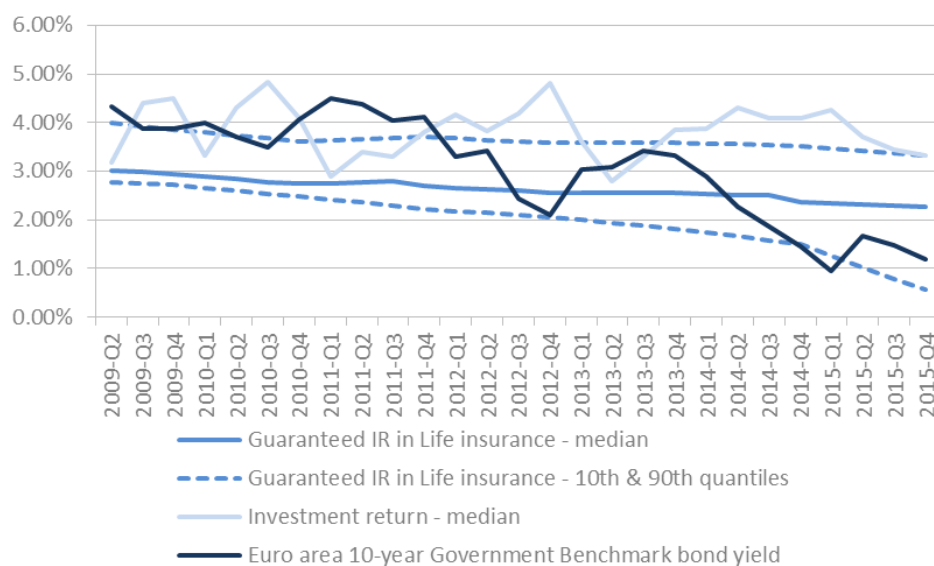


Source: EIOPA

Note: The estimation for the insurance figure is based on a sample of 32 large insurers.

The persistent low yield environment marginally affects the options embedded in the portfolios offered by the companies (i.e. guaranteed returns). Figure 5.6 shows how the median of the guaranteed interest rates in life insurance slowly reduces over time with some companies reacting quicker than others (see the 10th percentile curve). Generally, since the beginning of 2014, the guaranteed rates are well above the Euro area 10-Year government benchmark bond yield and the gap with the investment return of the life insurance industry, even though positive, has reduced.

Figure 5.6. Guaranteed interest rate in life insurance vs. investment return, Euro area 10-year government bond (in per cent)



Source: EIOPA (sample based on 32 large insurance groups in EU and Switzerland) and ECB

Note: The figures represent guaranteed rates for businesses where such guarantees are applied.

## 5.2. Quantitative risk assessment

The chapter investigates the impact of the risks previously presented in this report. In detail, the section elaborates on the reaction of the industry to the European weak growth and market volatility.

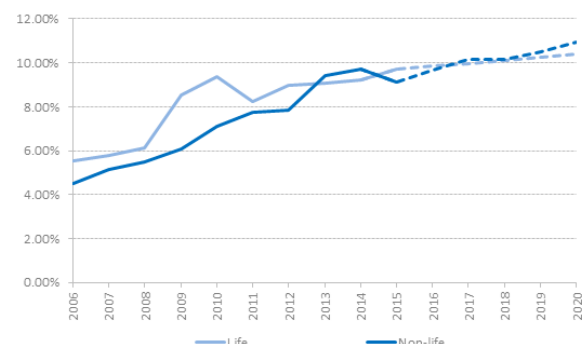
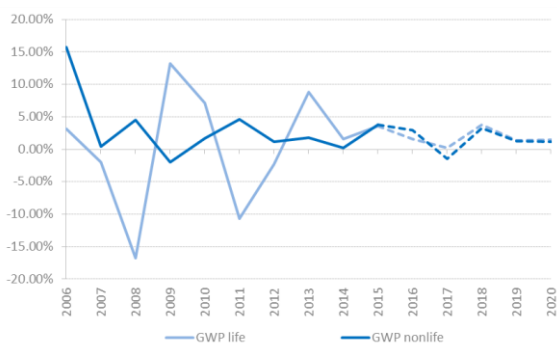
Despite the conventional and exceptional monetary policy intervention of the ECB the growth in Europe is still weak and heterogeneous. The first direct effect on the insurance industry is represented by the foreseen reduction in the underwritten premium both for life and non-life business (Figure 5.7a). The stagnant and heterogeneous GDP growth, reflected also in the unemployment rate and the low yields, will turn into a slow-down of the GWP, characterized by a zero and negative growth in 2017 for life and non-life alike.<sup>25</sup> The revised GWP projection compared to the last report reflects the deterioration of the European macroeconomic outlook.

<sup>25</sup> GDP projections are based on the National Accounts Projection of the OECD available at: <https://data.oecd.org/gdp/real-gdp-forecast.htm#indicator-chart>. Risk free rates and inflations are based on ECB projections (<https://www.ecb.europa.eu/stats/html/index.en.html>). Data retrieved on March the 29th, 2016



**Against this scenario in the EU, insurers increasingly rely on cross-border activities** (Figure 5.7 b). Despite the crisis of the emerging markets, the ratio of new contracts signed outside the home-country keeps increasing at a remarkable pace (approaching 10 per cent in 2017 according to the applied model) with some distinctions. While life business growth does not show any slow-down, the non-life business reports a drop in the growth rate in year 2015. The crisis of the emerging economies could have negatively affected the demand on property and casualty products.

Figure 5.7 a): Gross Written premiums (GWP) projection for the EU (in per cent)      Figure 5.7 b): Share of Gross Written Premium (GWP) abroad (in per cent)



Source: EIOPA and ECB Survey of Professional Forecasters (SPF)

Note: Data corresponds to aggregates for the euro zone; dashed lines represent the EIOPA projection using macro scenarios based on ECB SPF developed according to Christophersen, C. and Jakubik, P. (2014) Insurance and the Macroeconomic Environment.

Source: EIOPA

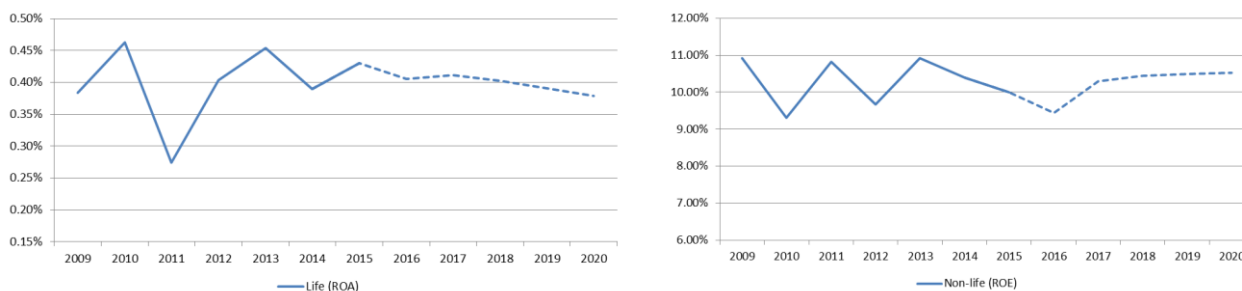
Note: Data corresponds to aggregates for EU/EEA countries, dashed lines represent the EIOPA projection using a macro scenario based on the IMF World Economic Outlook, October 2015 developed according to Christophersen, C. and Jakubik, P. (2014) Insurance and the Macroeconomic Environment.

**The weak European economic environment is characterised by limited and heterogeneous growth and stagnating inflation.** EU-exogenous shocks such as the slow-down of the real economy and the financial turmoil recently experienced in China complement the scenario. Low commodity prices with oil at its lowest level, counterbalance the monetary policy intervention keeping inflation in the EU far from the ECB’s target of 2 per cent. Interest rates and inflation are not foreseen to increase in the short to mid run.

**Life insurers with their long-term liabilities and defined commitments towards policyholders will be particularly affected by this scenario.** ROA for life insurers (Figure 5.8 a) will remain at low levels in coming years. This is mainly driven by the GDP and stock market development and risk free rate projections. The ROE for non-life insurers (Figure 5.8 b) displays a different pattern: the curve is

sloping downwards until the end of 2016 and is expected to revert afterwards, especially in 2017 due to the stabilization of the sovereign bond yields. From 2018 onwards it is expected to be more or less constant due to the weak growth projections of the GDP and the forecasted inflation in the EA.<sup>26</sup>

Figure 5.8 a) ROA - Life insurers (in per cent) Figure 5.8 b) ROE - Non-life insurers (in per cent)



Source: EIOPA

Note: Data corresponds to aggregates for EU/EEA countries. Dashed line represent the EIOPA projection using a macro scenario based on the OECD data (retrieved in April 2016) and developed according to Dorofiti, C. and Jakubik, P. (2015) Insurance Sector Profitability and the Macroeconomic Environment, EIOPA Financial Stability Report May 2015.

The contribution of insurers to systemic relevance with particular reference to the life business has increased in the last years across developed economies.<sup>27</sup> Nevertheless, systemic risk stemming from the insurance industry is still well below that of banks. In the light of the growing importance of the insurance industry in the global economy, the section concludes with an analysis on the evolution of interconnections between insurers and the rest of the financial service industry.<sup>28</sup>

The analysis aims at investigating the evolution of the systemic implications for the European insurance industry over time by measuring its level of interconnectedness vis-à-vis other players of the financial arena. Selected peers are banks and, due to the increasing relevance of non-bank and non-insurance financial institutions<sup>29</sup>, asset

<sup>26</sup> Figures are based on QFT data submitted to EIOPA quarterly and on a best effort basis by a sample of 32 European Insurers. Size of the sample may vary over time. Projections are subject to the approximation driven by the applied model and by the utilized data series.

<sup>27</sup> See e.g. IMF International Monetary Fund (2016): Global Financial Stability Report - Chapter3: the insurance sector - trends and systemic implications.

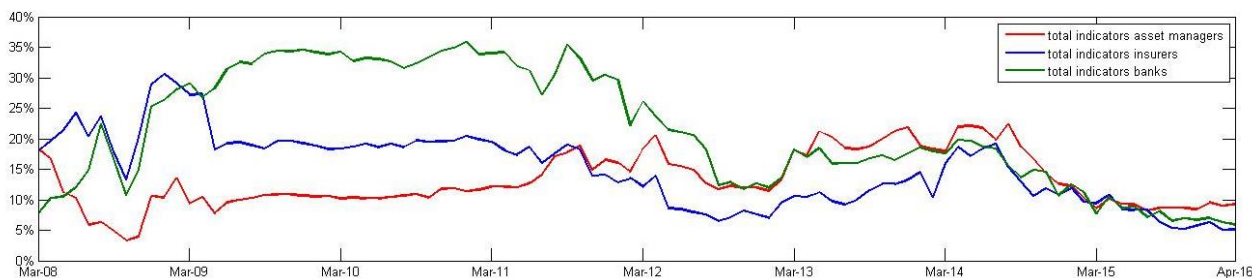
<sup>28</sup> Interconnectedness is also included among the determinants of systemic relevance for insurers by the IAIS - see International Association of Insurance Supervisors (2013): Global Systemically Important Insurers.

<sup>29</sup> EBA, EIOPA, ESMA (2016): Joint Committee Report on Risks and Vulnerabilities in the EU Financial System. Forthcoming.

managers. Interconnectedness and subsequently systemic relevance is assessed by applying the Granger Causality Test<sup>30</sup> to the time series of total returns of a panel of 60 listed companies and three groups. These are the top 20 EU listed insurers, the top 20 EU listed banks and the top 20 US/EU listed Asset Managers.<sup>31</sup> Hence, the results of this analysis are based on the market perception and do not reflect the real inter-exposures between the financial sectors.

**An overall reduction of the number of significant connections since the second half of 2014 is shown below** (Figure 5.9). It displays for each sector the number of statistically significant Granger causality connections over the total number of possible connections. The statistical significance level is set at five per cent. This corresponds to a reduction in the overall tensions in the financial market. The groups' patterns allow distinguishing between the three groups. In the aftermath of the 2008/2009 and 2010/2012 EU sovereign debt crises banks played a prominent role in posing systemic risk with respect to insurers and asset managers. In the general reduction of the level of interconnectedness observed (in March 2014) the behaviour of the three groups can be hardly distinguished. Only from end-2015 onwards asset managers tend to actively affects banks and insurers.

Figure 5.9. Interconnections among banks, insurers and asset managers



Source: banks: top 20 in terms of capitalization from STOXX® Euro 600 Banks; (re)insurers: top 20 in terms of capitalization from STOXX® Euro 600 Insurance; Asset Managers: 20 AM listed in US and EU stock markets. Data retrieved from Datastream®. Elaboration: EIOPA. A thorough description of the model can be found in Appendix 1.1 of Berdin, E. and Sottocornola, M (2015) Insurance Activities and Systemic Risk. SAFE Working Paper n.121.

<sup>30</sup> Granger, C. W. J. 1969 Investigating causal relations by econometric models and cross-spectral methods. *Econometrica* 37, 424-438.

<sup>31</sup> It is worth noticing that the concept of Granger causality does not measure the causality in its stricter meaning, but whether past values of a variable x contain information that helps to predict a variable y beyond the information contained in past values y of alone. More specifically, we are measuring whether the movements in stock price of one entity cause movements of stock prices of other entities and vice-versa.

## **PART II**

### Thematic Article

# Impact of Mergers and Acquisitions on European Insurers: Evidence from Equity Markets

Petr Jakubik and Dimitris Zafeiris<sup>32</sup>

## Abstract

Under the current low yield environment insurers are changing their business models and looking for new investment and business opportunities. This is also reflected in an increasing interest in mergers and acquisitions to achieve sufficient returns. However, there is no clear answer in the literature whether this strategy brings the expected positive results. This study empirically tests the effects of mergers and acquisitions (M&A) on share prices of European insurers via an event study. Our results do not confirm the positive impact of such strategies on acquirers' share prices delivering abnormal returns for shareholders.

## 1. Introduction

The recent surge in consolidation activity in the insurance sector revives one of the fundamental debates in financial literature whether mergers are value enhancing for shareholders. There is a considerable amount of contradicting research studies trying to explain the rationale behind and the impact of consolidating activities. Based on the economic theory, any impact on the valuation due to a merger should be the result of changes in the net cash flows steaming from synergies or alternatively lower riskiness of the combined entity. The synergies are based on economies of scale and economies of scope while lower risk is associated with diversification benefits (Cummins and Weiss, 2004). When large conglomerates include various lines of business or various geographical areas of activity, this could potentially limit the income volatility of the firm and consequently reduce firm's specific risk. Market intelligence also suggests arguments ranging from outright balance sheet growth to regulatory implications.

Although the majority of studies find valuation gains for target firms, the impact on acquirers – usually the initiators of a consolidation process – is still inconclusive. A survey of the relevant literature by Martin and Sayrak (2003) makes reference to the fact that although conventional wisdom suggests that large diversified institutions

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<sup>32</sup> European Insurance and Occupational Pensions Authority (EIOPA).

trade at discount compared to the market (the diversification discount), there is a number of studies that supports the contrary. In order to obtain a holistic view, we collect market information on the European insurance sector to identify any patterns that could help to link mergers and acquisitions literature with the empirical results. The topic of consolidation activity in the insurance sector poses a significant interest not only due to the potential impact to shareholder wealth but also on the perception of riskiness and/or stability of the sector. In the aftermath of the recent financial crisis, such activities are viewed not only in terms of, sometimes short-term, shareholder profit or loss, but also in a broader financial stability perspective. From this point of view, discussions on issues such as the market perception of the riskiness of large diversified entities versus smaller, focused entities, becomes extremely relevant.

This article is organised as follows. First, we present a literature overview of the alternative rationales for mergers and acquisitions activities and the corresponding results. Second, we describe the theoretical framework applied in this study. Third, data sample for the empirical part is described. Fourth, the results of our empirical analysis are discussed. Finally, we conclude based on the obtained results and identify areas that deserve further work.

## **2. Related studies**

There is an extensive and diverse literature on the rationale and impact of M&A activity, mostly based on commercial firms, but more limited for the financial sector and, particularly, the insurance sector. We distinguish three main categories and further elaborate on the literature directly or indirectly relevant to the insurance sector. The first category includes research based on production theory assumptions, the second category refers to literature discussing diversification benefits while the third category includes references which cannot be directly linked to the two main categories mentioned but still exhibit theoretical and practical relevance to the discussion, such as merger induced systemic risk effects.

### ***Cost and Revenue Economies***

Bruner (2002) conducts a survey on the impact of M&A activity by summarising the evidence of 130 studies between 1971 and 2001. For the purposes of this survey, four approaches for measuring M&A impact are discussed. (i) Event studies. They assess the impact of the merger by calculating abnormal returns to shareholders as the difference between the returns realised post-merger versus the returns predicted by a market model. (ii) Accounting studies. These studies assess the impact of M&A

activity by analysing the financial statements, profitability and performance of firms pre and post consolidation. They can be less controversial than event studies as they are not based on any market model assumptions. (iii) Surveys of executives and (iv) Clinical-case studies. The survey concludes that overall M&A activity is beneficial as it presents mostly neutral impact for acquiring firms and positive impact for target firms' shareholders. Consistent to the above, Campa and Hernando (2004) study the shareholder value creation of European M&As and find acquirer's shareholders receive cumulative average abnormal returns close to zero after the announcement of a merger while target firm's shareholders receive significant cumulative average abnormal returns. An interesting finding of this study is that mergers in industries that have been under government control or operating in heavily regulated frameworks are less beneficial than mergers in unregulated industries.

For the insurance sector, Berger, Cummins and Weiss (1999) identify economies of scope that may derive either from cost or revenue sources. They discuss cost scope economies when combining Life with P&C insurance within a firm due to lower costs associated with shared databases, IT infrastructure and logistics. Revenue economies of scope can be present due to sharing clientele and creating 'one stop shop' for all insurance needs of customers. Upon recognition of potential diseconomies of scale, the authors test if scope economies vary according to scale and product mix and outline a regression analysis of scope economies to assess the types of firms most likely to realise scope economies. They construct an alternative methodology to measure scope economies which uses separate cost, revenue and profit functions for life and P&C and includes data for specialists in the own functions. The results suggest that the realisation of scope economies depend on the size, type and business model of the insurer. Large, insurers with vertical distribution systems tend to realise profit scope economies as opposed to small institutions with horizontal distribution systems.

Cummins and Weiss (2004) assess the impact on shareholder value after the unprecedented wave of mergers and acquisitions in the European financial sector that followed the deregulation of financial services, with the exception of solvency requirements, during the early nineties. By conducting a standard market model event study methodology, the authors try to capture the market expectations as the best proxy for the net effect of M&A activity on the present value of the expected net cash flow of firms. The results of the analysis demonstrate that European M&As in the insurance sector generated small negative cumulative average abnormal returns (CAARs) for acquirers. These negative returns were more profound for domestic consolidation activity while for cross border transactions the impact was neutral. On

the contrary, for consolidation targets the results seem to demonstrate overall gains that in some cases were significant. These findings are broadly consistent to the conventional wisdom in the M&A literature that suggests null to negative impact on shareholders wealth of acquiring firms in the commercial sector (Bruner 2002).

On a more recent study on the insurance sector in Europe, Cummins, Klumpes and Weiss (2015) find small but statistically significant gains for acquirers, at least for some windows of the event study. Results also suggest large and significant gains for targets in the overall sample. Although these findings are consistent to the findings referring to target firms, they are not consistent with prior literature suggesting that European M&As were neutral for acquiring insurers.

### ***Corporate diversification (Conglomeration versus strategic focus hypothesis)***

Martin and Sayark (2003) survey the literature on corporate diversification. In order to streamline the voluminous and quite diverse literature on the topic, existing literature is classified in three categories according to the conclusion they reach on the impact of corporate diversification on shareholder value.

The first category includes research claiming that large, diversified firms destroy value, have a lower Tobin's Q (Montgomery and Wernerfelt 1998, Lang and Stulz 1994 and Servaes 1996) and trade at a discount of approximately 15 per cent when compared to the sum of their parts.

The second category of relative literature advocates that corporate diversification does not destroy value. It is a series of research that challenges the link between market discounts and diversification, claiming that most firms were trading at a discount before the decision for diversification (Graham 1999, Lang, Ofek and Stulz 1996).

The third category of research claims that diversified firms don't trade at a discount but at a significant premium and that the different conclusions of other research is the result of wrong estimations. A major argument for the existence of diversification premium is based on the existence of internal markets where firms can seek cheap internal capital (Hadlock et al.).

Specific to the insurance sector, Liebenberg and Sommer (2008) use a sample of P&L insurers over the period 1995-2004 and conclude that diversified firms underperform specialised firms and that this underperformance is actually measured as 1 per cent over return on assets or 2 per cent over return on equity by using Tobin's Q. As P/L insurers can choose to focus on a specific line of business or expand to more lines of business, thus achieving a more diversified corporate portfolio, they pose a good



sample to assess the impact of diversification on shareholder value. The authors' model accounting and market performance as a function of a binary diversification indicator and a range of other performance correlates. Findings suggest that undiversified insurers outperform diversified insurers as the costs and inefficiencies of diversification outweigh the potential benefits and risk reduction. There are also interesting results with respect to some of the control variables as both size and capitalization are positively related to accounting performance suggesting that customers are willing to pay an increased premium for insurers they perceive lower insolvency risk. The relation between size and performance may also be explained in terms of scale economies as discussed in the previous section.

Cummins, Klumpes and Weiss (2015) by using the same event study methodology as in the case of the overall impact of M&A activity on insurers' shareholders, find evidence of outperformance of focusing rather than diversifying consolidation transactions and conclude that acquiring insurance companies should be very sceptical over cross-industry acquisitions.

### ***Other relevant literature***

Stoyanova and Grundl (2014) investigate the link between regulatory frameworks and merging decisions. More specifically, the authors perform an analysis of Solvency II framework and, in particular, the standard formula. A model is applied in order to assess an insurer's decision to merge in order to take advantage of regulatory geographic diversification benefits and conclude that the framework may be the source of M&A activity.

Weiss and Mühnickel (2013) study the relationship between consolidation in the insurance industry and systemic risk by analysing a sample of global domestic and cross-border mergers. By using Marginal Expected Shortfall as a measure of acquiring insurance companies' contribution to moderate systemic risk, in combination to lower tail dependence coefficients as a second measure of extreme systemic risk, they find mixed empirical evidence in support of a destabilizing effect of consolidation in the insurance industry. While the results indicate a strong positive relationship between M&A activity in insurance and moderate systemic risk, this effect does not carry over to extreme systemic risk.

## **2. Description of methodology applied**

In order to identify the potential impact of consolidation activity on shareholder wealth, we use equity prices as the channel of information on shareholder

expectations after the announcement of such an activity. An event study measures the impact of an economic event, such as the announcement of a M&A, by using financial market data. In our analysis we employ an economic model event study, based on MacKinlay (1997), in particular using the Capital Asset Pricing Model (CAPM) to calculate expected returns. Given rationality in equity markets, the effects of an event should be reflected in observed security prices and a measure of the event's economic impact can be constructed using equity prices collected over a relatively short period of time. We use daily returns in order to estimate expected and abnormal returns. We define the 10 days event window from one day before the announcement (t-1) until 8 days after the announcement (t+8). Then we calculate abnormal return as a difference between observed market and expected return for time  $\tau = t - 1, \dots, t + 8$ .

Daily expected returns are defined for all acquirers  $i$  and all time periods  $\tau = t - 1, \dots, t + 8$  as

$$R_{i,\tau}^m = r_f + \beta_i(r_{i,\tau}^m - r_f) \quad (1)$$

where

$r_f$  is risk free rate,

$\beta_i$  is beta of the security  $i$ ,

$r_{i,\tau}^m$  is expected relevant market return for the security  $i$  and time  $\tau$ .

Furthermore, abnormal return for the security  $i$  and time  $\tau$  corresponds to

$$AR_{i,\tau} = R_{i,\tau} - R_{i,\tau}^m \quad (2)$$

where

$R_{i,\tau}$  is observed return for the security  $i$  and time  $\tau$

We further need to aggregate the abnormal return observed through the time and across the securities. Given  $N$  events, the sample aggregated abnormal return for period  $\tau$  is calculated as

$$\overline{AR}_\tau = \frac{1}{N} \sum_{i=1}^N AR_{i,\tau} \quad (3)$$

The average abnormal return can be then aggregated over the event window to obtain cumulative abnormal return.

$$\overline{CAR} = \sum_{\tau=t-1}^{t+8} \overline{AR}_\tau \quad (4)$$

The null hypothesis that the abnormal returns are zero could be tested via the following test statistics (MacKinlay 1997).

$$\theta_1 = \frac{\overline{CAR}}{\sqrt{\text{var}(\overline{CAR})}} \quad (5)$$

where

$$\text{var}(\overline{CAR}) = \sum_{\tau=t-1}^{t+8} \text{var}(AR_{i,\tau}) \quad (6)$$

and  $\text{var}(AR_{i,\tau})$  corresponds to variance of the abnormal returns at time  $\tau$  for  $i = 1, \dots, N$ .

This test statistics has asymptotically standard normal distribution. However, with the null hypothesis either a mean or variance effect might drive the results. In our case we are interested only in the mean effect. Hence, we expand the null hypothesis to allow for changing variance. This can be done by using cross section variance of cumulative abnormal returns in the testing statistics (Boehmer et al 1991).

$$\theta_2 = \frac{\overline{CAR}}{\sqrt{\text{var}(\overline{CAR})}} \quad (7)$$

where

$$\text{var}(\overline{CAR}) = \text{var}\left(\sum_{\tau=t-1}^{t+8} AR_{i,\tau}\right) \quad (8)$$

where the variance of abnormal cumulative returns is calculated for the sample including securities  $i = 1, \dots, N$ .

Moreover, as a robustness check, we use a non-parametric test based on the following statistics (Corrado 1989).

$$\theta_3 = \frac{1}{N} \sum_{i=1}^N (K_{i,0} - 2) s(K) \quad (9)$$

where

$K_{i,0}$  is the rank of the of the abnormal return in the event day,

$$s(K) = \sqrt{\frac{1}{10} \sum_{\tau=t-1}^{t+8} \left( \frac{1}{N} \sum_{i=1}^N (K_{i,\tau} - 2) \right)^2} \quad (10)$$

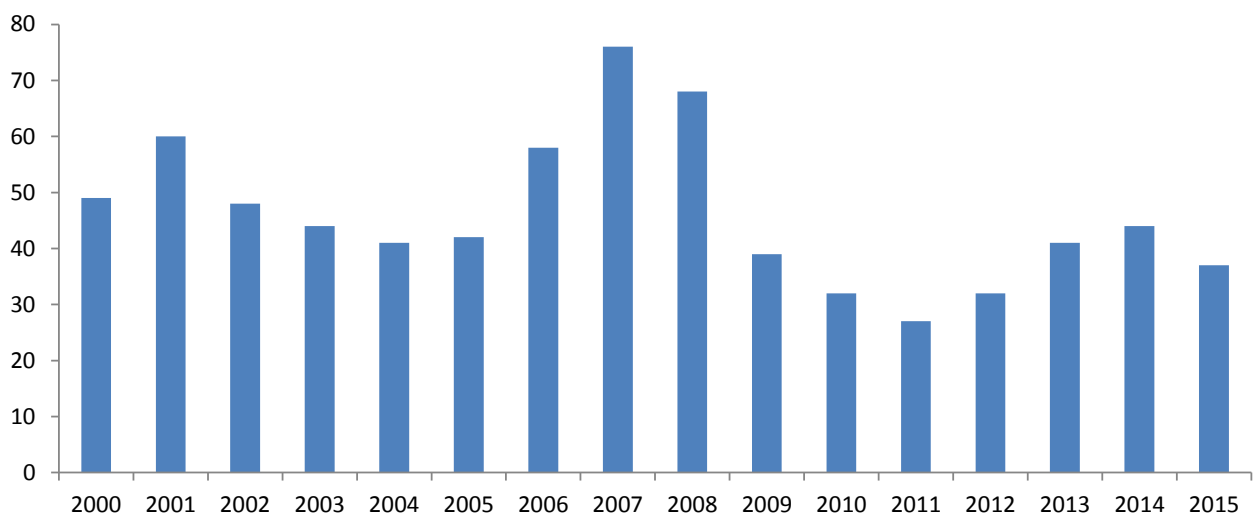
This test statistics has also asymptotically standard normal distribution.

### 3. Data sample and descriptive statistics

The purpose of our data sample is twofold. First, we want to assess market developments in European M&A activity during the last 15 years and, second, we try to identify any relationships between observed transactions and the rationales or incentives for consolidation.

We construct our sample based on Bloomberg © data for the period 2000-2015 for M&A activity in Europe where either the acquirer or target was an insurance company. Our sample database refers then to 1718 cases. However, in order to further analyse the data, we need to adjust for data availability and suitability to the analysis. We therefore filter our results by selecting only the acquirers that are listed in stock exchanges and for which information on the deal amount is available. This way, we construct a sample consisting of 738 transactions and the market observations (Charts AI.1).

*Figure AI.1: European Insurers M&A (number of transactions)*

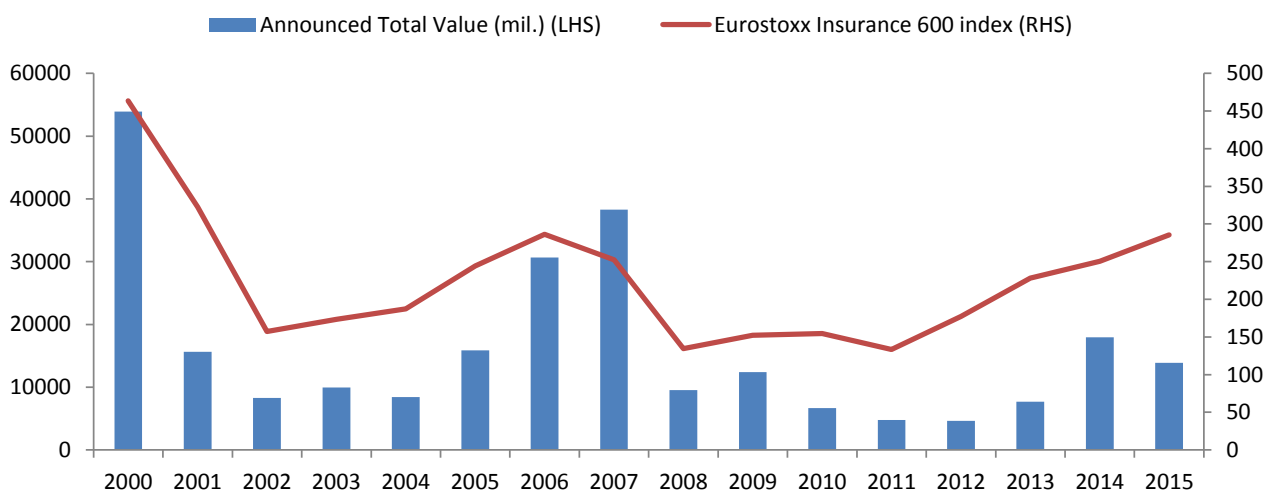


*Source: Bloomberg*

*Notes: Data filtered for listed acquirers, completed or pending transactions with deal amount data.*

An initial overview of the data indicates that there is a significant variation in M&A activity through time and that this variation can partially be explained by economic factors and equity market performance (Chart AI.2).

Figure AI.2: M&A activity (deal value) and Eurostoxx Insurance 600



Source: Bloomberg

Notes: Data filtered for listed acquirers, completed or pending transactions with deal amount data.

The overall picture indicates that there seems to be some degree of correlation between market performance and consolidation activity. Picks in activity followed a strong equity market performance in the late nineties and 2006-2007 and a significant drop is observed in the aftermath of the global financial crisis in 2008. Improvement in the last few years coincides with overall market performance but does not seem to confirm the expectations of a M&A activity peak due to the Solvency II introduction. On the contrary, EU consolidation activity seems to lag behind the US although a few more years of observations would be needed before concluding entirely in this respect.

If we were to focus our analysis to the 'decision maker' we would have to select M&A activity where the acquirer was an insurer. In such a case, our sample would refer to 444 cases. In order to use this sample for an event study based on market returns, the following information is needed: market prices at all observation periods, beta at T-2 for the acquirer as well as sub-sector<sup>33</sup> and country of domicile of both acquirer and target. Our study sample is thus limited to 343 transactions that fulfil the above requirements.

In order to assess the geographic focus of these transactions, we distinguish our sample into 'domestic' and 'cross border' transactions and observe for any trend

<sup>33</sup> The following classifications were used: Life/Health Insurance, Property/Casualty Insurance, Multi-line Insurance, Reinsurance, Insurance Brokers, Financial Guarantee Insurance

through time. At least for our sample, there is a shift in focus from domestic into cross-border consolidation activities in the last years which may be attributed to the internationalisation of markets and, particularly, the creation of a single market in the EU. Furthermore, differentiating between 'Diversifying' versus 'Focusing' transactions in our sample, based on the subsector of the merging entities, yields interesting results (see Table AI.1 and AI.2).

*Table AI.1: Type of consolidation - sectoral/geographical (number of transactions announced)*

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Diversifying	7	10	14	12	6	5	14	18	20	12	11	4	10	9	16	14	182
Focusing	10	17	11	13	9	15	18	16	15	6	4	1	8	6	8	4	161
Cross-border	8	12	11	15	8	10	20	26	19	12	11	5	12	10	16	13	208
Domestic	9	15	14	10	7	10	12	8	16	6	4	0	6	5	8	5	135
<b>Number of transactions</b>	<b>17</b>	<b>27</b>	<b>25</b>	<b>25</b>	<b>15</b>	<b>20</b>	<b>32</b>	<b>34</b>	<b>35</b>	<b>18</b>	<b>15</b>	<b>5</b>	<b>18</b>	<b>15</b>	<b>24</b>	<b>18</b>	<b>343</b>

Source: Bloomberg

Notes: Data filtered for listed acquirers, completed or pending transactions with deal amount data.

Although with variations through time, there is a clear tendency of firms to pursue diversifying or complementary activities when engaging in M&A activities rather than following a focused approach. This tendency deserves further analysis, particularly when considering the contrary or, in the best case, inconclusive discussions on the topic in the relevant literature.

By viewing our sample in terms on announced deal size rather than number of transactions, we get similar results for the geographical focus but conflicting results for the sectorial focus.

*Table AI.2: Type of consolidation - sectoral/geographical (total value of transactions announced, in EUR millions)*

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Diversifying	18119	5196	1412	2237	125	4890	3590	6233	4623	3274	1621	88	1267	2327	4839	3006	62844
Focusing	21432	2215	3281	2448	1116	7264	21832	13804	2106	3450	470	330	1078	3277	9154	6843	100101
Cross-border	25528	2404	1425	3320	1167	10666	19227	17907	4679	4352	1880	418	1651	2551	12395	9577	119147
Domestic	14024	5007	3268	1365	74	1487	6194	2131	2050	2371	210	0	694	3053	1598	272	43798
<b>Total</b>	<b>39551</b>	<b>7411</b>	<b>4693</b>	<b>4685</b>	<b>1241</b>	<b>12153</b>	<b>25421</b>	<b>20038</b>	<b>6729</b>	<b>6724</b>	<b>2091</b>	<b>418</b>	<b>2345</b>	<b>5604</b>	<b>13993</b>	<b>9849</b>	<b>162945</b>

Source: Bloomberg

Notes: Data filtered for listed acquirers, completed or pending transactions with deal amount data.

## 4. Empirical Results

Despite the overall average positive Cumulative Abnormal Returns (CAR), our analysis did not reject the null hypothesis for any of the statistics considered (equation 5, 7, 9, see Table AI.3).

Table AI.3: Statistical results

	Average CAR	Test statistics $\theta_1$	Test statistics $\theta_2$	Test statistics $\theta_3$
Total Sample	2.82%	0.233	0.242	0.935
Diversifying	1.13%	0.132	0.131	0.940
Focusing	3.59%	0.327	0.352	0.930
Cross-border	1.89%	0.220	0.221	0.880
Domestic	2.90%	0.255	0.271	1.019

Although the average cumulative abnormal return is positive for the whole sample, the test statistics cannot be rejected even at the confidence level 20 per cent for which the absolute value of tested statistics would need to be greater than 1.282.

Furthermore, the existence of average positive cumulative return is higher in case of consolidation activity within the same sector while it is less positive for diversification oriented activity. When looking at the impact of geographical activity, there seems to be slightly more positive results for domestic activities compared to cross-border (see Table AI.4 and AI.5). However, for none of those cases we could reject hypothesis of no presence of abnormal cumulative returns. Hence, the results suggested from the descriptive statistics don't seem to be statistically significant.

Table AI.4: Share of cases with positive abnormal cumulative returns (in per cent)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Diversifying	43	50	50	50	50	60	79	22	65	50	55	25	50	67	31	71	52
Focusing	70	71	82	62	89	60	56	50	47	17	25	0	88	50	50	50	60
Cross-border	63	67	73	67	75	70	80	27	53	33	36	20	58	70	38	62	55
Domestic	56	60	57	40	71	50	42	63	63	50	75	-	83	40	38	80	56
<b>Total</b>	<b>59</b>	<b>63</b>	<b>64</b>	<b>56</b>	<b>73</b>	<b>60</b>	<b>66</b>	<b>35</b>	<b>57</b>	<b>39</b>	<b>47</b>	<b>20</b>	<b>67</b>	<b>60</b>	<b>38</b>	<b>67</b>	<b>55</b>

Source: Bloomberg

Notes: Data filtered for listed acquirers, completed or pending transactions with deal amount data.

Table AI.5: Average cumulative abnormal returns (in per cent)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
Diversifying	2.82	-0.11	-0.36	2.18	1.82	0.68	2.33	-3.39	3.15	-0.70	0.24	-2.92	1.89	2.74	-0.80	7.41	1.13
Focusing	4.90	7.42	7.11	0.24	11.42	3.23	2.72	0.69	-1.07	-1.55	-2.82	-8.60	16.62	1.70	1.16	0.64	3.59
Cross-border	3.96	6.70	6.47	0.61	8.99	3.05	4.62	-2.15	0.38	-1.46	-0.35	-4.06	1.90	4.61	-0.60	2.76	1.89
Domestic	4.12	2.97	0.14	2.01	5.97	2.13	-0.90	0.73	2.48	-0.03	-1.20	-	21.51	-2.24	0.77	14.09	2.90
<b>Total</b>	<b>4.04</b>	<b>4.63</b>	<b>2.92</b>	<b>1.17</b>	<b>7.58</b>	<b>2.59</b>	<b>2.55</b>	<b>-1.47</b>	<b>1.34</b>	<b>-0.98</b>	<b>-0.58</b>	<b>-4.06</b>	<b>8.44</b>	<b>2.33</b>	<b>-0.14</b>	<b>5.91</b>	<b>2.28</b>

Source: Bloomberg

Notes: Data filtered for listed acquirers, completed or pending transactions with deal amount data.

## 5. Conclusion

The topic of M&A activity and its impact on shareholder value remains ambiguous in the literature and there is a scope for further work, especially in the insurance sector. Although the studies indicate neutral to negative results for acquirers, firms continue engaging in M&A activities in particular at the current low yield environment. Our study tries to contribute to the debate on the impact of consolidation activity through a market model event study, as introduced by MacKinlay (1997). The results of our analysis indicate that within the European insurance sector, when the acquirer is an insurance undertaking, there are no significant positive abnormal returns. Although some differences that depend on whether consolidation activities are diversifying or focusing on the same business can be observed, none of them proved to be statistical significant.

Our finding on the impact of corporate (as opposed to portfolio) diversification on the value of an insurer is in line with the portfolio theory. Any reduction of firm-specific risk claimed by the diversification proponents could be better performed by the investors themselves by holding a diversified portfolio of firms specialising in different lines, probably more effectively than a firm that diversifies its activities. Hence, there should be no reward or premium paid by the markets and, to the extent that conglomeration includes increased costs or intra group subsidies for less efficient business lines, there may even be a penalty, a diversification discount. Yet, we observe firms still engaging in diversification of activities either through M&A transactions or organic growth. Further research of the topic would be of added value, supplementing the analysis of consolidation impact based on event studies with a study based on the methodology of Berger and Ofek (1995) that would include also



insurers not engaging in M&A activities and comparing the sum of the parts of their individual business lines to the valuation of the diversified entity.

## **Bibliography**

- Berger A., Cummins J., Weiss M., Zi H. (1999): Conglomeration versus strategic focus: Evidence from the Insurance Industry, Center for Financial Institutions Working Papers 99-29, Wharton School Center for Financial Institutions, University of Pennsylvania.
- Berger A., DeYoung R., Udell G. (2001): Efficiency barriers to the consolidation of the European financial services industry, *European Financial Management*, vol. 7, no. 1, 2001, pp. 117-130.
- Berlin, M. (1999): Jack of All Trades? Product diversification in Nonfinancial firms, *Business Review*, May, pp. 15-29.
- Berger, P., Ofek, E. (1995): Diversification's effect on firm value, *Journal of Financial Economics* vol. 37, no. 1, pp. 39–65.
- Boehmer, E., Musumeci, J. and Paulsen, A. (1991): Event-Study Methodology under Conditions of Event-Induced Variance, *Journal of Financial Economics*, vol. 30, no. 2, pp. 253-272.
- Bruner R., (2001) Does M&A Pay? A Survey of Evidence for the Decision-Maker, University of Virginia Darden School Foundation, Version 2.3.
- Campa J., Hernando I. (2004): Shareholder Value Creation in European M&As, *European Financial Management*, vol. 10, no. 1, pp. 47-81.
- Corrado, Ch. (1989): A nonparametric Test for Abnormal Security-Price performance in Event Studies, *Journal of Financial Economics*, vol. 23, no. 2, pp. 385-395.
- Mackinlay C. (1997): Event Studies in Economics and Finance, *Journal of Economic Literature*, vol. XXXV, pp. 13-39.
- Cummins, D., Klumpes P., Weiss, M. (2015): Mergers and Acquisitions in the Global Insurance Industry: Valuation Effects, *The Geneva Papers*, no. 40, pp. 444-473.
- Cummins J., Weiss M. (2004): Consolidation in the European Insurance Industry: Do Mergers and Acquisitions Create Value for Shareholders? The Brooking/Wharton Conference, Public Issues Confronting the Insurance Industry, January.
- Elango B., Yu-Luen Ma (2008): An investigation into the diversification–performance relationship in the US property–liability insurance industry, *Journal of Risk and Insurance*, vol. 75, no. 3, pp. 567–591.
- Focarelli D., Pozzolo A. (2008): Cross-border M&As in the financial sector: Is banking different from insurance? *Journal of Banking & Finance* vol. 32, no. 1, pp. 15–29.
- Graham, J. (1999): Herding among investment newsletters: Theory and evidence. *Journal of Finance*, vol. 54, pp. 237-268.
- Huang, X., Zhou, H., Zhu, H. (2010): Assessing the systemic risk of a heterogeneous portfolio of banks during the recent financial crisis, *BIS Working Papers*, no. 296.
- Huang, X., Zhou, H., Zhu, H., (2009): A framework for assessing the systemic risk of major financial institutions, *Journal of Banking & Finance* vol. 33, no. 11, pp. 2036–2049.
- Klumpes P. (2016): Does M&A Add Value in the Long Run? – Evidence from the International Insurance Industry, *Newsletter Insurance and Finance*, The Geneva Association.
- Lang, L., Ofek, E., Stulz, R. (1996): Leverage, investment, and firm growth, *Journal of Financial Economics*, vol. 40, no. 1, pp. 3–29.
- Lelyveld, I., Knot, K. (2008): Do financial conglomerates create or destroy value? Evidence for the EU, *DNB Working Paper*, no. 174.
- Liebenberg A., Sommer D. (2008): Effects of corporate diversification: Evidence from the property-liability insurance industry, *The Journal of Risk and Insurance*, 2008, vol. 75, no. 4, pp. 893-919.

- Lins, K., Servaes, H. (2002): Is corporate diversification beneficial in emerging markets? *Journal of Financial Management* vol. 31, no. 2, pp. 5-31.
- Martin, J., Sayrak, A. (2003): Corporate diversification and shareholder value: a survey of recent literature, *Journal of Corporate Finance* vol. 9, n. 1, pp. 37-57.
- Montgomery, C., Wernerfelt, B. (1998): Diversification, Ricardian Rents, and Tobin's q, *The RAND Journal of Economics*, vol. 19, no. 4, pp. 623-632.
- Stoyanova R., Grundl H. (2014): Solvency II: A Driver for Mergers and Acquisitions?, *The International Association for the Study of Insurance Economics*, pp. 1018-5895.
- Weiss G., Muehlnickel J. (2013): Consolidation and Systemic Risk in the International Insurance Industry, *Technische Universitaet Dortmund, Working Paper*.

## **Appendix**

### ***Data coverage and disclaimer - The insurance sector***

EIOPA collects consolidated figures from 32 large insurance groups<sup>34</sup>. The data is provided by undertakings through the national supervisory authorities on a best effort basis. This means that the data is not subject to internal or external audit. Although effort is made to keep the sample for each indicator as representative as possible, the sample may vary slightly over time. As data is provided on an anonymous basis, it is not possible to track the developments on a consistent sample. EIOPA also collects EU/EEA-wide statistics on country level. This data is collected annually and published as statistical annexes together with the Financial Stability Report.

### ***Data coverage and disclaimer - The reinsurance sector***

The section is based on information released in the annual and quarterly reports of the largest European reinsurance groups. The global and European market overview is based on publicly available reports, forecasts and quarterly updates of rating agencies and other research and consulting studies.

### ***Data coverage and disclaimer – The pension fund sector***

The section on pension funds highlights the main developments that occurred in the European occupational pension fund sector, based on feedback provided by EIOPA Members. Not all EU countries are covered, in some of them IORPs (i.e. occupational pension funds falling under the scope of the EU IORPs Directive) are still non-existent or are just starting to be established. Furthermore, in other countries the main part of occupational retirement provisions is treated as a line of insurance business respectively held by life insurers, and is therefore also not covered. The country coverage is 70 per cent (22 out of 31 countries)<sup>35</sup>.

Data collected for 2015 was provided to EIOPA with an approximate view of the financial position of IORPs during the covered period. Several countries are in the process of collecting data and in some cases 2015 figures are incomplete or based on estimates which may be subject to major revisions in the coming months. In addition, the main valuation method applied by each country varies due to different accounting

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<sup>34</sup> The list of insurance groups is available in the background notes for the risk dashboard published on <https://eiopa.europa.eu/Publications/Standards/EIOPA%20Risk%20Dashboard%20December%202014%20-%20Background%20Note.pdf>

<sup>35</sup> Countries that participated in the survey: AT, DE, DK, EE (only qualitative information), ES, FI, GR, HR, HU, IS, IT, LI, LU, LV, NL, NO, PL, PT, RO, SE, SI, SK and the UK.

principles applied across the EU. Moreover, data availability varies substantially among the various Member States which hampers a thorough analysis and comparison of the pension market developments between Member States.

For RO, the data refers to 1st Pillar bis and 3rd Pillar private pension schemes only.

### ***Country abbreviations***

AT	Austria	IT	Italy
BE	Belgium	LI	Liechtenstein
BG	Bulgaria	LT	Lithuania
CY	Cyprus	LU	Luxembourg
CZ	Czech Republic	LV	Latvia
DE	Germany	MT	Malta
DK	Denmark	NL	Netherlands
EE	Estonia	NO	Norway
ES	Spain	PL	Poland
FI	Finland	PT	Portugal
FR	France	RO	Romania
GR	Greece	SE	Sweden
HR	Croatia	SI	Slovenia
HU	Hungary	SK	Slovakia
IE	Ireland	UK	United Kingdom
IS	Iceland	CH	Switzerland