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**JOINT COMMITTEE REPORT ON
RISKS AND VULNERABILITIES IN THE EU FINANCIAL SYSTEM
APRIL 2017**

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EXECUTIVE SUMMARY

The current environment of low interest rates and elevated political and economic uncertainties poses substantial risks to the banking and insurance sector. Many banks struggle with asset quality concerns and attempt to mitigate discrepancies between returns and their respective funding costs. Costs of banks' equity exceed respective returns on equity, while insurers predominantly face reinvestment risks, as available long-term interest rates may eventually not suffice to fund the contractually guaranteed returns of the outstanding policies. In the asset management industry, low returns on assets directly translate into low returns on fund shares, potentially further reinforced by the reduction of clients' returns through fees charged by the fund industry and the costs of distribution.

In late 2016, tendencies for increasing risk premia materialised in financial markets. So far, yields in the EU in general have reacted moderately, with the search for yield continuing in some asset classes. Increasing price volatilities and lingering liquidity concerns increased risks around the adequate valuation of asset prices. Valuation risk for financial instruments and volatility remains high, as episodes of high volatility continue to occur and political risks are elevated. Persistent conduct of business risks and rising cyber risk act as additional drivers. A steepening of the yield curve, as recently observed, may benefit the profitability of banks, insurers and pension funds, but may also pose additional valuation concerns. In the EU banking sector, the impact on earnings may only be seen over time since liabilities often reprice at a faster rate than assets. Moreover, high levels of non-performing loans (NPL), inefficiencies, overcapacities, and a lack of conclusive business strategies to improve profitability prospects all weigh on the sector despite some improving prospects for interest income. For the insurance sector, a sudden substantial increase of the interest rate might expose companies to an increasing probability of lapses.

Interconnectedness, in particular via asset price contagion and direct financial exposure, adds to financial sector risks. High co-movements in equity prices for insurers and banks, and high exposures of EU insurers to EU banks indicate the concentration of risk within those two sectors. Persistent search for yield supports the

potential of price contagion among risky asset classes and reinforces valuation risk, while short-term reactions of the prices for fixed income instruments observed in late 2016 did not translate in higher geographic price heterogeneity, again pointing to the preservation of valuation risk.

Technological risks are increasingly affecting the financial sector. Fast technological change will, over time, significantly impact existing business models of financial institutions. It leaves many financial intermediaries with ageing core IT systems and with the need to engage in IT investments, further aggravating profitability issues. Cyber risk threatens data integrity and business continuity in an interconnected financial system. Against this background, the demand for cyber insurance is expected to grow while cyber coverage products are still relatively new in the market, with limited underwriting experiences. Unlike other types of insurance, there is a severe lack of historical data that can be used for pricing purposes. Therefore, restrictive conditions regarding the policies are often applied in order to contain underwriting risk.

1 INTRODUCTION

The August 2016 Joint Committee Report on Risk and Vulnerabilities considered as key risks to the EU financial system *i)* the low growth and low yield environment, *ii)* the low profitability of financial institutions, and *iii)* the increasing interconnectedness within the financial system. This spring 2017 report focuses on continued challenges originating from low profitability, valuation risk and interconnectedness within the financial system. It also highlights increasing challenges posed by rapid advances in information and communication technologies (ICT), including cyber risks.

This report is cognisant of the increasing risks to financial stability associated with the unsettled political climate globally. The financial system continues to face elevated political and economic uncertainty in Europe and beyond. Financial market volatility may continue with uncertainties around the terms of the UK's intended EU exit, evolving US policies, the potential for easing fiscal and tightening monetary policies and pending elections in EU member states, and the potential for re-emerging debt sustainability concerns. The future coordination of international financial regulation, with potential for regulatory arbitrage, including the relocation of business, adds to the risks perceived by markets. Lingering concerns about emerging market economies, such as China's transition to a consumption-led economy and adjustments of many commodity-producing economies to more moderate price levels, additionally add to risks markets perceive. The adequacy of existing and newly required mechanisms to foster international collaboration will be tested, not least in light of the UK's decision to leave the EU and other political developments in 2016 that increase the risk of divergence.

Since autumn 2016, global risk premia have increased, feeding expectations for steeper EU yield curves. In the context of the ECB's asset purchase programme, however, EU risk premia remained low, except for cases of recently perceived changes in idiosyncratic sovereign risk. The evolution of credit spreads requires a close monitoring of EU debt markets. The potential for a sudden increase of risk premia persists as a major risk to EU financial markets.

Low profitability, asset quality concerns, risks related to business conduct and ICT all pose additional challenges to financial institutions. Addressing those issues will be fundamental, as they continue to weigh on investors' confidence in financial institutions and the sector's ability to support long-term economic growth.

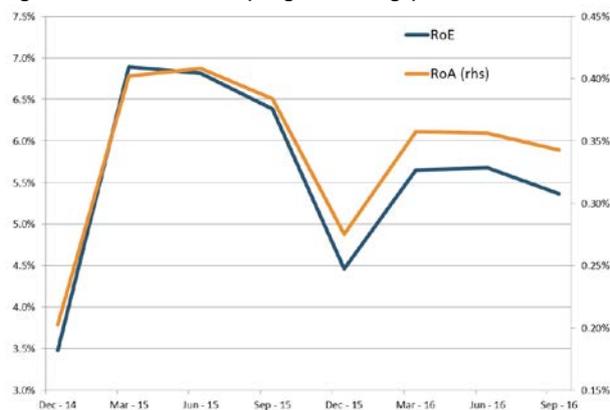
2 LOW PROFITABILITY

Persistent low profitability of financial institutions in a low growth – albeit moderately improving - and low yield environment continues to be a major challenge in the EU financial system.

In the EU banking sector, low profitability, high levels of NPL, continuously high litigation costs, overcapacities and a lack of strategies to return to sustained profitability all affect confidence in the sector notwithstanding a further steady strengthening of the capital base. The CET1 ratio (computed on a transitional basis) increased by 110bp between Q3 2015 and Q3 2016, to 14.1%. In Q3 2016, CET1 increased by 50bp.

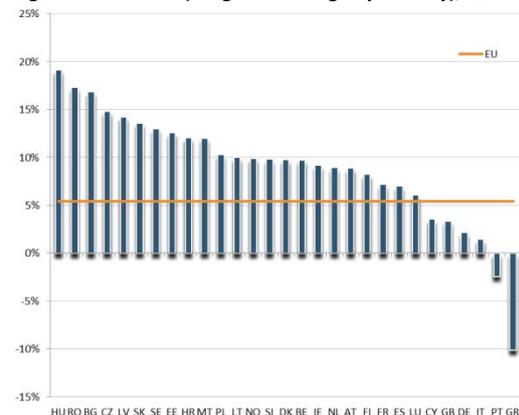
Although banks were able to reduce operating expenses, net operating income decreased to a larger extent, and resulted in an increased cost to income ratio of 63.0% in September 2016, compared to 59.9% in September 2015. Declining operating income was driven by equally strong decreases in all major income classes. In absolute terms, net interest income decreased by 6.9% from Q3 2015 to Q3 2016, net fee and commission by 7.0%, and net trading income by 7.4%. Banks' net interest income was at a level of 19.0% of banks' equity in Q2 2016, and insufficient to cover operating expenses, amounting to 20.9% of banks' equity. Return on equity (RoE) moreover remains below banks' cost of equity (CoE).¹ Litigation costs are not abating, and provide a further drag on profitability.

Figure 1: Bank RoE vs. RoA (weighted average)



Source : EBA

Figure 2: Bank RoE (weighted average by country), Q3 2016



Source : EBA

Concerning the outlook for the future, results from the December 2016 EBA risk assessment questionnaire (RAQ) suggest that banks are currently not targeting net interest income to increase profitability, but rather net fee and commission income, next to efforts to reduce operating expenses. More than 85 % of responding banks indicate a reliance on fee and commission income to increase profits. However, the increasing disintermediation of financial services traditionally provided by banks, with a growing importance of non-bank financial intermediaries, and the rise of financial technology (FinTech) may hamper the ability to grow in areas, which could otherwise compensate for the declining net interest margins.

Although NPL ratios continued to improve slowly in Q3 2016, EU banks moreover still struggle with high volumes of legacy assets and NPL, and with challenges to generate acceptable levels of income from their

¹ EBA data is based on a sample of risk indicators (RI) from 198 European banks (unconsolidated number of banks, including 40 subsidiaries; for the list of banks please refer to: <https://www.eba.europa.eu/risk-analysis-and-data>).

traditional lending activities. The NPL ratio stood at 5.4%, compared to 5.5% in Q2 2016. Some further gradual improvements in asset quality are often expected, but will strongly depend on successfully addressing existing impediments of NPL resolution. As more than one third of EU jurisdictions have NPL ratios above 10%, NPL resolution is a major challenge for EU banks.

Causes underlying the NPL challenges are manifold. They require a comprehensive coordinated European response, including (i) supervisory action to ensure adequate identification, management and provisioning of NPL, (ii) structural reforms to improve loan recovery processes, and (iii) addressing impediments on the demand side and for developing an efficient secondary market in NPL. **Recognition and provisioning of NPL, as well as NPL resolution strategies are fundamental in ongoing supervision. Supervisors should encourage banks to deal with their NPL in a more active way.** Addressing structural issues in dealing with NPL should include measures to enhance efficiency of the judicial system and its processes, to remove tax disincentives to provisioning and to ensure sector-wide adequate transparency about NPL. Legal and accounting impediments should also be addressed. Measures should moreover include steps to develop more efficient secondary markets for NPL. Such measures may include initiatives to facilitate debt securitisation and the **establishment of asset management company (AMC) solutions**. A common European approach for AMC, rather than a patchwork of national solution across the EU, could be one way to address challenges in secondary markets for distressed debt, and promote clarity on the application of state aid and BRRD rules. The EBA has published a report on the recent trends in the stock of NPLs in the EU, also assessing several impediments of a quick and efficient resolution of the stock of NPLs.²

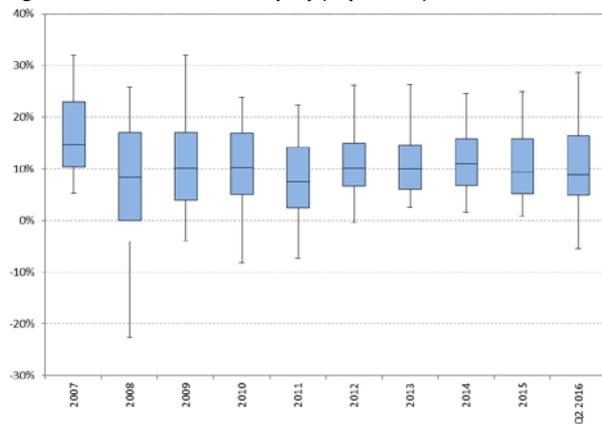
Protracted low profitability and a lack of strategies to return to adequate profitability highlight a need for banks to move towards more sustainable business models and improved efficiency. **Supervisory action is required through the business model analysis in the Supervisory Review and Evaluation Process (SREP) to maintain a dialogue with banks about their strategic choices and a return to long-term sustainable profitability. Moving towards sustainable profitability may also require further consolidation of the banking sector.** However, banking sector consolidation is limited only. Mergers and acquisition activity in the EU, especially on a cross-border level, has been on a declining trend in recent years, both in terms of the number of transactions and in terms of the total value.³ Several factors, such as heterogeneity of institutional and legal frameworks within the EU (e.g. of insolvency laws) may contribute to a slow process. Lacking efficiency is in particular an issue for many banks whose high operating expenses are hardly sustainable, also in certain countries and for some business models.

Insurance companies face challenges arising from a prolonged period of low interest rates, also influenced by ECB asset purchases. This applies especially to undertakings with a material exposure to life insurance contracts with interest rate guarantees. The rising share of negative or low yielding debt securities and long periods of such low interest rates represent a severe threat for the insurance sector and render it more difficult to generate adequate returns to meet their long-term liabilities impacting as well their profitability. Despite the unfavourable situation the industry registered an almost unchanged return on assets and a slightly decreasing return on equity in Q2 2016 (see Fig. 3 and Fig. 4). This development shall be confirmed against year-end data.

² <http://www.eba.europa.eu/-/eba-provides-updates-on-npls-in-eu-banking-sector>.

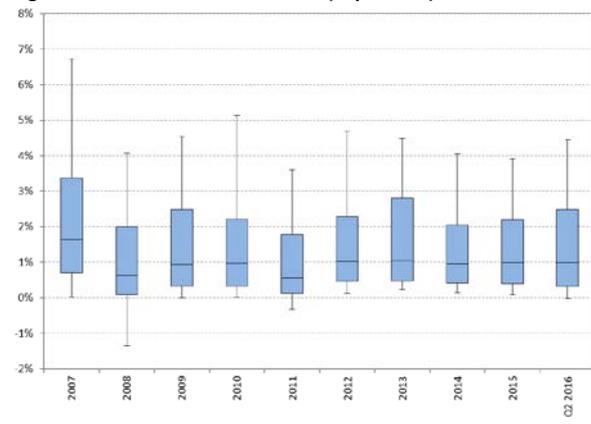
³ ECB Report on financial structures, October 2016

Figure 3: Insurers Return on Equity (in per cent)



Source: S&P Capital IQ, N=114; EIOPA elaboration.
Note: the chart shows the 10, 25, 50, 75 and 90 percentile distribution of the values for a sample of 114 European listed (re)insurers and brokers.

Figure 4: Insurers Return on Assets (in per cent)



Source: S&P Capital IQ, N=114; EIOPA elaboration.
Note: the chart shows the 10, 25, 50, 75 and 90 percentile distribution of the values for a sample of 114 European listed (re)insurers and brokers.

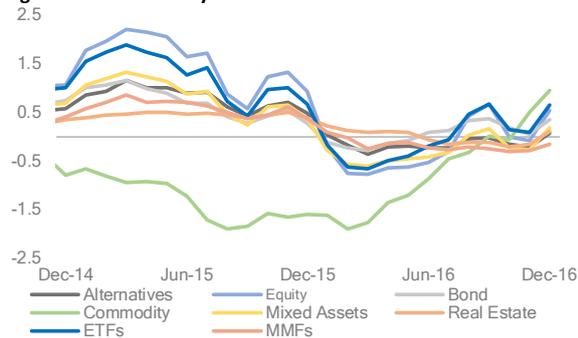
However, maturing assets have to be re-invested in order to match the cash flow profiles of all outstanding liabilities, exposing the insurer to reinvestment risk. If the low interest rate environment were to persist for a long time, this reinvestment risk could further increase in the coming years, especially if the large unrealised capital gains on bond portfolios are used for dividend or profit sharing pay-outs in the short-run. A potential lack of long-term (maturity over 10 years) fixed-income instruments can exacerbate the situation, posing a risk from an asset-liability matching perspective particularly relevant for life insurance undertakings. In addition, duration mismatches could be complemented by negative investment spreads, if yields on long-term bonds fall below interest rate guarantees, which have been promised to policyholders. Such challenges have prompted concerns that by squeezing returns, negative rates might incentivise insurance companies to accept a higher risk on their investment portfolio. Although this trend has so far not been observed in the insurance industry, its relevance deserves a continuous oversight effort.

In the EU fund industry rates of return were subdued in 2016, mostly ranging in negative territory. Since mid-2016 fund returns improved, especially for commodity and equity funds as well as for ETFs (Fig. 5). Still, only bond funds and parts of the hedge fund industry achieved an average positive performance for the entire year. Returns on a representative retail investor portfolio stood similarly low, experiencing a return to low positive rates only in Q3 2016. Even if fund share units constitute only 12% of EU retail investors' portfolios, fund returns appeared to be closely in line with returns of other components of retail investors' portfolios.⁴

Regardless of low rates of returns and negative valuation effects in the MMF sector, search for yield allowed the fund industry to attract investors. Fund inflows amounted in 2016 to almost EUR 0.3tn (0.12tn for MMF) and only equity funds experienced net withdrawals. Towards the end of the year investors returned to equity funds and flows to bond funds abated. This change suggests a marginal rotation in investors' preferences, most likely driven by reversed relative performance expectations.

⁴ For a detailed analysis of fund sector performance and for details of the data underpinning this section please refer to ESMA TRV 1 2017.

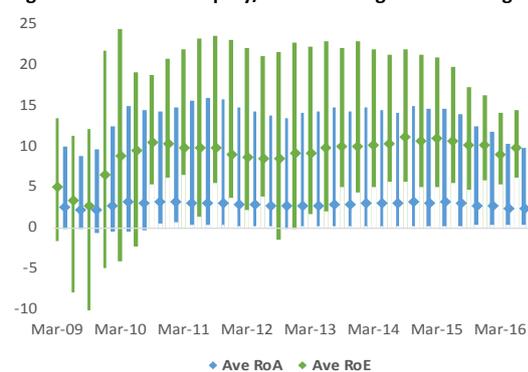
Figure 5: Fund industry returns



Sources: Thomson Reuters Lipper, ESMA.

Note: EU-domiciled funds' annual average monthly returns, asset weighted, in %.

Figure 6: Returns on equity/assets for large asset managers



Sources: Thomson Reuters Lipper, Bloomberg, ESMA. Source: EBA

Note: Maximal, minimal and average annual rates of returns on assets (blue) and equity (green) for a sample of 8 large asset managers out of the 20 biggest asset managers. Last data point June 2016.

RoE and RoA for a sample of large **assets managers** declined in the first half of 2016 as well (Fig. 6), with their average RoA arriving at 2.3% in June 2016. Asset managers' RoE stood at some 9% substantially above their RoA as well as average returns of the fund sector, suggesting a **robust profitability** of that part of the industry for which equity is traded. With virtually no leverage involved in the industry, return differences between equity and assets reduced returns on fund shares, net of fees, as profits were driven by fee income and potential efficiency gains due to automated business processes (cf. Section 5).

The continued low yield environment decreased investors' returns generated by asset managers, but did, also in light of similarly low yields for investment alternatives, not impair the industry's attractiveness beyond a general marginal preference of retail investors for real assets over financial assets. **The divergence between returns on fund shares and the RoE of some asset managers raised concerns about the appropriateness of available marketing channels and the availability of adequate cost and performance information to fund clients.** If the low yield environment were to persist for a longer period, such issues could lower the investment returns of households and reduce the efficiency of the asset management sector. While the first effect raises consumer protection concerns, both impacts could interfere with the full exploitation of the economy's funding potential. Therefore, **the EU Commission, supported by EU supervisors, is currently turning its attention to potential issues in markets for retail investment products and around the long-term performance of such products, with the compilation of analytics** aimed at informing respective potential policy work in the context of the Capital Markets Union initiatives already in preparation.

3 VALUATION RISK: POTENTIAL EFFECTS AND TRIGGERS

In Q4 16 **price reversals** were **observed** for a wide range of financial instruments. In money markets, **USD** denominated **short-term interest rates increased**. GBP denominated rates developed similarly, while EUR denominated money market rates continued their downward trend, even if levelling out around -33bps at the year's end. Exchange rates reflected these disparities, with an **appreciation** trend observed against the **USD** and implied **volatilities** for **EUR exchange rates** increasing. **Yields of EU sovereign (10y) and EU corporate (5-7y) bonds increased** across the board, peaking in the week of the US rate hike. Shortly before this peak EU

equity performance increases intensified, bringing equity markets on average back to their starting level in 2016.⁵

Risk premia to some extent reflected these price developments. **USD and GBP Libor spreads to overnight interest swap (OIS) rates rose** in the second half of 2016, even if moderating in the fourth quarter, while the respective **EURIBOR spread continued to decrease** (Fig. 7). In anticipation of the December 2016 US interest rate hike, the spreads between general and special collateral repos rose, opening up temporary arbitrage opportunities. Sovereign spreads vs. German debt and non-financial corporate **bond spreads both reacted moderately**, temporarily interrupting their downward trends over the second half of 2016 ahead of the hike in US interest rates (Fig. 8). Similarly, CDS spreads on sovereign debt rose temporarily by some 10bps, before falling back to the stable levels they experienced in 2016. Spreads on EU covered bonds reacted stronger, reverting their downward trend into an increase over the second half of 2016. Increases in price-earnings ratios of EU (US) equities accelerated (10% increase over the last 2 months of 2016 vs. the same (less) in the first 10 months of 2016). **Such pricing effects potentially indicate increased risk acceptance.**

Figure 7: Money market spreads



Sources: Thomson Reuters Datastream, ESMA.
Note: Spreads between 3M interbank rates and 3M Overnight Index Swap (OIS), in basis points. 5Y-MA Euribor=five-year moving average for Euribor spread.

Figure 8: Non-financial corporate bond spreads



Sources: Thomson Reuters Datastream, ESMA.
Note: EA non-financial corporate bond spreads by rating between iBoxx non-financial corporate yields and ICAP Euro Euribor swap rates for maturities from 5 to 7 years, basis points.

Along relatively muted reactions in EU credit or risk spreads, an **increase in the price volatility of financial assets illustrated uncertainty**: in Q4 2016 volatilities in money, sovereign and corporate bond and commodity markets increased. The price volatility of EU equities, however, fell by two thirds in the second half of 2016. This divergence in observable price risks matches a **relative reorientation of investment flows from fixed income to equity markets**: issuances in sovereign and corporate bond markets trended down, with negative net issuance observed in the second half of 2016. Equity issuances were more evenly distributed across the first (EUR 67bn) and second half (EUR 58bn) of 2016. A similar pattern appeared in the fund industry: the preference for bond funds observed until Q4 2016 reverted in the last months of 2016, with funds flowing out of EU bond funds and into the EU equity fund industry. Slightly increased settlement failure rates for EU bonds, lower net short selling positions for EU equities and higher net short selling positions for EU sovereign debt are additional evidence for a relative shift in perceived valuation risk from equity to fixed income markets.

Episodes of **price volatility** are **frequently connected to political events**, e.g. the UK referendum and the US election. In an environment characterised by low interest rates, potentially stretched asset valuations and moderate and fragile economic growth, **financial markets remain sensitive to** changes in the **information** available to market participants. Recurrent cases of inappropriate conduct in the financial industry may further

⁵ Data for this section is taken from ESMA's TRV 1 2017.

add to sensitivity. Though moderately improving in the second half of 2016 and early 2017, investor sentiment still remains volatile and is for retail investors lower than for institutional ones.⁶ In the banking sector, **spreads of market funding instruments**, in particular for senior unsecured and subordinated debt of European financials, have been **volatile since early 2016**. High volatility has **adversely affected issuance volumes**, as accessing primary funding markets and identifying adequate offering prices have been more challenging in times of market stress. According to the EBA RAQ, market analysts increasingly regard central bank quantitative easing programmes and reductions of market makers as drivers for decreases in market liquidity.

Corporate bond default rates, in 2015 in the short term historical mid-range and expected to follow the temporary rise of corporate bond spreads in late 2016, signalled the **persistence of credit risk** in the sector. The continued tendency for relative narrow credit risk premia in the EU may prove unsustainable in the longer run, particularly if currently observed international interest rate differences continue to deepen.

With EU money market rates on historical lows search for yield continued, documented by still low EU bond yields. The average quality of outstanding market portfolios of sovereign, corporate and covered bonds receded further in the second half of 2016. The transaction volume of sovereign repos rose, as repo rates went deeper into negative territory. Outstanding hybrid debt volumes continued to grow at moderate pace, while the valuation of contingent capital rose sharply by more than 10 percentage points. Price changes of such magnitude may lead to **concerns with regarding the valuation of these instruments**.

The moderate increase in the price volatility in money, sovereign and corporate bond and commodity markets, and rapidly growing price-earnings ratios for equity provided further indication for the **persistence of valuation risk**. Since late 2015, rising volumes in the trading of fixed income derivatives documented increased hedging or speculation interest of market participants. Apart from general growth of fixed income markets, this may also be due to increasing risks perceived in this market segment. Since late 2016, this trend overlapped with a rotation of investment preferences from bond to equity markets. This suggests a marginal shift of not yet fully priced in valuation risk from bonds to equities.

A **steepening of the yield curve** is recently observed, albeit in an extreme low interest rate environment. This is mainly attributable to increased inflation expectations in the EU, and expectations of an easing fiscal and a tightening monetary policy stance in the US. For the financial service industry, an increase of the interest rate might have positive effects on the income of banks, life insurers and pension funds on the one hand. On the other hand, the steepening of the yield curve increases valuation risk concerns and implies potential adjustments in asset allocation strategies.

Moderately increasing medium-and long-term interest rates increase net interest margins with the potential to **improve bank profitability**. Accordingly, bank share prices increased broadly in line with an observed and expected further steepening of the yield curve, and expectations of improving interest earnings. Concerns about perspectives for sustainably improved bank profitability nevertheless persist. High levels of NPL, inefficiencies, and a lack of convincing business strategies to improve profitability prospects outweigh benefits the steepening of the yield curve may provide. For banks with high levels of NPL, increasing interest rates may rather pose additional challenges. Faster increasing refinancing costs may particularly affect banks, which have extended long-term lending at low interest rates during the protracted low rate environment and may have increased their term transformation. Benefits of the steepening of the yield curve may moreover affect bank

⁶ The EU Commission survey of the financial services sector and the Sentix sentiment indicators for institutional and retail clients consistently document this trend.

earnings only with a delay since liabilities often reprice at a faster rate than assets. Looking jointly at the assets and liabilities, yield curve steepening would have a rather **beneficial impact on traditional life insurers business and pension funds based on defined benefits scheme** partly easing the challenge of meeting the obligations towards policyholders.⁷

The ongoing recalibration of relative risk premia between fixed income markets and equity markets could affect financial intermediaries exposed to variable debt costs and concerns around the valuation of their assets. Mitigating the impact of potential asset value corrections on fund withdrawals could be a potential challenge to asset managers. Partial mitigation is already achieved through the observed portfolio shifts towards equity, both on entity and industry level. Entity-specific stress tests, already established by the majority of EU asset managers, provide suitable analytical tools for further enhancing portfolio risk management. Similar arguments apply to the portfolios backing unit/index-linked products managed by insurers.

The magnitude and timing of yield increase and the lag in the impacts on the financial institutions might also play a role. For insurers, an increase in the yield curve might present a threat only under an extreme scenario encompassing a material jump in the interest rate. This might lead to the potential increase in lapse rates due to the availability of more profitable investments if compared to the guaranteed products or profit participation products offered by insurers facing low interest rates. This transition might be counterbalanced by the coverages embedded in insurance products, which may not be comparable with other investment products, and by surrender penalties (also in form of tax benefits) designed to limit sudden lapses. The political uncertainty and subsequent market volatility in some European countries coupled with the ongoing low yield environment could lead to an increase of risk premia. Higher risk premia in combination with still low risk free rates could result in an extreme but plausible “double-hit” scenario, which represents a severe threat for the insurance industry as shown by the 2016 EIOPA stress test exercise.

Stress tests represent suitable tools to assess the impacts of changing yields. Future prudential stress test exercises across financial sectors should reflect anticipated changes in yield curves and should, when feasible and adequate, incorporate relevant systemic features, such as interconnectedness.

Box 1 – 2016 EU-wide stress test for the European insurance sector

The 2016 EU-wide stress test for the European insurance sector assessed insurers’ vulnerabilities and resilience to two severe market developments: a prolonged low yield environment and a “double-hit” scenario. The “low-for-long” scenario reproduced a situation of entrenched secular stagnation driving down yields at all maturities, with a particular focus on the long term maturities, while the “double-hit” scenario reflected a sudden increase in risk premia combined with the continuation of a low yield environment. The severity of the scenarios went beyond the Solvency II capital requirements.

The exercise involved 236 insurance undertakings at the solo level from 30 European countries, with market coverage of 77% in terms of the relevant business (life technical provisions excluding health and unit linked) and included also medium- and small-sized undertakings.

On the **baseline (pre-stress)**, results indicated that on an aggregated level undertakings were adequately capitalised from a Solvency II perspective with an overall Solvency Capital Requirement (SCR) ratio of 196%. More than 70% of the participants had SCR coverage above 160%. Only two undertakings, representing 0.02% of the total assets in the sample,

⁷ On the liability side the increase of the interest rate automatically lead to a reduction of the technical provisions purely driven by an increase of the discount rate curve. On the asset side, increasing discount rates reduce a value of insurers’ investment portfolios. However, as insurers’ assets have typically lower duration than their liabilities, the impact of increasing yields on value of liabilities would be more prominent than on assets leading to an overall positive result.

had a SCR ratio below 100%. Without the Long-Term-Guarantee (LTG) and transitional measures, however, the overall SCR ratio would fall to 136% (32 undertakings below 100% representing 26% of the total assets).⁸

Overall, the “**double-hit**” has a negative impact on the undertakings balance sheets of close to EUR 160 billion (-28.9% of the total excess of assets over liabilities) with more than 40% of the sample losing more than a third of their excess of assets over liabilities. In the absence of LTG and transitional measures, such impact would apply to almost 70% of the sample.

The “**low-for-long**” resulted in a fall in the excess of assets over liabilities of about EUR 100 billion and undertakings representing 16% of the sample would lose more than a third of their excess of assets over liabilities (25% if LTG and transitional measures are absent).

In order to ensure a coordinated supervisory response to the revealed vulnerabilities, EIOPA issued Recommendations to the National Supervisory Authorities (NSA’s). The NSA’s actions may include, when needed:

- To ensure that undertakings align their internal risk management processes to the external risks faced;
- To review and assess undertakings’ models regarding the behaviour of management and policyholders;
- To review the clauses of the guarantees, their typologies, and the optionalities they carry to assess if the valuation of the technical provisions can be considered proportionate and prudent;
- To request a reduction in the maximum guarantees or in unsustainable profit participations offered;
- To request a cancellation or deferral of dividend distribution when the viability of the business model is at risk;
- To ensure that the vulnerabilities identified at solo level are appropriately recognised and dealt with at the group level.

Furthermore, the results also confirmed that while the LTG and transitional measures provide a certain financial stability cushion, supervisory vigilance is required in order to avoid a misestimate of the risks due to the longer-term type of concerns implied by the scenarios tested.

The European occupational pension fund sector continues to face a challenging macroeconomic environment with low interest rates exerting upward pressures on IORP liabilities as revealed also from the EIOPA EU-wide pension stress test in 2015. Traditional Defined Benefit plans (DB), which make up approximately 75% of the sector in terms of assets, are affected by such developments. By contrast, in Defined Contribution plans (DC), risks are transferred to the individual members instead of remaining with the individual funds or their sponsors. Europe is characterized by a high heterogeneity in national prudential regime therefore a harmonised approach towards valuation of assets and liabilities that is more realistic and sensitive to market movements would help to fully assess the vulnerability of the sector at EU level to different scenarios.

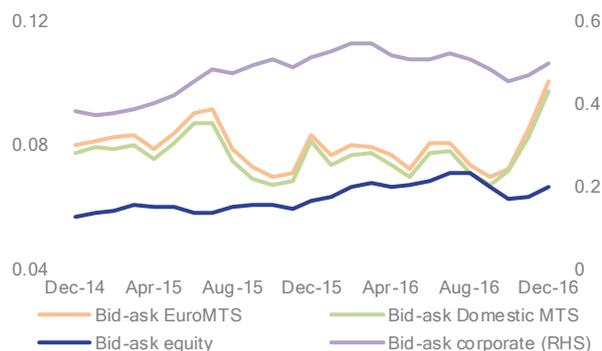
Over the past few years surges of volatility, associated with short-term illiquidity in a number of financial markets, generated **concerns on the deterioration of secondary market liquidity**, reduced market makers’ inventories, unbalanced supply and demand and the need to review trading strategies. With sovereign bonds markets appearing less affected, in **corporate bond markets** a tendency developed to place more, but smaller sized, trades more frequently.⁹ Concerns about trading market liquidity have had an impact on refinancing volumes and conditions of EU banks, demonstrating the interdependency of bank funding and market liquidity.

⁸ LTG measures, introduced by the Omnibus II directive (Directive 2014/51/EU) with the aim of ensuring an appropriate treatment of insurance products that include long term guarantees, are part of the core technical elements of Solvency II therefore fully embedded in the assumptions and calibration of the framework. The transitional measures are temporary adjustments aiming at facilitate the transition to the Solvency II requirements. For a thorough analysis of the impacts of each transitional and LTG measure in insulation on the solvency ratio please refer to EIOPA (2016) Report on long-term guarantees measures and measures on equity risk. Report available at: https://eiopa.europa.eu/Publications/Responses/EIOPA-BoS-16-279_LTG_REPORT_2016.pdf.

⁹ ESMA, “EU corporate bond market liquidity – recent evidence”, TRV No.2, 2016; ESMA, “EU sovereign bond market liquidity”, TRV No. 1, 2017.

Market liquidity conditions were benign in the last months in corporate bond and sovereign bond markets with some signs of lower liquidity during periods of market stress. Transaction costs for investment-grade corporate bonds declined in the second half of 2016, with bid-ask spreads decreasing by 0.5 bps to 0.45%. The turnover ratio, a proxy for markets' depth and breadth, increased from 7.7% in the first to 8.1% in the second half of 2016. Sovereign bond bid-ask spreads, on both Euro MTS and domestic MTS, stood in 2016 on average around eight basis points. Bid-ask spreads of sovereign bonds ranged above their pre-financial crisis levels, but remained well below those of corporate bonds, reflecting their higher liquidity. Turnover ratios for sovereign bonds in domestic MTS exceeded those in Euro MTS, with the difference widening since mid-2015 and reversing direction in H2 2016 again.

Figure 9: Bid ask spreads for bonds and equities



Sources: Markit Iboxx, MTS, Thomson Reuters Datastream, ESMA.

Note: Monthly averages of daily bid-ask spreads for sovereign bonds in ten EU markets (Domestic and Euro MTS), for corporate bonds (components of Markit Iboxx, current composition) and for the median of current EU constituents of Stoxx Europe Large 20. All data in %.

Figure 10 Equity illiquidity indicator



Sources: Thomson Reuters Datastream, ESMA.

Note: Composite indicator of illiquidity in the equity market for the current Eurostoxx 200 constituents, computed as principal component of six input liquidity measures (Amihud illiquidity coefficient, bid-ask spread, Hui-Heubel ratio, turnover value, inverse turnover ratio, MEC). The indicator range is between 0 (higher liquidity) and 1 (lower liquidity).

After several quarters of deteriorating liquidity in **EU equity markets**, average bid-ask spreads declined in H2 2016 by 0.5 bps, standing below their long-term average of 7 bps (Fig. 9). Increases in ESMA's equity illiquidity indicator, however, indicated the **ambiguity of liquidity** conditions (Fig. 10).

In total, **trading market liquidity on securities markets has displayed much greater resilience than expected**, even during periods of market stress, such as in the week around the 2016 US Presidential elections. Market analysts in the EBA RAQ provide a more favourable outlook for trading market liquidity compared to previous RAQs. The share of analysts who fully agree to expectations of decreasing trading market liquidity has declined to 33 %, after 50 % of analysts had such expectations in the two previous RAQs. Similarly, fewer analysts now fully agree to expectations that decreasing liquidity will adversely affect market segments concerned.

4 INTERCONNECTEDNESS WITHIN THE FINANCIAL SYSTEM

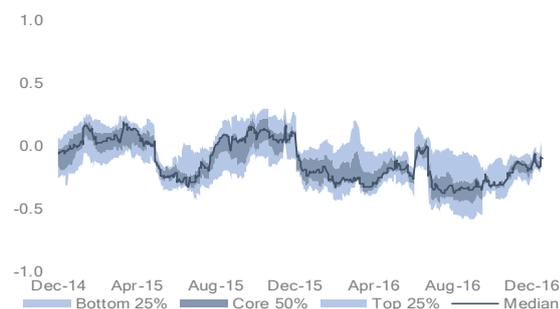
Interconnectedness within the financial entities, sectors and geographies arises **from** several mechanisms. These include **direct financial exposures** such as cross-holdings of assets between entities and sectors, **price contagion** transmitted via the reaction of asset prices to each other, and **contingent exposures** generated by activities such as the use of derivatives, securities financing transactions and similar instruments. Proxies for price contagion, i.e. co-movements of market indices, reflect the main current risks posed by the economic and political instability of some countries in a persistent low-yield environment as well as profitability and solvency challenges of the European financial system.

In securities markets, the median correlations between national equity indices and national bond return indices in the EU fluctuated in 2016 around zero for sovereign and -0.3 for corporate bonds (Fig. 11), while continuing their long-term trends, positive for sovereign and negative for corporate bonds. Determinants for such patterns include **search for yield behaviour affecting the valuation of riskier assets** such as equity and corporate bonds over the longer run increasingly similarly, but may also comprise **repricing incentives visible in valuation differences between sovereign and corporate debt**.

Ahead of major political events in 2016, such as the UK referendum and US Presidential elections, correlations between equity and corporate or sovereign bonds increased, remaining elevated at the end of the year, while their respective geographic dispersions narrowed. The year's end short-term upward trend in correlations of equities and corporate bonds may indicate anticipations of persistent reversals in the level of US interest rates, marginally reducing the attractiveness of bonds, in particular of corporate bonds featuring risk spreads over their sovereign counterparts. Slowly abating correlations between sovereign bond and equity returns are a potential signal for on-going search for yield incentives.

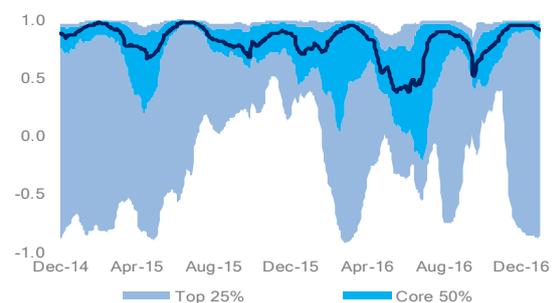
The correlations in between different EU geographies' sovereign bond as well as their corporate bond indexes remained flat on comparatively high levels in H2 2016 (Fig. 12), except for the decreased bottom quartile of the national sovereign bond distribution. Despite some repricing tendencies, **asset valuation in the sovereign bond market** segment continues to **show considerable geographic uniformity**.

Fig. 11: Correlations of corporate bond yields and equity indexes



Sources: Thomson Reuters Datastream, ESMA.
Note: Dispersion of correlations between daily returns of national equity indices and national corporate bond return indices for AT, BE, ES, FI, FR, IT, NL. Calculated over 60D rolling windows.

Fig. 12: Dispersion of sovereign bond yield correlations

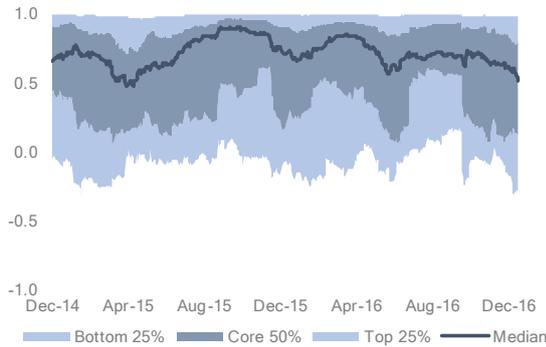


Sources: Thomson Reuters Datastream, ESMA.
Note: Dispersion of correlations between 10Y DE Bunds and other EU countries' sovereign bond redemption yields over 60D rolling windows.

Reduced correlations of national blue chip indices with the Euro Stoxx 50 (Fig. 13) and sectoral equity indices with the Euro Stoxx 600 indicated in Q4 2016 a **fanning out of the perception of valuation and risk divergences** across geographies and sectors. In particular, lower correlations of the three financial sector (and especially bank) equity indices with the Euro Stoxx 600 (Fig. 14) appeared as one of the drivers for this evolution.

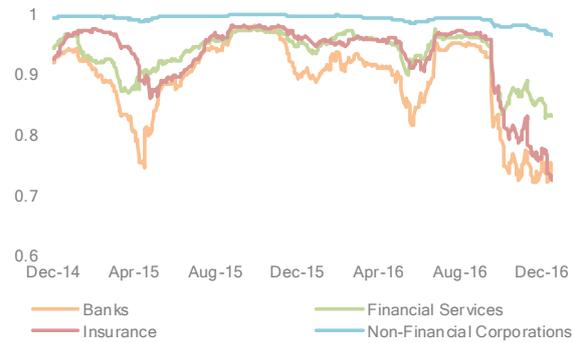
Changes in expected future interest rates acted as triggers for such increases in heterogeneity. A rising awareness of lingering profitability and asset quality problems in the financial industry, which, as discussed earlier in this report, vary across geographies as well as financial sectors, contributed additional impetus.

Figure 13: Correlations of national and EU blue chip indices



Sources: Datastream, ESMA.
 Note: Dispersion of correlations between daily returns of the Euro Stoxx 50 with national blue chip equity indices for 25 EU economies. Calculated over 60D rolling windows.

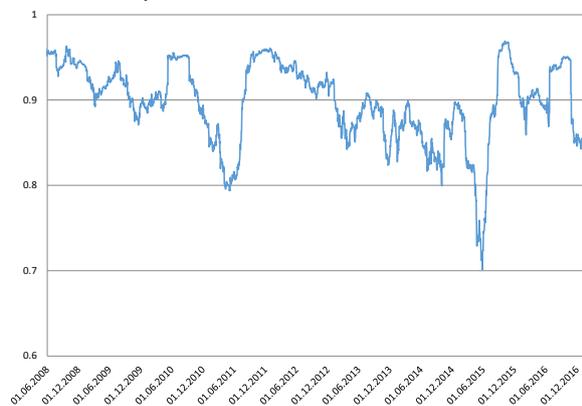
Figure 14: Correlations of main and sectoral Euro Stoxx 600 indices



Sources: Thomson Reuters Datastream, ESMA
 Note: Correlations between daily returns of the STOXX Europe 600 and of STOXX Europe 600 sector indices. Calculated over 60D rolling windows.

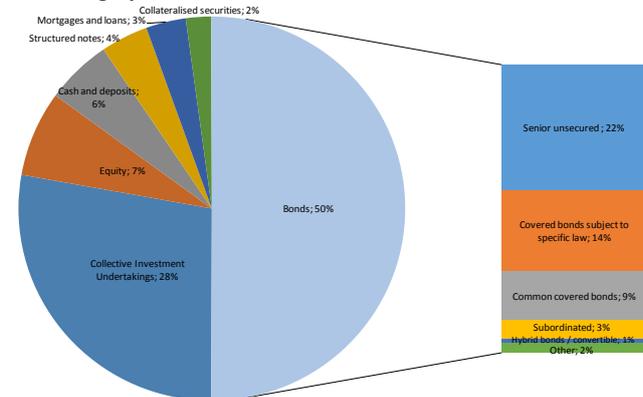
A closer look at the cross-sectorial correlation with particular reference to the co-movements of banks and insurers shows how, particularly during periods of stresses the two industries tend to react jointly with correlations close to 98% (Fig. 15). The high level of interconnectedness signals the level of direct exposures of the insurance industry towards the banking industry: the total investments in financial instruments issued by the banking sector amount to approximately EUR 2.2tn, corresponding to 23.8% of insurers' total assets and 32.9% of insurer's total investments. The largest exposure is on bonds (50% of total investments) followed by equity (7%), cash and deposit (6%), structured notes (4%), mortgages and loans (3%) and collateralised securities (2%) (Fig. 16).¹⁰ Among debt instruments the largest part is represented by senior unsecured (44%) and covered bonds in their different fashions that sum up to 45%.

Figure 15: Correlation between STOXX Europe 600 Insurance and STOXX Europe 600 Banks



Source: Bloomberg; Calculation EIOPA
 Correlation based on daily observation calculate on 125D rolling windows

Figure 16: Insurance sector exposure towards the banking sector, by asset category



Source: EIOPA Solvency II Quarterly Prudential Reporting (N=2600 solo undertakings)

Banking sector risks may also spill into the fund industry: EU hedge funds increased their exposure to EU banks during 2016 substantially, from 7.3% to 12.8% of total assets. Simultaneously, the share of assets associated

¹⁰ Collective investment undertakings (28%) is included for informative purposes. Collective investments are issued by funds that are usually part of bank conglomerates, but the underlying assets are not necessarily securities issued by banks.

with fixed income strategies in hedge funds' portfolios increased and distressed debt strategies recorded relatively strong performance.

In addition to direct exposures, growth in global derivative markets contributed in early 2016 to the level of interconnectedness. The global notional outstanding of OTC derivatives and their market value increased in the first half of 2016 by 7.5% and 37% respectively, along with the notional amounts outstanding for exchange-traded derivatives, which rose by some 5% in the first three quarters of 2016. Interconnectedness observed in money markets rose: sovereign repo transaction volumes, averaged over 20 days, increased in Q4 2016 up to a level of more than EUR 180bn, while repo rates continued to stay at low levels and eligible collateral did not show any particular sign of scarcity.¹¹ Interconnectedness through securities lending did hardly change, with the values of loaned EU securities roughly stable at some EUR 0.5tn.

Increasing interconnectedness implies a **higher potential for materialisation of systemic risks**. Stress testing methodologies should account for such risks as far as possible. **Consistent EU-wide** approaches for the implementation of such **stress testing** exercises **appear to be promising tools to inform effective risk mitigation**. The systemic relevance of insurers relates to their exposures through asset allocations and liability portfolios. As systemic implications are mostly driven by specific insurance product features such as maturity transformation and direct lending, cross-sectorial consistent supervisory practices based both on entities as a whole and specific activities is advisable.¹²

5 CYBER RISKS AND OTHER RISKS DERIVED FROM ICT

Cyber risk appears as a major risk and is on the rise.¹³ Against this background, the demand for cyber insurance is expected to grow while cyber coverage products are still relatively new in the market, with limited underwriting experiences and lack of historical data. Insurers may use their expertise with business interruption insurance and may expand existing policies by cyber insurance aspects. Since historical data are not sufficient, insurers shall use different instruments to limit the underwriting risks. E.g. the policies typically include contractual exclusions or prescribe organizational minimum standards to be established by the contractual partner as a prerequisite for insurance coverage. At the same time, insurers complement their databases with new aspects of risks allowing them to establish an adequate pricing when covering new risk features.

The level and nature of the risk differs across countries, financial sub-sectors and types of intermediaries. Currently denial-of-service attacks, data theft and/or manipulation, malicious software, misinformation and false identification are the most relevant forms.

Operational risks related to ICT risks appear to be on the rise across the financial sector. Embracing the potential of ICT to bring innovation, improve consumer experience, and reduce costs, European financial institutions have increased their dependence on IT platforms and telecommunication networks, rendering

¹¹ Cf. ESMA TRV 1 2017, A. 89-91, A.67 and A.76.

¹² IAIS (2016) "Systemic Risk from Insurance Product Features". Available at www.iaisweb.org

¹³ The Depository Trust & Clearing Corporation's (DTCC) Risk Barometer Q1 2016 ranks cyber risk is the most relevant risk source, with 25% of financial market participants assessing it as top risk, down from 46% in year before. The 2016 Ponemon Institute Report on the Cost of Cyber Crime Study & the Risk of Business Innovation Analysis roughly assessed (small sample size prevented precise estimation) the average cost of a financial company due to cybercrime at USD 16.5mn, well above other commercial sectors, most frequently generated by business disruptions and loss of information due to cyber-crime. Additional respective details on securities markets are available in R. Tendulkar, "Cyber-Crime, Securities Markets and Systemic Risk," Joint Staff Working Paper of the IOSCO Research Department and World Federation of Exchanges, July 2013.

concerns about connectivity and outsourcing to third party providers more prominent. The rising digitalisation of distribution channels and customer's appetite for 'always-on' services presses systems to adapt, which must be underpinned by strong change in management practices. Many institutions rely on ageing core IT systems for core business processes, and further investments to maintain and replace such systems are often needed.

Financial institutions face difficulties to cope with the threat of intruders gaining unauthorised access to their critical systems and data. The sophistication of such attacks is well illustrated by recent hackings of banking payment systems (e.g. attacks on the SWIFT system) and online account thefts. Further heightened supervisory diligence to address these risks is needed. **One area of supervisory focus to address ICT risks has been on measures to address outdated legacy IT systems, IT resilience and governance and outsourcing.**

In the banking sector, **the EBA's draft guidelines on ICT risk assessment as part of the SREP set out guidance for supervisors to identify and measure the ICT risk exposures and are due to be published in 2017¹⁴**. ICT related risks are also on the list of topics for discussions in supervisory colleges in 2017. External and intra-group dependencies through ICT outsourcing are increasing as institutions are trying to reduce costs and raise effectiveness. This trend will become even more important if the use of 'cloud'-type ICT services gains traction in the financial sector. Recognising the need for further supervisory guidance, the EBA also **plans to publish a recommendation on outsourcing to cloud services during 2017**. Further policy work is foreseen at the EBA in 2017 to look at the prudential and consumer impact as well as any authorisation perimeter issues arising from new FinTech companies undertaking regulated activities. Although it is too early to evaluate the full disruptive potential of FinTech competitors for the European banking sector, these innovative services and new market entrants will, over time, significantly impact existing business models.

Financial market infrastructures (FMIs) face cyber risk as threats to their business continuity and the integrity of their various kinds of **proprietary data**. Due to the central role of credit rating agencies (CRA), central securities depositories (CSD), trade repositories (TR) and central counterparties (CCP) losses in market confidence and threats to the entire financial system, and in particular derivatives markets, can follow. Finally, the intertwining of FinTech and FMIs, for example through distributed ledger technology (DLT),¹⁵ anchors cyber threats as a long term but rapidly evolving risk for these companies.

Existing regulation already provides for some mitigation. Thus, EU CCPs are required (i) to hold capital covering, besides credit, business, and restructuring risks, also for operational and legal risks and (ii) to maintain a robust information security framework to manage risks around unauthorised information disclosure, data accuracy and integrity and the availability of their services.¹⁶ In addition, **ESMA is currently advancing the assessment of CCPs' cyber security capabilities through a cyber-risk and controls assessment questionnaire. To promote supervisory convergence ESMA invited national competent authorities to assess all relevant aspects** identified by ESMA and to share respective results with college members by Q1 2017. These measures build on ESMA's work on CRAs and TRs,¹⁷ and the 2016 CPMI-IOSCO guidance on cyber resilience, which identifies steps to be taken to ensure safe and efficient operation of financial market infrastructures and maintain financial stability.

¹⁴See: <https://www.eba.europa.eu/documents/10180/1608089/Consultation+Paper+on+Guidelines+on+ICT+Risk+Assessment+under+the+SREP.pdf>

¹⁵ See ESMA's "Report on Distributed Ledger Technology Applied to Securities Markets" <https://www.esma.europa.eu/press-news/esma-news/esma-assesses-dlt%E2%80%99s-potential-and-interactions-eu-rules>

¹⁶ Cf. EMIR RTS No 152/2013 and EMIR RTS No 153/2013.

¹⁷ See ESMA's 2016 annual report "ESMA's supervision of credit rating agencies, trade repositories and monitoring of third country central counterparties", p.32f.

EIOPA and IAIS are monitoring the issue of the cyber risk from a supervisory perspective.¹⁸ At this stage, the focus is more on raising the awareness of the exposure of the insurance sector, on the specific threats and on the reported events. No detailed policy actions are currently foreseen besides the current Insurance Core Principles and the general supervisory response to cyber risk at European and country specific level. **Additionally, specific efforts shall be devoted to assess the potential accumulation of risk deriving from traditional property and casualty coverages and the cyber coverages.**

Adequately capturing the technology-driven evolutions and addressing the challenges set out above requires strong ICT governance. However, management boards of many institutions to date often lack technology expertise, or appear inadequately informed about material ICT risks and technological evolutions relevant for their institution, leading to ineffective decision-making concerning these challenges.

Alignment between firms' IT strategies and business strategies is often found to be weak. Moreover, ICT risk assessment and risk identification processes in many institutions appear insufficiently robust and incident-driven, lacking a forward-looking assessment of emerging risks.

Inadequate IT governance can contribute to poor operational management practices and inadequate recovery and resilience solutions. **Supervisors should consider to further assess the resilience of financial institutions to cyber security and ICT risks.**

¹⁸ IAIS (2016) Issue Paper on Cyber Risk to the Insurance Sector