

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

MARCH 2015

<b>Executive summary</b> .....	<b>2</b>
<b>1 Introduction</b> .....	<b>3</b>
<b>2 Macro risks</b> .....	<b>4</b>
2.1 Risks from a weak economic growth and low inflation environment.....	4
2.2 Search for yield in a protracted low interest rate environment .....	8
<b>3 Operational Risks</b> .....	<b>12</b>
3.1 Business conduct risk .....	12
3.2 IT related operational risk and cyber risk.....	14

## EXECUTIVE SUMMARY

Since the last issue of this report in August 2014, **financial system risks have not changed in substance, but have intensified further**. Risks related to broad macroeconomic conditions, in particular low interest rates, and the resulting search-for-yield behaviour, as well as political developments at EU and international level prevailed and in some cases grew stronger. Concerns over operational risks generated by inappropriate business conduct and negligence of proper maintenance, management and development of sustainable IT systems complemented this menu.

**Feeble economic prospects for the EU cautiously improved in early 2015**. The risk of deflationary tendencies nevertheless persisted and risk drivers such as subdued investment demand and structural frictions in the financial system remained in place. Neither economic policies nor regional geopolitical tensions, the global economic slow-down, economic and financial uncertainty around the long-term trajectory of the Greek fiscal position and potential impacts on sovereign bond markets, or fluctuating commodity prices were conducive to revive prospects for the real economy substantively. Monetary policy kept interest rates at near-zero level, reinforcing the low-interest rate environment.

**Low interest rates and remaining uncertainties about the economic recovery affected the outlook for the financial industry adversely**. The profitability of banks remained under pressure. Risk-weighted assets continued to be under scrutiny, though investor confidence picked up, as the EU-wide stress test made steps towards addressing concerns about asset quality and capital levels. Balance sheets expanded slightly, albeit further de-risking. Insurers remained exposed to stagnating business volumes, reduced profit margins and rising liabilities. Asset prices increased, while becoming more volatile due to increased yield sensitivity of investors. Volatilities were reinforced by uncertainties about economic prospects, expectations for reversals in interest rate level and fluctuations in commodity prices and exchange rates. Accordingly, valuation risk intensified, implying increasingly skittish investors and elevating liquidity risks due to highly sensitive investment positions. The withdrawal of market makers from secondary markets due to structural reasons impeded liquidity in some market segments additionally.

**Higher valuation and market liquidity risk raised concerns about the outlook for financial entities' stability** in the event of reversals in interest rates and asset prices. Recent stress tests illustrated that the insurance industry could face substantial fractions of undertakings not meeting solvency requirements for the case of adverse scenarios. Risks to banks' capital positions as identified in the EU wide stress test appeared manageable, even if volumes of non-performing loans in corporate and real estate portfolios rose. Deflationary tendencies are likely to preserve the current high valuation risk. Concerns about asset bubbles are rising, as interest rates are expected to stay below expected growth for some time. As market expectations also may demonstrate positive probabilities for interest rate reversals, valuation concerns are concentrated on such events. In addition, investments flows attracted to overheating asset market segments distort funding flows to the real economy and impede future economic prospects.

**Low profitability is motivating financial institutions and other investors to search for yield**. Thus, new risks are increasingly concentrated into the balance sheets of financial entities, as those extend maturities and enter risky business areas. Financial entities are starting to change their business models. The fund industry became active in the field of loan origination accepting new credit risk in its activities. Similarly, insurers and some banks are reaching for new markets and products.

**Concerns about misconduct and IT risks remain high**. As banks' litigation and redress costs further increased in 2014, market withdrawals, such as from price-fixing, are becoming more likely, and a rising number of system outages endanger market functioning. Benchmarks' continuity and integrity remain a source of concern even if key panels remained stable. **IT risk rose** due to costs pressures, outsourcing, the need for additional capacities and a mounting number of cyber-attacks.

The EU Commission's plan for achieving a Capital Market Union, including the facilitation of funding channels complementing traditional channels through the banking system, is expected to provide a valuable stimulus for economic activity in the future. On-going regulatory reforms, including further completion of harmonised regulatory frameworks, and supervisory reforms improved the stability and safety of the financial industry. The results of the Comprehensive Assessment provided considerable transparency into and improved market confidence towards the EU banking sector.

Additional supervisory measures are recommended. **Bank regulators should continue to assess business model viability and promote consistency in the risk-weighting of assets. Efforts to improve the insurance industry's asset-liability and risk management deserve further attention** in the transition to Solvency II. **Restructuring in financial entities' business models should be monitored**. Legislative measures, such as for European Long Term Investment, Venture Capital and Social Entrepreneurship Funds, are fostering new forms of market-based funding. However, **further promotion of sound and innovative business models could – assuming adequate risk regulation and supervision – deliver additional stimulus**. Concerning operational risks, adequate **inclusion of misconduct costs in future stress tests, further progress towards benchmark reforms, and appropriate application of supervisory instruments would be desirable**. Awareness of regulators and industry of IT risks rose, but **systematic integration of IT risk in overall risk management still needs to progress**.

## 1 INTRODUCTION

Since the August 2014 Joint Committee Report on Risk and Vulnerabilities the risks facing the EU financial system did not substantially change in character, but intensified further. The same key risks continued to aggravate the challenge to the stability of the European financial system:

- Low growth, deflationary tendencies, volatile asset prices and their consequences for financial entities;
- Search for yield behaviour risks exacerbated by already materializing and potential snapbacks;
- Risks from deteriorating conduct of business of financial institutions;
- Increased concern about IT risks and cyber-attacks.

### REGULATORY CONTEXT

There was a pause in the European legislative process in 2014 with the election of a new Parliament in May and the appointment of a new Commission in November. No Trilogues were held from May until October and there have been no new financial services legislative proposals from the Commission in 2014. Nevertheless since August 2014 some items of legislation already in the pipeline and with implications for risk management were completed or significantly advanced.

In November there was **final agreement by the co-legislators on European Long Term Investment Funds (ELTIF)**. This Regulation provides a set of common rules governing the management (and risk management) of such funds. In the same month **the agreement on Packaged Retail and Insurance-Based Investment Products (PRIIPS) was formally finalized**. This Regulation aims to improve market transparency for packaged retail and insurance-based investment products.

In December there was political agreement on the **Fourth Anti-Money Laundering Directive** and the **Funds Transfer Regulation**. The Directive strengthens measures to prevent the use of the financial system for the purpose of money laundering and terrorist financing and the Regulation aims to ensure “due traceability” of funds transfers. The Parliament is expected to vote on the ‘Anti-Money Laundering package’ and the Regulation on Interchange Fees (MIF) in early 2015.

Under the Latvian Presidency, Trilogues are underway on the **Securities Financing Transactions Regulation**, the **Payment Services Directive** and the **Insurance Distribution Directive**. Within the Council, negotiations are continuing on 3 dossiers of particular significance for financial stability - **Bank Structural Reform, Money Market Funds** and **Financial Benchmarks**.

The Commission published its Work Programme for 2015 on 16 December 2014. The most significant element is a package of measures to create a Capital Markets Union (CMU) by 2019. A Green paper initiating a consultation process was issued on 18 February and will be followed by an Action Plan and specific proposals later in 2015. A recent report showed that Europe is strongly bank-based and thus vulnerable to higher systemic risks.<sup>1</sup> CMU aims to diversify the sources of external funding and to improve financial stability by reducing regulatory arbitrage.

**The three European Supervisory Authorities (ESAs), EBA, EIOPA and ESMA, continued their efforts to develop a single rulebook**, which is fundamental to the achievement of a level playing field for financial institutions and market participants. In the banking sector regulatory work in 2015 stems from the technical implementation and application of the CRDIV/CRR package, and nearly 250 deliverables of more detailed technical rules are expected from the EBA in total. Regulatory work also includes the recovery and resolution framework as covered by the Bank Recovery and Resolution Directive and the revision of the Deposit-Guarantee Schemes Directive. In 2015 the focus is in particular on the recovery and resolution framework and the prudential areas of liquidity and leverage. In the area of consumer protection, the EBA focusses towards fulfilling its mandates as laid down under the Mortgage Credit Directive, the proposed review of the Payment Services Directive, the Payment Accounts Directive and the Markets in Financial Instruments Regulation (MiFIR).

In preparation of Solvency II which will enter into force on 1 January 2016, EIOPA is finalizing an extensive set of guidelines and technical standards to ensure consistent implementation and technical application of the regulation across Europe. These instruments will help establishing consistent, efficient and effective supervisory practices in Europe and thus strengthen the internal market. EIOPA is preparing guidelines and technical standards which cover all pillars of Solvency II, i.e. quantitative requirements (Pillar 1), governance and supervision (Pillar 2) and reporting and disclosure (Pillar 3). EIOPA also prepared advice to the European Commission on possible delegated acts under the Insurance Mediation Directive on the better handling of conflicts of interest in the distribution of PRIIPs.

Concerning markets for securities and other financial products and services, ESMA’s main focus in 2015 will be on the revision of the Markets in Financial Instruments legislation (MiFID/MiFIR), which aims to establish a safer, sounder, more

---

<sup>1</sup> Advisory Scientific Committee of the ESRB (2014): Is Europe Overbanked? Report of the Advisory Scientific Committee of the ESRB No. 4, June 2014.

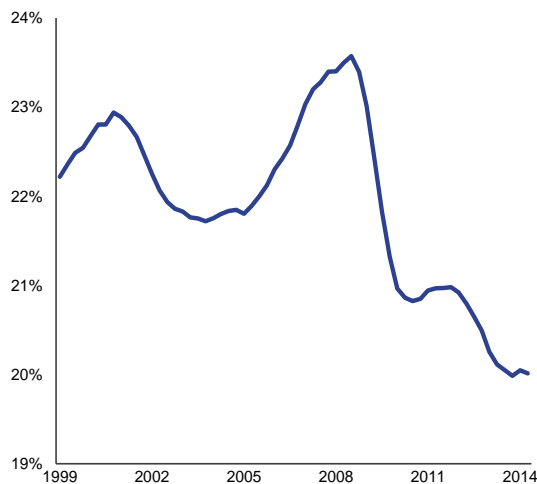
transparent and responsible financial system in the EU. Implementing the MiFID/MiFIR reforms requires ESMA to draft 85 technical standards, guidelines and recommendations and technical advice. Other main topics of ESMA's regulatory activity are the delivery of several technical standards under the Market Abuse Directive, the regulation on Central Securities Depositories, legislation related to European investment funds and to transparency and prospectus, and the implementation of the CRA legislation, as well as the standards arising from the upcoming regulation on benchmarks.

## 2 MACRO RISKS

### 2.1 RISKS FROM A WEAK ECONOMIC GROWTH AND LOW INFLATION ENVIRONMENT

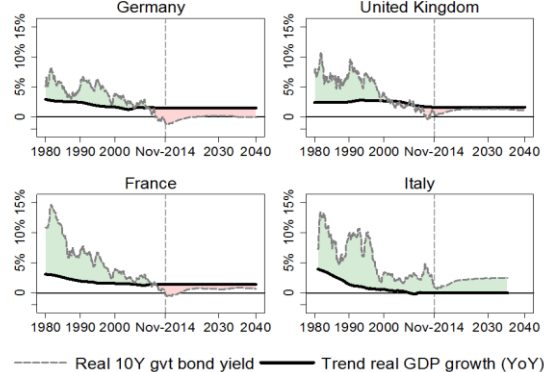
Economic activity in the EU continues to develop slowly, albeit with some improvement with a union-wide growth forecast of 1.5 percent for 2015. Global events further increase the risk that Europe's recovery will face headwinds. Geopolitical and macroeconomic developments in Ukraine and Russia elevate the risk of instability in the region, and current economic and financial uncertainties regarding the negotiations over the long-term trajectory of the Greek fiscal position could lead to further instability and may affect sovereign bond markets. Fiscal consolidation and overall uncertainty are to blame for anaemic investment, which is clearly below pre-crisis trend (Cf. Fig. 1). To some extent, constraints on firms' access to external finance may also play a role. Together with demographic developments, this burdens future growth prospects additionally.

**Figure 1: Gross fixed capital formation as a percentage of GDP (EU28).**



Source: Eurostat and ECB.  
Note: Four-quarter moving average.

**Figure 2: Real long-term government bond yields (actual and market expectations) versus the trend real GDP growth rate.**



Source: Bloomberg; Consensus Economics; Bank of England; St Louis Fed; and Antolin-Diaz, Drechsel and Petrella (2014), 'Following the Trend: Tracking GDP When Long-Run Growth is Uncertain', Fulcrum Asset Management Research Papers.  
Note: The trend real GDP growth for Germany and the UK over 1980-2040 is based on estimations by Antolin-Diaz, Drechsel and Petrella (2014). The projection over 2014-2040 of the real 10-year government bond yield is based on market expectations for the nominal bond yield and for inflation, as derived from forward swap rates. The area between the grey line and the black line is shaded green when the interest rate is greater than the growth rate and red when the interest rate is less than the growth rate.

In line with stagnant growth, actual and expected inflation in the euro-area and the EU fell for several quarters. Yearly EU wide inflation stood at -0.2% in December, down from 0.8% in January 2014. EA 5-year inflation expectations fell from 1% to 0.8%. Monetary policy measures aim therefore to maintain price stability while supporting economic activity. Thus, central bank policy rates remained near-zero in most of the EU, while unconventional monetary policy activity expanded. Markets have adjusted to this new normal, warranting a transmission from reference rates to yields on securities: in the UK and Germany, real long-term sovereign bond yields are expected to be near-zero for decades to come (Cf. Fig. 2).

Deflationary tendencies and low interest rates in the EU were accompanied by depreciation in the region's main currencies: EUR/USD and GBP/USD exchange rates decreased and became more volatile since mid-2014. The impact on European GDP is uncertain, however, as exports benefit, while capital movements react adversely due to expected further depreciation. Increased exchange rate volatility, materialized and implied, adds to economic and financial uncertainties. Volatility on foreign exchange markets could increase further should monetary policy stances of central banks decouple going forward.

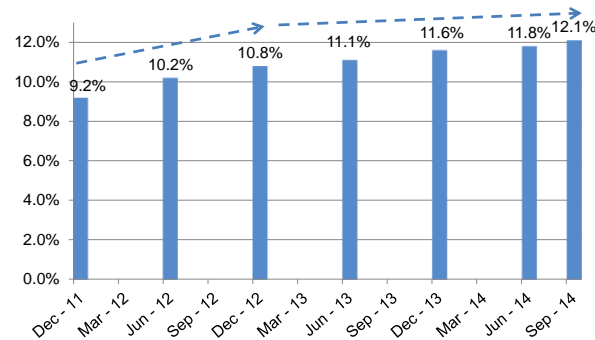
Marked fluctuations and increased volatilities were also observed for commodities, in particular energy and precious metals. Decreasing energy prices, expected to persist for some time, weaken oil producers' demand for EU exports and reinforce already existent deflationary tendencies within the EU. While lower producer prices may provide some stimulus and increase the purchasing power of households – the reduction of oil prices is a favourable supply side shock - adverse

second-round effects running through indexation of financial products tend to reduce these gains. Volatilities in specific sectors may also adversely affect the asset quality of banks with sizeable exposure to these sectors.

Investments in the EU are not only adversely affected by weak growth, but structural frictions in the financial system add a complementary driver. Decreases in real investment were larger in countries which experienced particularly severe banking crises. Over the past 15 years, the relation between economic growth and banking system's performance has become stronger.<sup>2</sup> If Europe were to adopt an US-style market-based funding structure, yearly GDP growth could increase by around one percentage point, according to estimations.<sup>3</sup> However, given recent deleveraging trends in the EU banking system, to be discussed in detail below, funding in Europe is indeed expected to become more market-based, in the medium-term. Still, there may be a role for policy to further accelerate this process, including the current CMU initiative.

Despite volatilities in EU equity markets, confidence from both debt and equity investors towards EU banks increased in 2014 in the context of the EU-wide stress test and the Comprehensive Assessment. Banks took advantage of more favourable market conditions and continued to raise capital (Cf. Fig. 3). Between January and September 2014 banks issued EUR 53.6 billion of equity (EUR 39.2 billion net of repayments and buybacks) and EUR 39.1 billion of contingent convertible instruments. The largest European banks reached in September 2014 a Common Equity Tier 1 capital ratio of 12.1% (weighted average), similar to the largest US banks. Issuance of equity and debt instruments has been widely spread across the EU, and large banks in financially stressed countries have also been able to benefit from a benign market sentiment.

**Figure 3 CET1/Tier 1 ratio – (weighted average, 55 EU banks).**



Source: EBA, KRI.

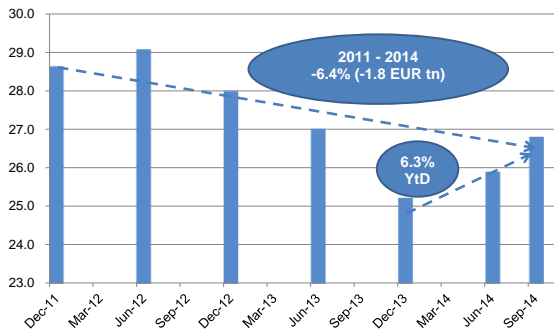
The overall deleveraging of EU banks observed in previous years appears to have come to a halt, as both their gross loan volume and their total assets slightly grew in the first 9 months of 2014, after previous substantial contraction since 2012 (Cf. Fig. 4). Since 2011 a reduction in risk-weighted assets (RWA) confirmed a continuing process of de-risking of the bank's balance sheets and business in parallel to deleveraging (Cf. Fig. 5). In percentages, de-risking even surpassed deleveraging slightly. However, some doubts on the comparability and consistency of RWA calculations remain and a certain part of de-risking might also result from optimisation of RWA. Supervisors should further deepen their understanding on comparability of RWAs, and the EBA is in the process of developing a wider and deeper analysis on the consistency of RWAs across European banks.

In addition, loan volumes decreased, in absolute as well as relative terms, less than total bank assets. Deleveraging has therefore not only been driven by lending business, but resulted also from lower positions in traded bonds. This holds in particular because the reduction of loan volumes takes in general a longer time than the reduction of tradable security positions. Off-balance sheet items, like guarantees or loan commitments, have shown a rather stable development (ratio to total balance sheet), implying that their influence on deleveraging and de-risking can also be considered as unchanged over time.

<sup>2</sup> ESRB (2014): Reports of the Advisory Scientific Committee, No. 4/June 2014: Is Europe Overbanked? [https://www.esrb.europa.eu/pub/pdf/asc/Reports\\_ASC\\_4\\_1406.pdf?f37a949482c3bc093f112ad5828e247b](https://www.esrb.europa.eu/pub/pdf/asc/Reports_ASC_4_1406.pdf?f37a949482c3bc093f112ad5828e247b)

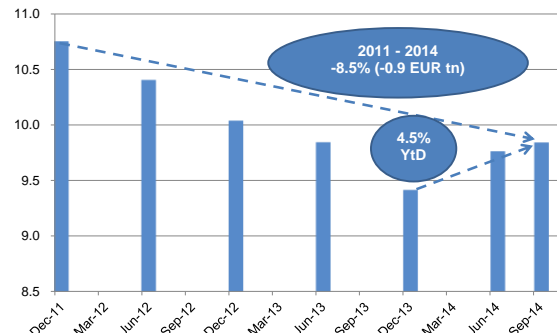
<sup>3</sup> Sam Langfield and Marco Pagano (2014): Bank bias in Europe: Effects on systemic risk and growth. <https://www.aeaweb.org/aea/2015conference/program/retrieve.php?pdfid=1104>

**Figure 4: Total banks assets, EUR tn.**



Source: EBA.

**Figure 5: Risk weighted assets, EUR tn**



Source: EBA.

The heavy debt overhang and the necessary restructuring of debt-laden corporates and households, squeezed net interest margin, low profitability, and the macroeconomic environment all imply substantial challenges ahead in the banking sector. It is uncertain whether the recent slight increase in loan volumes can become a persistent trend. Neither does this trend appear to be consistent across the EU banking sector, as dispersion between banks increased. In the EBA December 2014 Risk Asset Questionnaire (RAQ) some respondents confirmed that future deleveraging would principally focus on reduced lending. Further adjustments in order to restructure balance sheets are also needed. Continued repair of individual banks' balance sheets remains fundamental, and sectorial restructuring should continue to be a key priority for the medium term.

While the results of the Comprehensive Assessment and the EU-wide stress test have substantially enhanced clarity on credit risk, the weak economy is still hampering possible future improvements. Changing monetary conditions in major jurisdictions, adverse trends in some emerging markets as well as geopolitical risks may all further impact asset quality. In particular, some EU banks are heavily exposed to emerging markets, both in terms of contributions to banks' profits and assets, while a slowdown of the global economy could disturb capital flows and strain the markets' confidence in a still modest economic recovery in general. Increasing exchange rate volatilities and unfavourable depreciation expectations adversely affect existing exposures and challenge some EU banks carrying high exposures to foreign currency denominated lending. Finally, EU banks' income and profitability is still under significant pressure, which is unlikely to dissipate in 2015.

In general, the quality of banks' loan portfolios did not deteriorate further in the first nine months of 2014, but quality concerns are still elevated. Volumes of impaired and past due (> 90 days) loans remained close to their historical peaks. The weighted average ratio of impaired and past due (> 90 days) loans to total loans stayed stable at a high level of 6.6%. Since mid-2012, this ratio fluctuated between 6.0 % and 6.8 %. Heterogeneity increased, particularly at the dispersion's higher end. Thus, the Asset Quality Review (AQR) revealed significant differences in asset quality between banks as well as regions. The average coverage ratio (specific allowance only, i.e. not taking into account general loan loss allowance) is still within a range of 45% to 47%, broadly unchanged from the previous three quarters. The first EU-wide application of the harmonised definition of non-performing loans (NPL) as proposed by the EBA in the AQR resulted in additional NPLs of EUR 136 billion (+18.4 %). The highest relative increase was identified in large corporate portfolios (+33.3 % or EUR 33.8 billion), whereas the highest absolute impact could be seen in real estate portfolios (EUR 36.7 billion or 18.4 %).

In the insurance sector, low economic growth has already led to relatively low growth or no growth at all in some traditional life businesses in the past, and puts pressure on future premium growth. While the sector should be well positioned to source growth from the needs for retirement, savings and health solutions, the latest EIOPA estimates suggest that these positive growth developments for the life sector will only start to get traction in 2016. Non-life insurance may, however, already benefit from compulsory business lines. Furthermore, economic stagnation in the EU motivates insurers to look for new growth opportunities, in particular in emerging markets. EIOPA's analysis indicates that insurers are expanding into new markets when economic growth abroad significantly exceeds domestic growth. The latest projections employing the IMF's World Economic Outlook suggest a further increase in the share of premiums underwritten abroad.

Low interest rates continued to expose financial institutions, in particular banks and insurers, to profitability issues. Between March and September 2014, the weighted average Return on Equity (RoE) of EU banks fell from 7.5% to 5.4%. More and more banks have dropped below a RoE of 8 % — which has been identified as the relevant benchmark for the expected cost of equity in the responses to the December 2014 EBA RAQ. Reasons included asset quality deterioration, the balance sheet clean-up of EU banks, e.g. provisioning for NPLs, costs related to conduct and IT risk (Cf. Section 3.2.), including already materialized incidents, and squeezed net interest margins. Further pressure on net-interest margin is expected in light of envisaged substantive sovereign bond purchases by EA central banks. At the same time, opportunities for further cost cutting at banks are getting fewer.

Margins earned by insurance companies have decreased and prompted them to review and adapt their business model (Cf. Box 1). In particular life insurers with high exposure to traditional life business with guarantees need to restructure their business towards less interest sensitive products with reduced, flexible or no interest guarantees. However, no immediate options are available in relation to existing business, which must be addressed through more medium term measures. In addition low interest rates may adversely affect the balance sheet of insurers through the valuation of technical provisions (when valued on a market consistent basis). Similar effects apply to the profitability of CNAV money market funds and some hedge funds promising nominally fixed returns.

Driven by the developments outlined, several key risks and vulnerabilities emerged. For insurance companies and occupational pension funds these continue to be the weak macroeconomic environment, a continuation of the low yield environment and increases in credit risk generated in a potential risk reversal scenario (this is discussed in more detail in the next section). The EIOPA stress test showed that the sector is particularly vulnerable to a “double hit” stress scenario that combines decreases in asset values with a lower risk free rate.

Finally, and in particular with regard to banks, a general disconnect between price developments on financial markets and the real economy continues to be observed. The market performance of several asset classes appears to be independent from economic fundamentals, as e.g. represented by economic growth prospects. This raised market concerns about imminent consequences of misaligned asset prices, which will be discussed in more detail in the next section.

**A host of policy measures**, including structural programmes, EU-wide and national fiscal policies, monetary policy, macro-prudential policies, regulatory harmonization and other legislative measures **are already in place or in design attempting to boost economic growth and generate sound and sustainable macroeconomic conditions**. Concerning the financial system, in particular the current CMU plans with their objective to increase the diversity of and efficiency in EU funding markets, to foster the EU’s attractiveness for international investors and to continue the enhancement and harmonization of financial market supervision are worth mentioning. **The CMU has the potential to further facilitate conventional and alternative funding channels, thus contributing to the revival of economic growth in the EU in the future.** Nonetheless, **supervisors should remain vigilant with respect to potential consequences for systemic risks.** With further growth of market-based intermediation activities<sup>4</sup> expected due to likely structural changes in the financial system, **supervisory authorities need to anticipate ancillary risks, such as concentration risks**, for example generated by the potential rise of new systemic institutions, **cross border exposures and regulatory arbitrage**. Structural change may also go along with destructive creation, implying **challenges for supervisors and management in terms of sustainability of business models, in particular for banks.**

The results of the EU-wide stress test marked a step change in the process of balance sheet repair, and European banks have already accomplished significant adjustments by cutting risky assets, front-loading impairments and shrinking their balance sheets. Following the exercise, banks advanced in repairing their balance sheets. Banks that fell below the 5.5% threshold presented capital plans to their competent authorities detailing how they intend to address vulnerabilities identified in the stress test. In a post-stress test environment, banks plan to focus their corrective actions on commercial real estate (CRE), small and medium-sized enterprises (SMEs), residential mortgages, consumer credit loans and on corporates.

Banks need to meet further regulatory requirements still being phased in or calibrated, to foster consistency of RWA, and to ensure sustainability of their business models. Concerning profitability issues, the management of costs associated to past business misconduct, monitoring of provisioning for reputational and legal risks (Cf. Section 2) will be key.

The prevailing low interest rates pose significant challenges for insurance companies and prompt them to review and adapt their business model. **Going forward, supervisors should accompany these processes and strive to ensure proper asset-liability management and risk management practices in the insurance industry.**

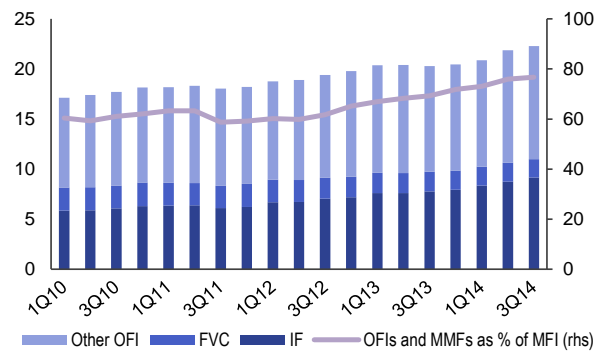
---

<sup>4</sup> E.g. Aspects of non-bank financial intermediation, such as market based intermediation, also at times referred to “shadow banking” cuts across various sectors and at times may fall outside the regulatory remit. The ESAs therefore continue to work together to monitor such shadow banking activities and entities, and take note of the FSB work where the transformation of shadow banking into resilient market-based financing is viewed as key to build safer, more sustainable sources of financing for the real economy, given such activities have contributed to the global financial crisis.

## 2.2 SEARCH FOR YIELD IN A PROTRACTED LOW INTEREST RATE ENVIRONMENT

Since late September 2014, the influence of search for yield remained prevalent in an environment of low interest rates. Investors' demand for assets with higher returns, yet entailing higher risk, was sustained. Accordingly, sovereign bond yields remained low even across more vulnerable EU economies, with the exception of the imputed yields for Greek government bonds with short maturities. Corporate bond yields continued to fall across rating classes, revealing an orientation of investor preferences towards riskier assets. In general, yield compression persisted or even increased. Insurers started to engage in infrastructure financing and shifted towards higher yield but lower quality bonds, in order to improve overall return. However, the overall portfolio mix in the insurance sector has not changed dramatically. Moreover, the ongoing search for yield attracts investors in catastrophe bonds, which in turn drives down the price of risks (even though the risk itself has not changed). Banks, in spite of a strong motivation for deleveraging due to recent regulatory changes, experienced incentives for additional risk taking as well. Lenders increasingly relied on market-based financing, with investors moving marginally away from bank bonds to other asset classes, and to sectors such as insurance, asset management or direct market investments. Thus, equity issuance continued to follow a growing medium-term trend<sup>5</sup> and the volume of assets managed by other EA financial institutions continued its growth trend which started in 2011 (Cf. Fig. 7). In 2014, the market value of MMFs and other financial institutions (OFIs) represented 77% of the aggregated balance sheet of credit institutions.

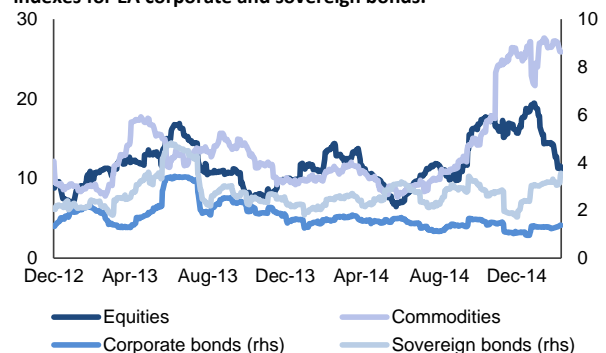
**Figure 7: Size of other EA financial institutions, EUR tn (lhs) and % of credit institutions assets (rhs).**



Source: ECB, ESMA.

Note: EA other financial entities. The residual category "Other OFI" has been estimated with ECB Quarterly Sector Accounts MFUA. EUR tn. Assets in % of credit institutions assets

**Figure 8: 40D Volatility of return indices on Datastream EU equity index, S&P GSCI commodity index and Iboxx Euro all maturities indexes for EA corporate and sovereign bonds.**



Source: Thomson Reuters Datastream, ESMA.

Note: Data until 11 March 2015.

In securities markets, search-for-yield intensified already existent biases in asset valuation and related concerns simultaneously, while market and liquidity risk materialised partially. Increased market uncertainty was reflected in increasingly volatile asset markets, including equities, bonds, commodities and forex markets (Cf. Fig. 8). In particular derivative markets signalled increased anticipation of short term risks ahead. Stock market volatilities augmented especially in the short term, with abrupt price swings occurring frequently. Heterogeneities in sovereign and corporate bond markets increased. The higher variability observed for market valuations reflected, among other factors, rising concerns about the macroeconomic conditions presented above. Associated commodities and exchange rate dynamics fed back into market concerns. In addition, market developments in the corporate bond market segment, where a divergence in spreads between lower- and higher-rated bonds was observed, may signal heterogeneous trends, with investments partially being redirected from riskier to higher rated classes. Thus, market volatility seems to increase risk perception, while the effects of search-for yield still remain in place.

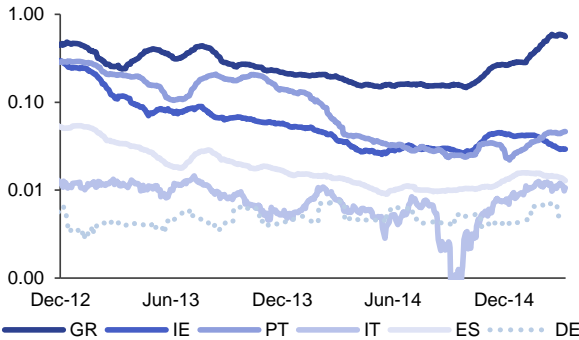
Signs of stress in market liquidity intensified, especially at shorter maturities. Heterogeneity across countries increased as observed in the sovereign bond market. Over the last quarter, the decrease in bid-ask spreads for 10Y sovereign bonds partially halted, in particular for some more vulnerable countries while remaining stable for core economies (Cf. Fig. 9). Such a preservation of heterogeneous liquidity conditions across countries may be related to increasing sensitivity with respect to country-specific differences, in particular in light of intensified uncertainty surrounding national reforms and heightened market concerns on debt sustainability and fiscal consolidation. Liquidity in EU equity markets decreased (Cf. Fig. 10), while corporate high-yield debt issuance dropped in 4Q14 EU by 60% compared to its 4Q13 level. In addition, structural market changes, such as increased inventory costs for banks and adjustments of bank business models to

<sup>5</sup> Cf. ESMA (2015): Trends, Risk and Vulnerabilities, No. 1 2015. T.14, p. 11.



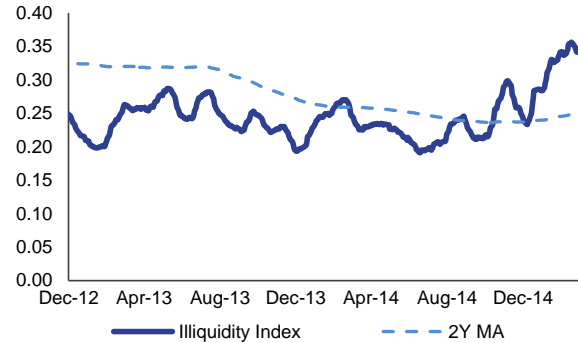
increased regulatory requirements, may have reduced incentives for market-makers, in particular for banks, to provide liquidity services and may contribute to increased volatility.

**Figure 9: 10Y EA sovereign bond bid-ask spreads in percentage points; logarithmic scale, 30D moving average.**



Source: Thomson Reuters Eikon, ESMA.  
Note: Data until 11 March 2015.

**Figure 10: Composite indicator of liquidity in EuroStoxx 50 equity**



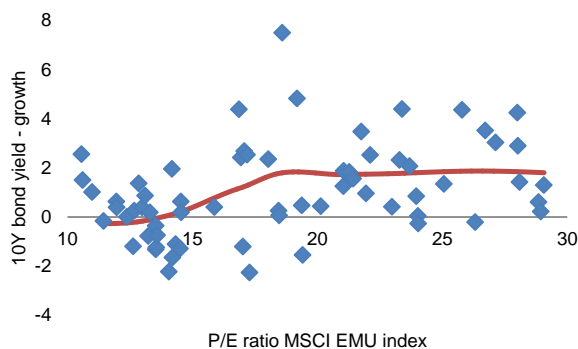
Source: Thomson Reuters Datastream, ESMA.  
Note: The indicator range is between 0 (higher liquidity) and 1 (lower liquidity). Methodology available in ESMA Risk Dashboard. Data until 11 March 2015.

Three main risk trends can be identified in this context. Firstly, persistent low interest rates have sustained the demand for riskier investments and provided investors with incentives for enhancing their portfolio returns. This is frequently achieved by renewed build-up of leverage and an extension of portfolio maturities. However, increases in leverage were mainly limited to financial institutions outside the banking system.

The renewed investor appetite for risk is reflected by a medium-term upward price trend in most asset classes, as market players not being ready to adjust their return targets to the “new normal” of very low interest rates “reach for yield” by taking on exposures exceeding the risks present in money or low-risk fixed income markets. This bias afflicts not only less informed retail investors, but also supposed sophisticates, as e.g. shown by still high RoE targets of major EU banks. The increased sensitivity of investors to yield differences entails a higher probability for price fluctuations, as investors are ready to follow market news quickly by switching into new assets. Hence a future characterised by persistent low interest rates would exhibit greater volatility than the past.

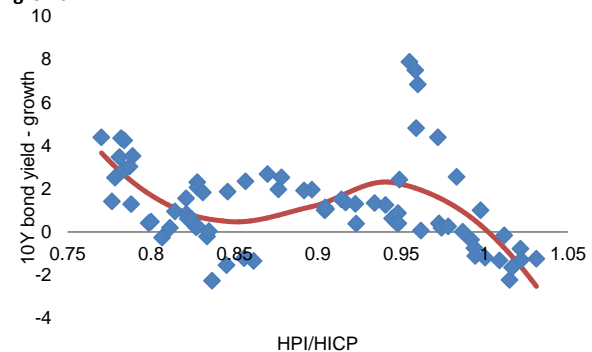
Increased volatilities and deflationary expectations, which push real yields below long-term growth expectations, may create the opportunity for asset price bubbles, as currently prevalent volatile investment strategies remain rational due to perceived sustainability of real yields. As market expectations indicate that future real yields are likely to stay below GDP growth (Cf. Fig. 3), they provide the rationale for investing on secondary markets and suggest that bubbles are in future more likely than in recent past. Available historical data (for Europe cf. Fig. 11 and 12) confirm indeed that asset prices, in particular also for real estate (relative to rents), tend to be elevated when the interest rate is low (relative to output growth). However, the motivation to turn to secondary markets implies that rising asset prices are accompanied by depressed real investment, leading to a misallocation of capital and lowering contemporaneous economic growth rates: the glut of savings does not match the dearth of monetisable investment opportunities. Given the low relative performance of growth rates, savers turn to bubbles to reach their return targets. Over time, productive investments are crowded out, as real resources are misdirected.

**Figure 11: EA equity PE ratio vs sovereign yield – output growth.**



Source: ECB, Eurostat, Bloomberg, ESMA.  
Note: Quarterly data from 1996Q1 to 2014Q2. Outliers removed from 2001Q4 to 2003Q2 as well as Q2 and Q3 in 2009. Bond yield is ECB EA sovereign benchmark yield.

**Figure 12: EA house price to rent ratio vs sovereign yield – output growth**



Source: ECB, Eurostat, ESMA.  
Note: Quarterly data from 1996Q1 to 2014Q2. Bond yield is ECB EA sovereign benchmark yield.

Secondly, as discussed in the last section, low interest rates influence the profitability of financial institutions, potentially threaten the stability of their business models and generate incentives for, potentially innovative, changes in business models (Cf. Box 1). As further decreases in interest rate levels compress banks' lending rates, while deposit rates are predominantly remaining non-negative, profit margins are tightened for deposit-funded banks which have issued floating rate loans. Therefore, realignments of revenue streams are required for at least some banks. Fundamental questions remain about the sustainability of some banks' business models in search for sustained and solid profitability, especially for those which still have not yet adapted to an environment of prolonged low interest rates.

Thirdly, recent asset price fluctuations reduced market confidence and increased risk perception, thus feeding already existing expectations for potential future risk reassessments. A fragile market equilibrium could be disrupted by some large or several small unexpected negative events and may lead to a general risk premia reassessment which would have a substantial impact on the financial system via decreasing asset values. This risk is equally reflected in recent stress test results and high implied volatilities observed across asset classes. While currently the EU insurance sector in general is sufficiently capitalised in Solvency II terms, with only 14% of the companies, representing 3% of total assets, having a solvency capital requirement (SCR) ratio below 100%, stress tests revealed that the sector is vulnerable in case of several stress scenarios. In case of a "double hit" stress scenario that combines decreases in asset values with a lower risk free rate, 44% of stress-tested companies would not have a sufficient level of capital. Concerning the low yield scenarios a further persistence in the low interest rate environment ("Japanese-like" scenario) or, alternatively, a sudden reversal of interest rates ("Inverse" scenario), would lead to 24% of companies not meeting their SCR under the "Japanese-like" scenario, while 20% would not meet this threshold under the "Inverse" scenario.

All three trends generate financial stability concerns on their own. Rising leverage and potential maturity mismatches load new risk onto balance sheets and can generate additional liquidity concerns, in particular regarding the potential for spillovers due to interconnections between banks and other financial institutions. This interconnectedness appears in the form of direct linkages, such as banks owning non-bank entities, holding their liabilities or equity or providing explicit funding support, and indirect linkages, e.g. institutions following similar investment strategies or being exposed to the same counterparties. The higher probability of prolonged instances of misaligned asset prices adds to future volatility risks and increases systemic risks by loading all financial sector segments with correlated risks feeding into the risks around simultaneous future asset price correction, discussed below.

Persistent valuation risks, increased market volatility, both materialised and expected, and other vulnerabilities such as those revealed by stress tests are likely to reinforce already existent expectations for future market re-adjustments. Such adjustments, should they materialise, have the potential to push up the financial burden associated with elevated levels of both public and private debt and entail significant consequences on financial market stability. Large asset price corrections, increasing default probabilities and changes in the prevalent relative price structure of assets are likely consequences, as already experienced, on a minor scale, in May 2013. Increasing anticipation of those risks by market participants already feeds back in respective materialization probabilities.

Notwithstanding existing risks, intensive work aiming at ensuring higher efficiency, transparency and financial system stability has been done. The EU-wide stress test provided an unmatched level of transparency into the EU banking system, and the EBA published aggregate results as well as an extensive range of granular information for each participating bank. Enhanced transparency contributed to improved market confidence towards the EU banking system as observed following the publication of results. This could entail significant improvements in funding conditions and enhanced efficiency in capital allocation. As a follow up to the stress test in the insurance sector, EIOPA issued a set of Recommendations to NCAs in order to address in a coordinated way the identified vulnerabilities. **NCAs are recommended to engage with companies to ensure that they have a clear understanding of their risk exposures and their vulnerability** to given stress scenarios and that they have the capacity to take recovery actions if those vulnerabilities materialise. Based on the results of the "Japanese-like" and "Inverse" scenarios, in particular for undertakings that operate considerable duration and/or internal rate of return mismatches, NCAs are recommended to examine their asset/liabilities management (ALM) and risk management strategies and practices and ensure that they properly assess the sustainability of the guaranteed rates offered. Possible medium-term remedies for existent business includes enhancing ALM, and some NCAs are already requiring insurers to set aside reserves to support existing contracts with high guarantees. **New business, in turn, presents new options in terms of changes in product design (to 'de risk' them) or changes in the mix of business. Supervisors should monitor developments in this field closely and where appropriate assess the viability of the business models.** Concerning market infrastructures, all currently operating EU CCPs are authorized according to EMIR rendering them subject to new regulatory standards which contribute to increased levels in their risk resilience.

**There are currently various initiatives at the EU (i.e., ELTIF, European Venture Capital Funds (EuVECA) and European Social Entrepreneurship Funds (EuSEF)) or national level (i.e., loan origination in IE, Euro Private Placement in FR), to improve the lending channels.** Additionally, significant regulatory reforms such as MiFID II are currently in process. Their main objectives are increasing transparency, competition, investor protection, as well as the resilience of financial market infrastructures. **Increasing vulnerabilities, associated with concerns about excessive risk taking strategies in the asset**

management industry, as well as a high degree of interconnectedness with the banking sector, have led regulators to intensify information gathering and oversight of the market-based funding sector for non-bank-non-insurance-institutions, both at an EU but also at a more global level. Moreover, significant work for the implementation of macro prudential tools has also been undertaken.

### Box 1 – Business model challenges

The EBA analysed implications of the collective implementation of regulatory measures including CRR/CRDIV capital requirements, Basel III leverage ratio, LCR, NSFR, reforms in banking structures, bail-in and EMIR for business models.

This qualitative analysis indicates that the cumulative potential implications of regulation are not univocal, and legal requirements may result in unintended effects for elements of business models. While incoming regulation contributes to move banks towards more prudent and sustainable business, the implications of new regulations can be substantial for some components of banks' business models. Some temporary pressure on profitability and returns of banks is anticipated in the transition phase towards the new requirements. Expectations are that some banks will need to further change their business models towards those which have proved successful, once the regulatory framework has been implemented.

There are also expectations that some aspects of lending might move to market-based funding structures as a result of changes in banks' business and that banks increasingly retreat from market making activities. Also, non-traditional banking institutions may start to participate in areas of markets, from which banks might retreat because of profitability or complexity issues. This trend is already evident from the increasing role that private equity firms and hedge funds are playing in e.g. the Commercial Real Estate segment in some regions. Also, cross-sectorial implications might arise. For example, would insurers increase their participation in certain areas of lending and financing, overlap with the banking industry could increase.

Protracted low interest rates and low profitability puts additional pressure on some financial institutions to rethink their business models, and on supervisors to assess the soundness of business models. They provide further challenges to ensure sustainable business models and provide incentives for potentially innovative and riskier changes to business models. In the near term, the December 2014 EBA RQA indicated that some banks are refocussing on core activities and markets. Non-domestic activities continue to be a prevalent choice for scaling-down. With respect to earnings, the questionnaire identified anticipated changes to banks' earning mix, in order to match better their risk–return targets.

Supervisors should assess and, when needed, challenge the changes to business models of financial institutions to ensure that these changes do not materially impede with the provision of financial services or associated economic growth impulses.

In the context of "search for yield", the EU fund industry experienced in the last 2 years strong growth driven mainly by equity and fixed income segments and complemented by enormous growth in exchange traded funds and loan participation funds. In particular the latter, investing into secured and unsecured loans as well as similar debt instruments, quintupled its assets under management (AuM) to EUR 13bn in June 2014, albeit from a low base, as investors attempted to achieve higher returns by turning to high yield assets.

The emergence of this new fund type generated benefits as well as risks for financial stability. Concerning benefits, loan participation funds hold a significant portion of their portfolio as floating rate assets, offering protection against interest rate risk. They also provide opportunities for risk diversification, as in recent years their performance was only weakly correlated with the ones of other asset classes (except high yield bonds). Finally, the lately emerging loan origination funds, which provide credit in their own right,<sup>6</sup> could contribute directly to the financing of the real economy, especially SMEs.

However, being typically open-ended funds, EU loan participation and origination funds are exposed to liquidity, funding and credit risks. Their loans, predominantly not traded in secondary markets, not rated or rated below investment grade and frequently having maturities of more than 5 years, are typically less liquid than fixed income assets, resulting in potential maturity mismatches between assets and liabilities. The illiquidity of their assets could marginally increase the financial system's vulnerability to runs and generate contagion to other parts of the financial system. Opportunities for regulatory arbitrage would open the road for pushing credit risk not conform with bank regulation from banks to loan participation funds, while lower credit origination sophistication and regulatory arbitrage could load unsustainable risk in loan origination funds. Such tendencies could lead to excessive credit growth and pro-cyclicality, if this new fund type should provide a sizable fraction of corporate funding in the EU. In the context of recent CMU plans risks for financial

<sup>6</sup> This implies that the responsibilities of the fund's investment manager include credit assessment, selection, pricing, documentation, monitoring, servicing and provisioning.

stability and the integrity of the single market should be carefully monitored, in particular as data on these funds is scarce, since loans are mostly unlisted products, and funds are frequently limited to selected investors. In addition, markets and national legislation remain fragmented, thus increasing the difficulty for obtaining an EU-wide overview.

To mitigate those risks, loan participation and especially loan origination funds should be treated within a harmonised framework. Recent EU initiatives aimed at improving the funding of SMEs by investment funds, including rules on European Venture Capital Funds and European Social Entrepreneurship Funds. A regulation to set up ELTIFs was agreed on as well. ELTIFs will be obliged to invest at least 70% of their capital in eligible assets including equity, corporate debt<sup>7</sup> and loans originated by other ELTIFs. Concerns related to intermediation activities not adequately covered by regulation are addressed by subjecting ELTIFs to additional rules and preventing them from funding loan origination by means of borrowing. To mitigate liquidity risk ELTIFs will be generally closed-ended, allowing early redemption only by way of derogation under strict rules, including appropriate liquidity management systems and effective procedures for monitoring liquidity risk being in place and limiting it to a fraction of assets eligible for the portfolio of a UCITS.

The current low-growth/low yield environment places particular pressure on traditional life insurance with guarantees. From the industry perspective, the first option is often to reshape or lower the guarantees they offer to new policyholders. However, due to the large share of existing policies with guarantees, which need to continue to be honoured in the overall portfolio, the average effects on guaranteed interest rates in the portfolio of insurers will only materialize over a longer time period as old policies gradually reach maturity. In fact, the average guaranteed interest in life insurance weighted by technical provisions has only come down from 3% to 2.5% over the last five years among the largest European insurers.

Life insurers are therefore also aiming to redesign their product portfolios. This generally involves a move towards products that are less risky for the insurers in current market conditions (e.g. unit-linked products, in which risk is shifted to the policyholder) and the discontinuation of selling new rigidly guaranteed products. Among the largest European insurers, for instance, the median growth rate in premiums was around 9% in non-linked products and almost 15% in unit-linked products. Moreover, the unweighted share of premiums in unit-linked business compared to traditional life business in EEA countries rose from 35% to 40% between 2009 and 2013. However, the development was far from uniform across countries, and the share of unit linked also declined in some markets.

Finally, with domestic sales constrained, insurers also look outside their national boundaries. Many large European insurers have been looking for new sources of revenues in the emerging markets of Latin America and Asia.

In the pension fund sector, the funds are also reacting to low yield conditions. In particular, the pension landscape continues to evolve with a gradual shift from Defined Benefit (DB) schemes to schemes where members bear more risks (such as Defined Contribution (DC) or Defined Ambition (DA) contracts<sup>8</sup>). In some countries sponsors of DB schemes may respond to increases in un-hedged liabilities, and the consequent pressure on financing their funds, by moving to pure DC plans. In other countries, funds are developing hybrid DB/DC schemes containing caps on earnings. Several large European companies have also decided to reduce the pension shortfall by injecting large amounts of money into the schemes.

### 3 OPERATIONAL RISKS

#### 3.1 BUSINESS CONDUCT RISK

The financial industry incurred in recent years reputational and financial damage caused by detrimental business practices. The scope and magnitude of misconduct events increased, affecting consumer confidence and impacting adversely on the financial institutions involved.

Despite numerous actions already taken by regulators and supervisors, both from prudential and consumer protection perspectives, recent misconduct incidents indicated that additional measures are needed to address and prevent conduct of business risks properly. These incidents illustrated internal control failures as well as a lack of common approaches for the intensity and scope of conduct risk supervision, its prudential treatment and enforcement measures adopted by NCAs. Prevention of such incidents should start at the roots, by motivating firms to amend their cultures, to the extent possible, through proactive promotion of incentives well aligned with clients' interests and proactive measures to improve the

<sup>7</sup> Corporate debt of companies with a market capitalisation below EUR 500mn is admissible for this from of funds.

<sup>8</sup> Defined Ambition (DA) contracts are a new type of pension schemes, combining features from DC and BD, which aim to create greater certainty for members than is provided by a pure DC pension schemes, but at less cost volatility for employers than current DB pension schemes.

attitude of staff towards conduct issues. To address specific failures and prevent incidents related to misconduct, **the following lines of action are recommended** in particular when aligned with the wider framework for operational risk:

- **Strengthening product oversight and corporate governance controls:** Supervisors should have processes in place to fully evaluate an institution's corporate governance, which might include engaging more frequently with the board and its risk and audit committees and carrying out external audits to corporate governance systems (in an ex-ante or preventive approach). External audits should aim to assess, on a regular basis, whether non-executive board members', supervisory board and internal audit members' functions are carried out correctly and effectively, and its consequent impact on internal governance risks. The outcome of these audits should be a diagnosis report including any relevant proposals for improvement and/or remedial action on the issues under scrutiny.
- **Improving the regulatory framework applicable to conduct risks:** Peer reviews of the application of the EU legal framework could be an important tool to the identification of gaps in the coverage of existing rules (in terms of products/services, practices and institutions) or in the respective supervision and enforcement. Peer reviews would allow drawing conclusions on sufficiency or adequacy of the existing legislative framework. Inadequate sales incentives, product oversight and governance arrangements have already been identified as important drivers for mis-selling practices that deserve further work. Peer reviews serve also as basis for further promotion of consistent application of enforcement measures and greater harmonisation of sanctions within the EU.
- **Improving supervisory practices to address conduct risks:** The prudential framework should a) ensure the inclusion of conduct risk and its materialisations in institutions' stress testing exercises if relevant; b) develop supervisory benchmarks for conduct risk (within operational risk); and c) ensure factoring in of conduct risk in banks' ICAAPs and insurer's ORSA, irrespective of this already being considered in the framework for calculation of regulatory capital for operational risk. To address retail conduct failures, off-site inspections or report-based supervision should be complemented by on-site and mystery shopping inspections, which can be particularly effective for monitoring mis-selling of financial products or other detrimental practices towards clients. As information on inappropriate behaviours and practices is frequently known internally, measures enabling staff to report misconduct incidents in institutions and to supervisors (whistle-blowing) may prove effective for the identification of such practices. Supervisors are also advised to promote auditing exercises to identify roots for misconduct, such as forensic auditing exercises, an ex-post approach useful for identifying positive examples of business conduct and best practices.

At the same time, the ESRB analysed and assessed misconduct risk in banks from a macro-prudential perspective. Three dimensions of potential systemic impact of misconduct of EU banks were identified: the scale and uncertainty of the economy-wide costs of misconduct risk; the loss of confidence in financial markets and institutions generated by misconduct, potentially deterring users' demand for financial services; and the eventual withdrawal of entities from financial markets and activities, either enforced by e.g. penalties or on a voluntary basis, impairing market functioning and leading to a direct loss of financial services to the end user.

The ESRB recommends the following actions to address these systemic risks: (a) ensure that Supervisory Review and Evaluation Process (SREP) assessments take into consideration the systemic impact of potential misconduct (where relevant, competent authorities can apply Pillar 2 measures such as requiring strengthening internal governance or applying capital add-ons to cover (systemic) misconduct risk); (b) include misconduct costs, if relevant, in future stress tests (the ESRB and the EBA should devise a minimum methodology for banks to apply when calculating potential misconduct costs under stress); (c) enhance coordination in international fora, such as Financial Stability Board (FSB) and Basel Committee on Banking Supervision (BCBS), by establishing a coordination framework including best practices and principles to ensure that any spill-overs from enforcement actions are well managed and; (d) explore extending the Legal Entity Identifier (LEI) regime to a larger range of counterparties.

#### **Box 2 – Risks related to key benchmarks in the EU**

The integrity and continuity of EU financial benchmarks remains a key concern for ESMA, EBA and EIOPA as well as NCAs.

Cases of attempted market manipulation and false reporting of global reference rates have undermined confidence in the integrity and reliability of price signals for a large volume of financial contracts and assets traded in wholesale and retail markets. The official sector has taken action to promote that widely-used benchmarks are held to appropriate standards of governance, transparency and reliability. National regulators, international standard setting bodies and central banks have proposed measures to restore the governance and oversight processes of benchmark rates. Ongoing investigations into the potential manipulations of interbank interest reference rates, derivatives prices, oil price benchmarks, the gold benchmark and exchange rates are being carried out by competent authorities in the EU and elsewhere. With respect to Euribor, the

dispersion of submitted quotes has widened since July 2014. Potential explanations are decrease in the level of inter-bank offered rates and increased volatility in money markets in recent months.

Operationally, the continuity of submission panels of certain interbank reference rates remains a key risk concern. While most interest benchmark panels have remained stable since the last risk report, the Euribor experienced further withdrawal, the Eonia Swap Index was discontinued on 1 July 2014 and the Eurepo Index was discontinued on 2 January 2015. In the EU a legal framework that includes a power to compel submitting banks is currently being negotiated by the co-legislators. The number of contributors to the Euribor panel dropped from 26 to 25 banks in the second half of 2014.

A wide range of counterparties are exposed to IBOR-referenced contracts, both on the asset and liabilities side of their balance sheets. Key risks from the discontinuation of benchmarks might include contract continuity and the inability of market participants to value outstanding contracts and collateral, with potential knock-on effects on price and liquidity in both derivatives and lending markets. IBORs are also used as a reference rates for millions of variable rate mortgages in the EU.

In the meantime, administrators of key interest reference rates have made significant progress in enhancing the governance, transparency and reliability of their benchmarks as also recently highlighted by IOSCO, which conducted a review of the Implementation of the IOSCO Principles for Financial Benchmarks by World Markets Company (WM) in respect of the WM/Reuters 4.p.m Closing Spot Rate. In conjunction with the IOSCO report, the FSB released the final version of its report on foreign exchange rate benchmarks. The FSB report sets out a number of recommendations to reform the foreign exchange markets and benchmark rates that have been identified as preminent by market participants.

### 3.2 IT RELATED OPERATIONAL RISK AND CYBER RISK

As in previous reports one key type of operational risk subject to very specific challenges is IT, or technology, risk. Dependency on proliferation of information technology in financial services continued to grow, for example through mobile and online payment systems, through internet-based provision and marketing of financial products or investment advice and through electronic trading platforms or algorithmic-based trading. IT systems of institutions and market participants are becoming increasingly complex and interconnected, while IT-related threats have become more complex and intense. IT systems need to cope frequently with significant capacity spikes, due to fluctuations in demand.

Risks crystalize as system outages, caused either by inadequate infrastructures or cyberattacks such as distributed denials of service (DDoS), adverse impacts on firms' profits due to past inefficient IT investments,<sup>9</sup> and data theft or outright fraud generated by cyberattacks, both from state-sponsored and private agents. Ancillary risks stem from fragmented IT systems, inadequately managed IT development processes and a tendency for underinvestment into IT systems.<sup>10</sup> However, risks are not limited to instabilities of technical systems. System security, system availability and operational continuity, failure to link IT strategy to business strategy, failures in the design or execution of IT change programmes and outsourcing arrangements all carry their own risks and complexities which can bleed across into other more traditional forms of risk. Higher system failure rates transform into reduced operational resilience both at a firm and systemic level. Highly interconnected and rigid IT systems increase the systemic impact of potential failures and limit regulators' recovery and resolution options. Firms' capacity to capture robust data for timely and automated risk identification is hampered by antiquated and fragmented systems. And finally, data theft and fraud can result in violation of conduct rules, reputational damage and, ultimately, funding outflows in the short term and loss of customers and revenues over the long term.

Cost pressures generated by reduced profitability of financial market entities discussed earlier temper the willingness to maintain existing IT infrastructure adequately and to commission required large-scale and expensive IT change programmes to ensure future competitiveness. Due to limited resources, IT projects often show high failure rates and long implementation and/or payback timelines. Continued sectorial restructuring adds to these issues, particular in the banking sector, where e.g. for some UK banks technology investments are expected to be pushed close to 20% (up from 12-15%) of revenues due to restructuring and business model changes. Such quantum and uncertainty may lead to cases of poor programme management and increased execution risk, which will put infrastructures under further operational stress.

<sup>9</sup> In the UK recent examples resulted in write-downs of industry investments of in excess of GBP 300mn.

<sup>10</sup> A RBS system outage in June 2012 interrupting the account access of more than 6.5m UK customers temporarily is widely seen a result of those risks.

Awareness of IT related operational issues spreads among market participants and regulators. Over 80 % of respondents to the December 2014 EBA RAQ agreed that increasingly sophisticated and complex threats require increases in the resilience against cyber and IT-related risks. Cyber risk has been identified as a major risk source for financial markets infrastructures,<sup>11</sup> potentially impacting on their confidentiality, accessibility and integrity. Banking supervisors of EU member states appeared to agree on the main IT risks categories identified: 'Security risk' was identified as the most substantive IT risk, while outsourcing risk and continuity risk were perceived as substantive, but less dominant risks.

Concerning risk mitigation, awareness increased as well. 74 % of respondents to the December 2014 EBA RAQ reported increased spending on IT security and resilience of IT systems. A growing number of respondents indicated that responses to IT-related risks would be increasingly targeted, rather than subsumed into the coverage of general operational risks. Such measures are often aimed at increasing the resilience of IT and online banking systems against disruptions such as DDoS attacks. Efforts also include technologies such as transaction-filtering. An increased number of respondents indicated plans to strengthen governance and risk culture on related risks (58 %), or to improve business continuity plans (42 %).

Mitigation driven by regulation developed as well. Solvency II will require insurers to hold capital against operational risks. Risks arising from inadequate or failed internal processes, personnel or systems or from external events will be captured by employing technical provisions, premiums earned, and expenses incurred as volume measures. However, such factor-based provisioning can only be one component of operational risk mitigation, both at company level and by NCAs. EIOPA is therefore finalising Guidelines on the System of Governance which cover governance issues, including also those specific to operational risk.

With size, complexity and interdependencies of financial firms' technology and operating structures increasing, IT controls and audits should be reinforced and institutions should be encouraged to integrate IT security and resilience into their proprietary risk models. **In particular, NCAs should require entities to set tolerance limits for their key operational risk. NCAs should ensure that, for the purposes of operational risk management, entities develop and analyse appropriate sets of operational risk stress scenarios** which might include business conduct scenarios. Supervisors should regularly assess whether firms have functions in place that can identify, quantify and escalate the risks independently from those functions responsible for the direct management of these risks (e.g. business-lines, IT, operations). Equally supervisors should be conscious of the need to enhance their own ability to adequately assess a firm's IT resilience across a number of features which variously require specialist resource and or a range of inputs from across different supervisory functions including resolution. Supervisory review complemented by the firm's own internal assessment of the inherent risks will often yield more tangible supervisory results. Finally, given protracted low profitability in the financial sector, **it will be important to ensure that spending on IT systems and security are maintained at adequate levels and that related internal controls remain robust.**

Supervisory standards and requirements on IT differ substantially, not least since international and European supervisory cooperation to elaborate on operational IT supervisory aspects is limited. The focus of IT supervisory aspects remains predominantly at the national level, and the landscape for IT supervision in Europe is very heterogeneous. However, the EBA survey indicates an interest to enhance the European supervisory cooperation from a regulatory and an operational supervisory point of view. **Coordination and cooperation of authorities involved in addressing IT-related risks should be increased on a European level**, and should include activities related to Computer Emergency Response Teams (CERT), which have been launched in some jurisdictions.

---

<sup>11</sup> BIS Committee on Payments and Markets Infrastructures (2014): Cyber resilience in financial market infrastructures. <http://www.bis.org/cpmi/publ/d122.pdf>.