

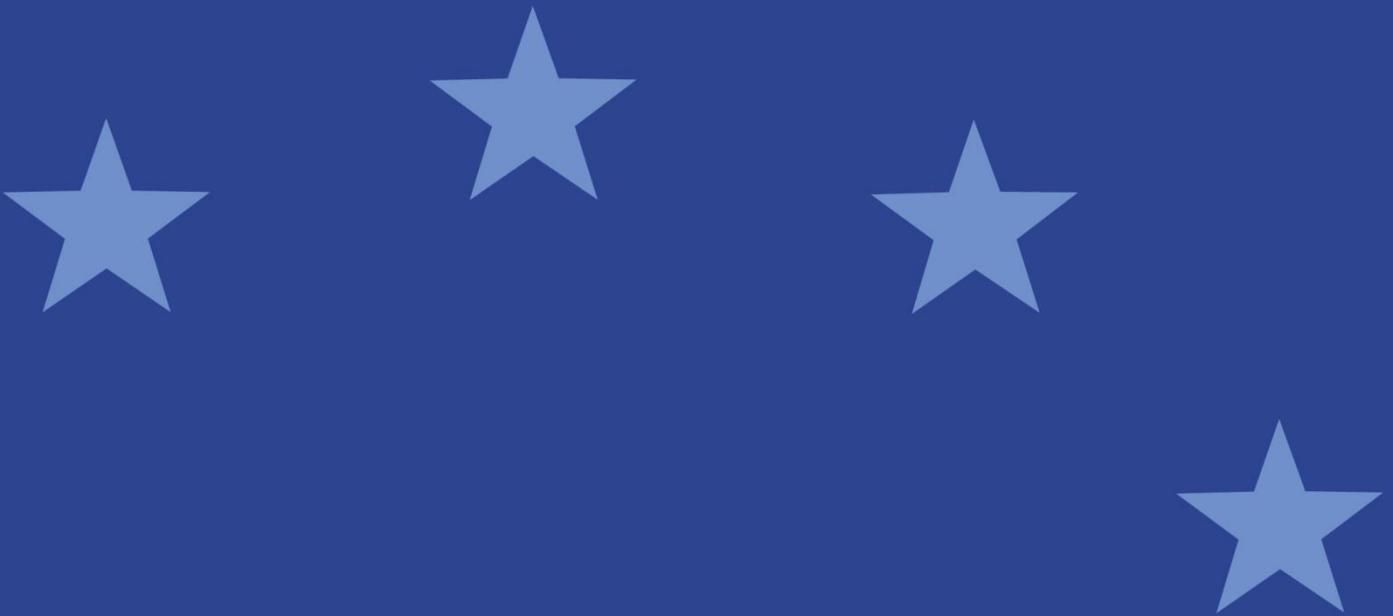


European Securities and  
Markets Authority

# TRV

ESMA Report on Trends, Risks and Vulnerabilities

No. 2, 2015



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# Executive summary

## Trends and risks

### ESMA risk assessment

Business area risks	Risk categories				Risk sources		
	Risk		Risk	Change	Outlook		Change
Overall ESMA remit		Liquidity				Macroeconomic environment	
Systemic stress		Market				Low interest rate environment	
Securities markets		Contagion				EU sovereign debt markets	
Investors		Credit				Funding patterns	
Infrastructures and services		Operational				Market functioning	

Note: Assessment of main risks by business areas for markets under ESMA remit since last assessment, and outlook for forthcoming quarter. Assessment of main risks by risk categories and sources for markets under ESMA remit since last assessment, and outlook for forthcoming quarter. Risk assessment based on categorisation of the ESA Joint Committee. Colours indicate current risk intensity. Coding: green=potential risk, yellow=elevated risk, orange=high risk, red=very high risk. Upward arrows indicate an increase in risk intensities, downward arrows a decrease, horizontal arrows no change. Change is measured with respect to the previous quarter; the outlook refers to the forthcoming quarter. ESMA risk assessment based on quantitative indicators and analyst judgement.

**Risk summary:** Risk levels in the markets under ESMA remit remain high, reflecting elevated risks for investors, infrastructures and services, and the financial system at large as well as high risks in the securities markets. The latter corresponds to our assessment of market risks which we currently consider very high, following a persisting build-up in the preceding quarters. Our credit risk assessment remains unchanged at very high levels. While still at a lower level, liquidity risk can be expected to intensify further going forward, while contagion and operational risk remain unchanged, at high and elevated levels respectively. Key risk sources remain: the improved but uneven economic outlook, ultra-low interest rates, the debt crisis in the euro area, funding patterns, and potential weaknesses in market functioning.

**Market environment:** EU systemic stress remained moderate but volatile. The combination of strong monetary support and extremely low interest rate levels, low oil prices, and improved economic outlook has sustained market confidence. High asset valuations reinforced financial stability concerns, especially in a context of substantial monetary policy support reflected in extremely low interest rates, improved but still subdued growth, and uncertainty related to recent sovereign debt developments in the EU. The political developments in the euro area around the Greek financial situation towards the end of the reporting period sparked higher volatility in securities markets but had a limited price impact. The contemporaneous rapid price decline on China's equity markets and subsequent emergency measures by the authorities were followed by the markets with concern. However, no significant spill-overs were observed in EU markets. Overall, market sentiment in the EU increased, remaining above its long-term average. This is mirrored in still high-issuance activity, with capital market financing sustained and loan-based financing still subdued. But even though capital market financing continued to increase, it still plays a limited role in funding the economy compared to loan financing. This highlights the need to strengthen the former with a view to achieving a more diversified financing base for the EU economy.

**Securities markets:** EU equity markets performed well, with initially moderate volatilities, which subsequently rose as the euro area debt situation flared up. In the fixed-income market, capital market financing continued, supported by strong investor demand driven by search for yield strategies. Concerns were heightened further as asset price valuations remained high, running ahead of fundamentals, and secondary market liquidity remained structurally low. In this market environment, the potential for disorderly unwinding of market imbalances intensified and may continue to do so depending most importantly on monetary policy stances in key economies.

**Investors:** Portfolio performances and their volatility fluctuated across asset classes for EU institutional and retail investors. Leverage ratios increased for most fund types, with flows to more risky fixed income funds proving unusually high at the beginning of 1H15 as search for yield behaviour among investors persisted. Against this background, concerns over the materialisation of

liquidity risk increased. Moreover, fluctuations in the net asset value of funds may impact on investor redemption decisions. In addition, evidence pointed to the increasing relevance of potential maturity and liquidity mismatches within important segments of the EU fund industry over the last two years. In the light of this, there is a risk of contagion due to the linkage of the fund industry with the wider financial system. Given the importance of investment funds for retail investors, market and liquidity risks may also be transmitted to retail investors.

**Infrastructures and services:** In the first half of 2015, electronic order book trading increased. For central clearing and security depositories, key regulatory reforms are having an impact, and the importance and central role of CCPs and CSDs in the financial system has grown further. In the light of this, the need to guarantee the operational resilience of key infrastructures is a central concern. Technology-related risks such as trading interruptions and cyber-attacks, as well as risks around market conduct, are attracting increasing attention. In a different context, the imposition of emergency capital market measures adopted by Greece and the suspension of key market activities affecting trading venues, CCPs, CSDs, investment fund redemptions and net short positions tested the resilience of the infrastructures concerned. However, the imposition of emergency measures did not have any critical impact on market functioning and infrastructures outside Greece. Moreover, the lifting of these emergency measures on August 2015 also came without any relevant effects on EU markets outside Greece. The effects on valuation remained contained to the Greek financial markets.

## Vulnerabilities

**Measuring the shadow banking system – proposals for a focused approach:** Since 2011, international policy makers have been engaged, through the Financial Stability Board (FSB), in a global project to monitor and measure shadow banking. In the EU, ESMA and the ESRB have developed shadow banking metrics aimed at improving the monitoring of market trends and risk assessment. The analysis follows a dual approach: the entity-based approach, focusing on the entity pursuing shadow banking activities and the activity-based approach focusing on the activities themselves. This paper proposes a revision of some of the existing indicators in order to identify entities at the core of the shadow banking system. This includes the design of a simple liquidity risk indicator for bond funds, which are more likely to perform liquidity and maturity transformation than other types of funds. The indicator developed shows a trade-off, at fund level, between liquidity and maturity transformation. Eventually, this indicator could help differentiate between funds performing traditional asset management activities and those engaging in bank-like activities.

**Primary dealer funding constraints and sovereign bond liquidity:** This article is based on research analysing the impact of primary dealers' financial constraints on the liquidity and pricing of sovereign bonds in nine European countries before and during the financial and sovereign crises. Empirical evidence shows that primary dealers' funding costs matter for sovereign bond liquidity. The article also highlights that financial constraints of primary dealers, measured via a proxy variable, may generally lead to less liquid sovereign bond markets, though these effects depend on the time-period under study, the issuer and the origin of the dealers.

**Bank-loan mutual funds – the US case and potential implications for Europe:** Recent years have seen the increased presence of loan origination and participation fund vehicles across a number of member states, mainly within institutional separate accounts or within the AIFM platform targeting professional investors. The article analyses the related sector of retail offered loan participation funds existing within the framework of the US 1940-Act market and not dissimilar to the European UCITS. Moreover, the topic of alternative sources of lending, to complement traditional bank lending, is a timely issue within the EU. This article seeks to understand the features, regulation, performance, supply and demand factors, and the risks of loan participation funds. It also attempts to determine how the inclusion of senior secured bank loans in traditional asset allocation serves to alter the risk-return ratio. It concludes that the asset class examined carries unique risks that need to be understood by the investor, whilst offering an appealing investment choice for certain investor profiles.

# Trends

# Market environment

EU markets in 1H15 were characterised by high valuations for equity and bond markets, elevated foreign exchange market volatility and low commodity prices. This reinforced concerns around asset valuations in an environment of substantial monetary policy support reflected in very low interest rates, still subdued growth and uncertainty related to recent sovereign debt developments in the EU. Concerns intensified over structurally lower liquidity in bond markets as market valuations and volatilities significantly fluctuated. Overall, however, market sentiment was sustained above its long-term average. Issuance activity increased, with capital market financing expanding while loan financing remained subdued. However, capital market financing continues to play a limited role in funding the economy compared to loan financing. This highlights the need to strengthen the former with a view to a more diversified financing base for the EU economy.

**Market performance** in the EU equity market remained robust (+13%), reinforcing market valuation concerns. Corporate and sovereign bond markets performed solidly at the beginning of 2015 but fluctuated at the end of 1H15 (T.1). The main drivers were an upward adjustment in inflation expectations reflected in the sudden increase in yields at the beginning of June, also in core countries (e.g. German Bunds), and the recent sovereign debt developments in the EU. The global index for commodity prices, having declined 28% in 2H14, increased (8%) in 1H15, while remaining at low levels. The political developments in the euro area surrounding the Greek financial situation towards the end of the reporting period sparked higher securities market volatility but had no far-reaching price impact. Markets followed with concern the coincident rapid price decline on China's equity markets and subsequent emergency measures adopted by the authorities, but no significant spill-overs were observed in EU markets.

These issues were reflected in **exchange rate** developments, the euro having weakened against major currencies in the first part of 1H15 but then appreciating towards the end (-8% against the USD, -9% against GBP end-June 2015). This is reflected in capital flow movements, both in (T.3) and out (T.4) of the EU. The persistence of these trends will depend on key economic fundamentals, notably growth performance, as well as monetary stances at an international level.

Concerns over high asset valuations were further reflected in high or fluctuating **volatilities** (T.2) in 1H15 across asset classes. Having been high over the period, commodity price volatility began to ease in June. In contrast, foreign exchange and sovereign bond volatilities increased, as did equity volatilities, especially end-1H15, as uncertainty related to the more recent sovereign debt developments in the EU

mounted. Observed episodes of fluctuation in bond market valuation and volatilities, also in sounder economies (e.g. in German government bonds), intensified concerns over structurally lower liquidity levels in bond markets.

Overall, **market sentiment** in financial services improved in 1H15 and was well above its 5Y MA. Developments in confidence levels, however, were uneven within the financial sector. Increases were observed for financial intermediaries and auxiliary activities, whereas confidence in the insurance and pension fund sector remained subdued (T.6).

The **role played by capital markets in financing** strengthened. Net issuance increased from EUR 587bn in 2013 to EUR 694bn in 2014 (T.5), continuing to expand in 1Q15 (EUR 575bn). Net financial sector debt issuance remained negative throughout 2014 while turning positive in 1Q15 (EUR 52.8bn). Securitised assets continued to decline, with net issuance amounting to EUR -25bn in 1Q15. On the other hand, in 1Q15 net issuance was positive for equity (EUR 368bn), government debt (EUR 148bn) and debt issuance for non-financial corporations (EUR 31bn). Yet despite its positive net contribution, capital market financing continues to play a limited role compared to loan financing. This highlights the need to strengthen the former with a view to a more diversified financing base for the EU economy, which is a main element in the Capital Markets Union initiative launched by the European Commission in February this year.

Regarding **capital market based intermediation**, shadow-banking liabilities remained stable at EUR 8.3tn at the latest reporting date, pointing at a sustained limitation of core bank-type activities in the capital markets, well below the relative size observed in other key economies.

T.1

Market performance

Strong performance across asset classes

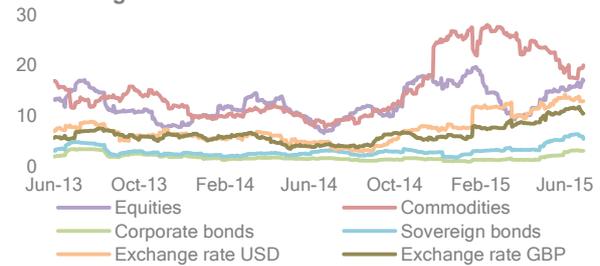


Note: Return indices on EU equities (Datastream regional index), global commodities (S&P GSCI) converted to EUR, EA corporate and sovereign bonds (Iboxx Euro, all maturities). 03/06/2013=100  
Sources: Thomson Reuters Datastream, ESMA.

T.2

Market volatilities

Fluctuating across assets



Note: Annualised 40D volatility of return indices on EU equities (Datastream regional index), global commodities (S&P GSCI) converted to EUR, EA corporate and sovereign bonds (Iboxx Euro all maturities) and EUR exchange rates to USD and GBP, in %.  
Sources: Thomson Reuters Datastream, ECB, ESMA.

T.3

Portfolio investment inflows

Increasing at the second half of 1H15



Note: Net inflows=BoP and international investment position. Portfolio investment liabilities of EA 19 (fixed composition) residents. Net transactions over the period, EUR bn.  
Sources: ECB, ESMA.

T.4

Portfolio investment outflows

Increasing at the end of 1H15

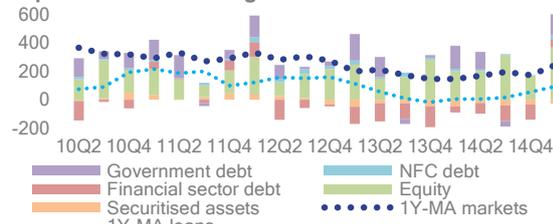


Note: Net outflows=BoP and international investment position. Portfolio investment assets of EA 19 (fixed composition) residents. Net transactions over the period, EUR bn.  
Sources: ECB, ESMA.

T.5

Capital markets issuance

Capital market financing continued to exceed loans

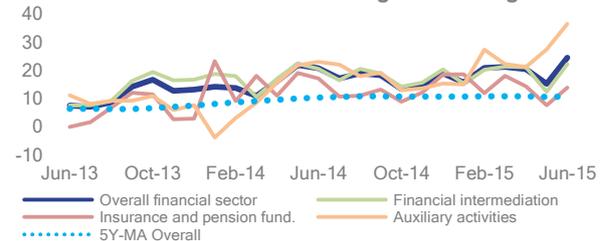


Note: Net issuance of debt securities, equities and securitised assets in the EA, by type of instrument and sector, in EUR bn. Securitised assets include ABS, MBS and covered bonds. Due to different netting and consolidation methodologies, the data may not be fully reconcilable. 1Y-MA markets plots the 1Y-MA of the aggregate of all assets displayed in columns. 1Y-MA loans plots 1Y MA of loan-based financing.  
Sources: ECB, Dealogic, ESMA.

T.6

Financial services survey

Confidence levels remain above long-term average

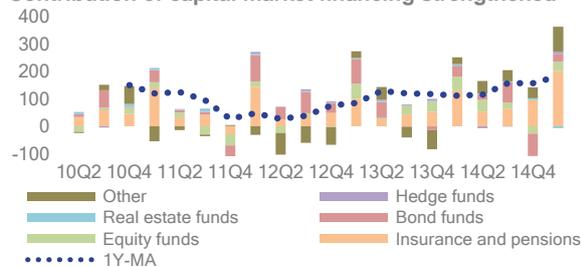


Note: European Commission survey of EU financial services sector and subsectors (NACE Rev.2 64, 65, 66). Confidence indicators are averages of net balance of responses to questions on development of the business situation over the past three months, evolution of demand over the past three months and expectation of demand over the next three months, in % of answers received.  
Sources: European Commission, ESMA.

T.7

Institutional financing

Contribution of capital market financing strengthened

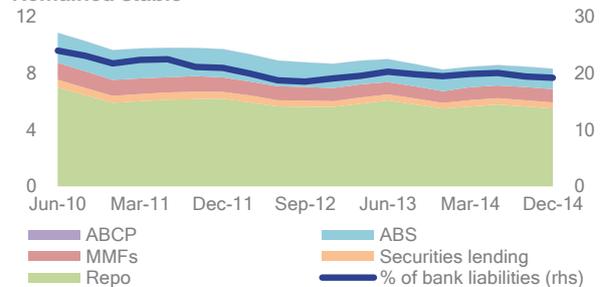


Note: EA institutional investment flows by type of investor, EUR bn. Other = financial vehicle corporations, mixed funds, other funds. EUR bn. 1Y-MA = 1Y moving average of all investment flows. 1Y-MA not shown for 10Q2 and 10Q3 as not all series are available for 2009.  
Sources: ECB, ESMA.

T.8

EU shadow banking liabilities

Remained stable



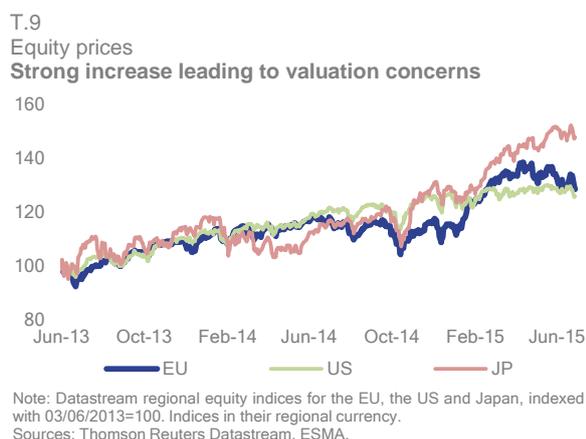
Note: Size of shadow banking system proxied by amounts of ABS and ABCP outstanding, size of the EU repo market and EU securities on loan (collateralised with cash), and liabilities of MMF, in EUR tn. % of bank liabilities on rhs.  
Sources: ECB, AFME, ICMA, Markit Securities Finance, ESMA.

# Securities markets

Search for yield remained an important driver of EU securities markets in 1H15, as monetary policy support persisted, with interest rates remaining at very low levels and money market liquidity being artificially ample. Concerns surrounding excessive asset valuations increased. With bank lending remaining subdued, capital market financing, although still limited, has further enhanced its funding role. Such developments, especially in an environment of structurally lower liquidity in secondary markets, expose markets to potential imbalances in the event of sudden risk reassessment, related liquidity shortages and sudden spikes in volatility across markets. At the same time, expectations of a potential future divergence in monetary policies at international level may be the source of further portfolio rebalancing and volatility in foreign exchange markets, as already seen in recent currency movements and fund flows.

## Equity: strong performance and reduced volatility

The solid EU equity market performance in 1H15 (T.9) raised concerns related to excessive asset valuation, as search for yield continued to be sustained by historically low interest rates.



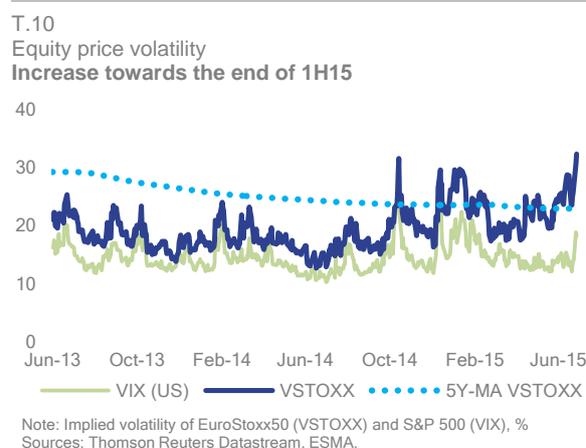
From December 2014 to June 2015, EU equity prices increased by around 13%, performing better than US equity markets, in particular at the beginning of 2015. As the low interest rate environment persisted, supported by accommodative monetary policies, asset prices stayed on an upward trend beyond fundamentals. Indeed, investors risk appetite remained strong and investment strategies remained directed to higher risk products aiming at higher returns. In effect, performances held a strong increasing trend across sectors, including financials, technology and industrials. However, the strong performance in EU equity markets moderated in the second part of 1H15, following increasing uncertainty around sovereign debt market developments and the evolving situation in Greece.

Overall, investor sentiment and market confidence were supported by improved economic prospects, low oil prices and the

buoyant ECB monetary policy aimed at reducing deflation expectations and continuing to contain borrowing costs.

Moreover, strong equity issuance activity signalled the increasing role of securities markets in financing the real economy (A.11 and A.15). The value of IPOs and Follow-On Offerings rose to EUR 190bn in 2014 from EUR 144bn in 2013, and the trend seemed to continue in 1H15 (EUR 122bn), up EUR 5bn compared to 1H14. Equity issuance activity has been particularly strong in the industry and services sector (EUR 46bn) and the finance sector (EUR 41bn), while remaining subdued for real estate (EUR 9bn).

Political uncertainties persisted, related to geopolitical risks at the European borders and beyond and to financial developments within the EU, in particular at the end of 1H15 as the Greek debt crisis unfolded. Risks in emerging markets have increased as oil- and commodity-exporting countries have been severely affected by the significant price movements for these asset classes.



Dispersion in the performance of national equity indices in the EU widened considerably in 1H15, reflecting significant heterogeneity among EU

countries (A.18). **Market volatility** oscillated in 1H15 (T.10). In the first part of 1H15, it fell slightly, reflecting a lesser degree of uncertainty compared to the end of 2014, a period characterised by substantial instability across different asset classes, deflation expectations and lower confidence in future macroeconomic developments. In the second part of 1H15, volatility increased amid mounting uncertainties over Greek public finance developments. Furthermore, fluctuations in volatility across markets pointed to still-high market sensitivity, even in more liquid markets.

#### T.11

##### Market liquidity

##### Structural and cyclical drivers under scrutiny

Concerns over declining market liquidity, including areas such as fixed-income and high-yield markets are growing among market participants and institutions. While a better understanding of the cyclical and structural drivers of liquidity in the current environment is needed, initial evidence suggests that liquidity in secondary markets may indeed have declined, albeit to varying degrees across market segments. Lower levels of liquidity could translate into higher susceptibility and market instability. In less liquid environments, shocks are more rapidly transmitted across market segments and through the wider financial system and their impact on prices and volatility is stronger.

Financial market liquidity has been affected by a number of recent structural changes, including regulatory reforms in the post-crisis period. Technology, regulatory and competition developments have impacted on dealers' ability and willingness to act as counterparties to immediate trading needs, typically performed by contractual or de facto market-makers. In sovereign debt and, to an even greater degree, corporate bond markets liquidity hinges on whether market-makers respond to temporary imbalances in supply and demand by stepping in as buyers (or sellers) against trades sought by other market participants. At the same time, the role of the asset management industry in providing market-based funding intermediation in general, as well as in credit intermediation, has increased.

Market intelligence suggests that liquidity is increasingly concentrating in the most liquid securities and market segments, while conditions are deteriorating in less liquid ones (e.g. corporate bonds), where the incentives to supply liquidity have significantly decreased. This is a source of mounting concern in an environment of still high risk taking behaviour and appetite for investments entailing larger returns yet carrying higher risks. This is even more evident as, already in very liquid markets, there have been examples of the disruptive consequences of sudden increases in volatility and dry up of liquidity. Two examples of this are the 15 October 2014 episode in the US sovereign bond market and the recent sudden increase in yields for the German Bunds.

## Debt instruments: strong issuance amid structurally lower liquidity

Yields on 10Y **sovereign bonds** declined in the first half of 1H15, falling below their long-term average, but started to increase again in both core and peripheral countries as from April (A.26). Overall, however, yields remained at low levels. As reflected by the developments in sovereign CDS spreads (A.31), the perception of

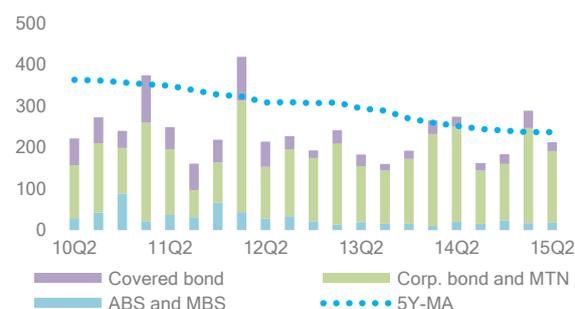
sovereign risk remained moderate across the eurozone. However, it was observed to increase at the end of 1H15 following heightened uncertainties around EU sovereign debt developments. For several euro-zone countries, sovereign debt yields turned negative during 1H15, both in nominal and real terms, despite the prevailing low inflation environment. Trends of this kind should be monitored closely as they may have unanticipated negative consequences, especially in the medium to long term. A reduced price of leverage may create incentives for excessive risk behaviour, limited structural reforms and low productivity enhancements and may distort asset price valuations.<sup>1</sup> Nevertheless, market sensitivity remained high as mirrored by fluctuations in valuations and volatilities in the bond market, both for peripheral and core economies (e.g. German Bunds). Fluctuations were due partly to higher than expected inflation figures at the end of May and partly to increasing concerns related to low secondary market liquidity and the more recent sovereign debt developments.

EU sovereign bond issuance totalled EUR 585bn in 1H15, lower than for the same period of 2014 (EUR 711bn). The 1H15 decrease encompassed sovereign issuance in almost all EU countries, with significant declines in some big Euro Area countries (A.23).

#### T.12

##### Corporate bond issuance

##### Increase in ABS and MBS issuance

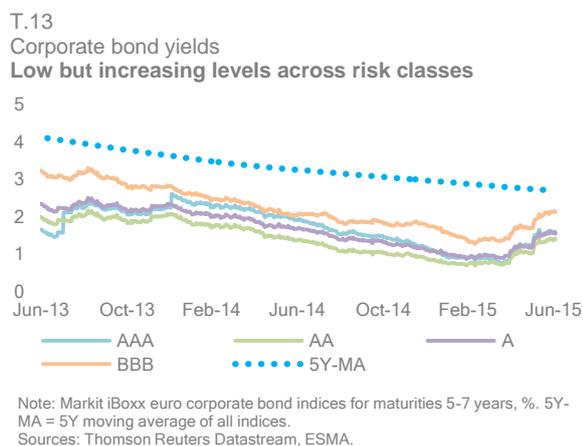


Note: Quarterly debt issuance in EU by deal type, EUR bn.  
Sources: Dealogic, ESMA.

**Corporate bond** issuance for both banks and non-financial corporations was around EUR 500bn in 1H15. It rose in 1Q15 but subsequently slowed in 2Q15 as market uncertainty and risk perceptions increased. Looking at the type of instruments (T.12), the strongest issuance was in the ABS and MBS segment, increasing to EUR 34bn in 1H15. This

<sup>1</sup> BIS, "Ultra-low or negative interest rates: what they mean for financial stability and growth". Remarks by Hervé Hannoun, Deputy General Manager at the Eurofi High-Level Seminar, Riga, 22 April 2015.

sustained issuance may be partly related to the persistency of search for yield strategies and the increasing role of capital market-based financing for corporates; however, it is still limited compared to bank funding. In such a market environment, substantial risks may arise in relation to the structural decline of liquidity that has characterised financial markets over more recent periods.



**Securitisation** is an important part of the EU policy discussions on ways to diversify financing sources of the economy.<sup>2</sup> According to AFME data, in 4Q14 about EUR 60bn of securitised products were issued in Europe, an increase of almost 60% and 6% respectively from 3Q14 (EUR 37bn) and 4Q13 (EUR 56bn). Of those EUR 60bn issued, 40% (EUR 24bn) were placed. At the end of 4Q14, EUR 1.4tn of securitised products were outstanding, of which EUR 782bn (56% of outstanding) were retained, presumably for repo or other secured financing. Spreads of EA AAA-rated securitised products declined significantly from the end of last year, reaching their lowest level (below 1bp) at the beginning of May. In contrast, spreads in the US remained broadly stable around 80bps.

The credit quality of securitised assets also remained broadly unchanged across rating classes in 2H14. The percentage of AAA-rated securitised assets stayed put at 22% in 2H14, while the AA category increased to 15%. The share of securitised assets rated sub-investment grade remained below 30%. Overall, the number of rated securitised assets shrank marginally, due to a decline in the CDO and CMBS segments, while there was an increase in ABS and non-categorised securitisations. At the same time, the accuracy of ratings measured

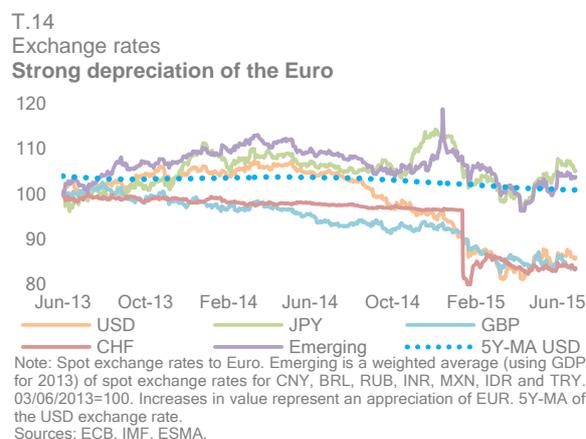
<sup>2</sup> EU Commission, Consultation Document "An EU framework for simple, transparent and standardised securitisation", 18 February 2015.

over the previous 12 months fell in 2H14 across different segments, continuing to be highest for ABS and RMBS (A.52).

European **covered bond** activity picked up from 2H14 but still remained at record low levels in 1H15, with the outstanding amount in the EU reaching EUR 2.5tn in 1H15, around 390bn lower than the same period of 2014. Covered bond issuance in 1H15 totalled EUR 59bn, 8bn lower than 1H14 (A.53). This was due partly to the availability of ample liquidity from the central bank and investors' continuing search for yield strategies. Covered bond markets are more fragmented than other bond market segments in the EU, featuring considerable heterogeneity of issuance activity in EU countries. In an environment of broadly subdued issuance and generally low interest rates, average covered bond spreads (across all rating categories) fell from 34bps in December 2014 to 25bps in May 2015, continuing their long-term decline (A.54).

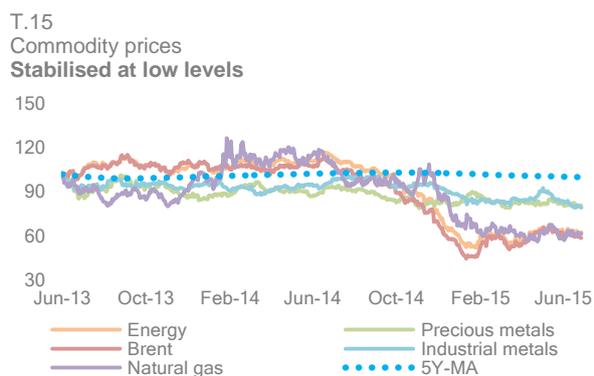
## Currencies and commodities: high volatility

Volatility in **foreign exchange** markets increased significantly amid rapid appreciation of the US dollar. Since the beginning of 1H15, the EUR has depreciated by around 8% against the US dollar, 6% against the yen and 13% against the Swiss Franc (T.14). The weakening of the euro was more pronounced at the beginning of 1H15. In May and June the depreciation trend came to a halt, as reflected in capital flows (A.7, A.8). The above developments were also influenced by the divergence in the economic recovery across regions (uneven and slow in the EA, strong and rapid in the US), along with foreseen divergence in monetary policy stances.



Following a substantial decline, particularly in the energy sector, where oil prices fell almost 30% in 2H14, **commodity prices** were relatively stable or up slightly in 1H15, though remaining

at very low levels (T.15). The main trend drivers continued to be the abundant oil supply on the one hand and lower demand in both Asia and Europe on the other, combined with a stronger US dollar.



Note: S&P GSCI Commodity indices and Brent price, indexed 03/06/2013=100.  
 5Y-AVG = 5Y average computed using S&P GSCI. Indices denominated in USD.  
 Sources: Thomson Reuters Datastream, ESMA.

Overall, commodity price volatility declined slightly, though remaining at high levels above its 5Y average, hovering just below 23%. Meanwhile, in the energy sector it stayed above 30% (A.76). Low oil prices, though generally positive for the global economy, hurt countries dependent on oil revenues, as reflected in currency movements, leaving many emerging economies more vulnerable and subject to increasing instability. The above developments may be amplified by increasing expectations of changes in the Fed's monetary policy stance.

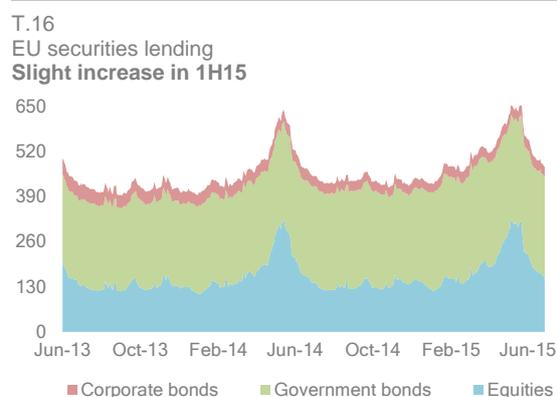
In 2H14, notional amounts of outstanding **OTC derivatives** declined by 9% to USD 608tn (A.79). This was exacerbated by the contraction in positions denominated in currencies other than USD. Conversely, the gross market value of OTC derivatives outstanding increased by almost 20% (A.80).

For interest rate derivatives, which represent the largest part of the OTC world (83% of total OTC volumes), notional volumes decreased by 8% to USD 505tn in 2H14. Notional volumes of CDS and commodity contracts also fell (by 10% and 15% respectively) while equity-linked contracts rose by 12% and foreign exchange contracts remained broadly stable at USD 76tn (A.79).

The increase in gross market value of outstanding OTC derivatives was driven by interest rate derivatives, foreign exchange and commodity contracts, which rose by 16%, 71% and 18% respectively, while equity-linked contracts and credit default swaps continued to decline (A.80).

## Other market activities

As of end June 2015, the total outstanding value of EU securities on loan was composed of government bonds (EUR 294bn), corporate bonds (EUR 29bn) and equities (EUR 152bn). In all three cases mostly non-cash collateral was used. European equities lending trades exhibited seasonality: corporate action trading (in this case lending for cross-country tax arbitrage on dividends) boosts volumes during the second quarter of each year. As of June 2015, securities lending activities were around EUR 475bn for all asset classes, about 530bn less than in the same period of 2007 when they reached record levels above EUR 1tn (T.16). Securities lending transactions with open maturity constituted the vast majority across the three segments of the securities lending market.



Note: Total value of EU securities on loan, in EUR bn.  
 Sources: Market Securities Finance, ESMA.

The utilisation rate, the ratio between the value of securities on loan and the available lendable value, may be used as a proxy for short selling activities since securities lending allows for short sellers to bet against the securities owned by their clients. At a national level, utilisation rate levels on EU government bonds vary. Differences were also observed in trends, declining for more vulnerable economies while remaining stable or increasing for core countries. At the end of 1H15, the utilisation rate was about 29% for EU government bonds, the large majority of which was collateralised with non-cash, but significantly lower for equities and corporate bonds (5% and 7% respectively).

Money market funds are an important source of short-term financing for financial institutions. As a result, they are highly interconnected with both EA and non-EA credit institutions. Loans and debt securities issued by these entities, representing 67% of EA money market funds total assets in 4Q14, slipped from 74% in 3Q14. By way of comparison, loans and debt securities issued by credit institutions form less than 15%

of the total assets of other types of EA investment funds, including 8% for hedge funds (A.86).

The daily number of listed shares in EU benchmark equity indices on which **short positions** were reported to NCAs increased from an average of 273 in 1H14 to an average of 283 in 2H14. The shorted market value, as a percentage of market value in the EU, also rose in the reporting period by 10% to reach 0.77%. The increase in shorted market value is possibly related to the weak performance and increased volatility that characterised equity markets in 2H14 (A.67). On the other hand, average net short positions held on EU sovereigns, as a percentage of each country's total general government debt securities, fell slightly in 2H14 down from 3.3% from 3.6% in 1H14 (A.69).

T.17

Credit quality

#### Benign environment

Overall, in 2H14 the net assignment of new ratings slowed while remaining positive for sovereign and non-financial corporate bonds. The increase in non-financial corporate bonds (1.9%) was in line with the broader credit market conditions stemming from investors' yield-seeking behaviour and the need to diversify sources of financing. All other asset classes experienced net negative new rating assignments, with insurance corporate bonds (-6.6%) and structured finance (-0.9%) suffering the most significant change. Defaults occurred only in three asset classes: non-financial (0.6%) and financial (0.3%) corporate bonds and structured finance instruments (0.6%).

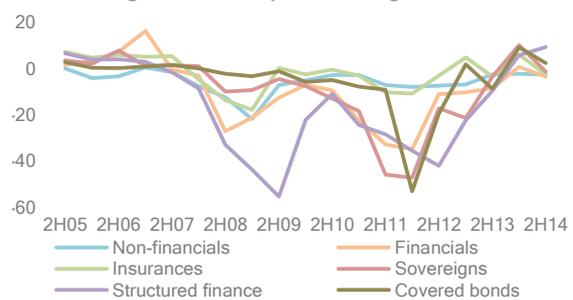
The direction of rating changes (notch-weighted drift) was negative for all corporate bonds (between -2.4% and -3.4%) and for sovereign ratings (-1.3%), while the best performers were structured finance (9.4%) and covered bonds (2.4%). Changes in credit quality (rating drift) typically translated to increasing rating volatility (number of rating changes). Volatility, though remaining at very low levels, increased for non-financial (2.6%) and financial (2.4%) corporate ratings and structured finance ratings (9.4%) (T.18).

The severity (average size) of rating actions was greater for upgrades than for downgrades across all asset classes with the exception of corporates (financial and non-financial). The average rating change severity for upgrades and downgrades remained higher for structured finance ratings (more than 2 notches) than for other products. Rating severity (both upgrades and downgrades) increased for corporates (financial and non-financial), covered bonds, insurance and sovereign ratings (upgrades). On the other hand, the rating severity of downgrades declined for sovereign, insurance and covered bonds.

T.18

Rating changes

#### More downgrades for corporate ratings



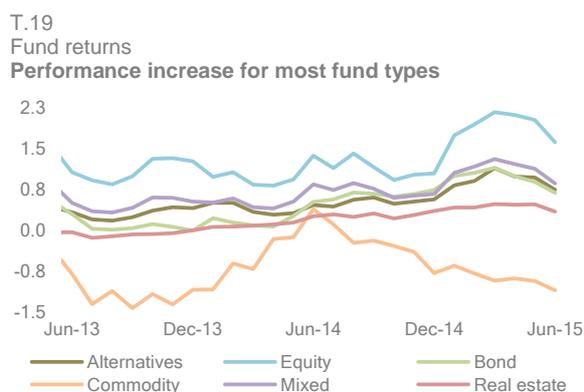
Note: Drift of ratings from all credit rating agencies by asset class computed as percentage number of upgrades minus percentage number of downgrades, %.  
Sources: CEREP, ESMA.

# Investors

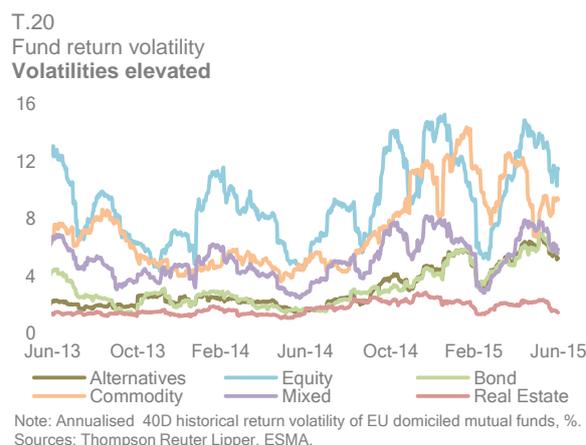
In early 1H15, returns improved across asset classes for EU institutional and retail investors but slowed towards the end of 1H15. Leverage ratios increased for most fund types, flows to more risky fixed income fund types were unusually high and volatilities in the performance of most fund industry segments were more pronounced, probably in relation to search for yield behaviour. The fund industry, too, is discussing the implications of current liquidity concerns, with volatility fluctuating and liquidity in major asset classes remaining tight. In addition, evidence highlighted the increasing relevance of potential maturity and liquidity mismatches within important segments of the EU fund industry over the last two years. Should market and liquidity risks materialise, there is a risk of contagion due to the fund industry's interlinkage with wider financial system. Given the importance of funds for retail investors, market and liquidity risks may be transmitted to retail investors as well.

## Investment funds: volatile returns, rising liquidity concerns

In 1H15, intensified **search for yield** appeared to be an important driver of the EU investment fund industry. Commodity funds aside, an upward trend was registered in the performance of all fund types at the beginning of the year, although this slowed towards the end of 1H15. Monthly returns ranged from -1.1% for commodity funds to 1.6% for equity funds (T.19). The performance changes led to unusually high performance volatilities for all fund types (T.20).



trends reversed: Significant outflows were observed for bond funds (EUR -11bn) and money market funds in particular (EUR -34bn). These developments are probably related to the halt in the depreciation trend of the Euro compared to the initial part of the year and to a shift in investor sentiment. Concerns have been deepening over the development in Greek debt and potential divergence in monetary policies at an international level.



**Assets under management**, for the entire EA investment fund industry, increased in April to EUR 10.6tn, up EUR 1tn from December 2014, with bonds, equity and mixed funds registering the highest assets under management (A.91). 30% of all outstanding shares of EU investment funds were issued by alternative investment funds and the remaining 70% by UCITS (A.92).

The trend in fund performance is mirrored in trends in **fund flows**. In 1H15, investment funds received EUR 278bn of net flows, with rising inflows into mixed and bond funds in the opening months of the year constituting almost 85% of the total (A.95). In May, however, these

Net flows into bond funds were concentrated mostly on emerging market funds and funds with a global focus (A.96). Over 1H15, inflows were particularly high for funds investing in corporate, emerging and high yield bonds. In 1H15, leverage in equity, bond and mixed funds increased marginally as the growth in assets under management exceeded that of net asset value (NAV), implying higher relative debt positions or derivative exposures (A.93, A.94).

For the EU **alternative investment funds** sector, hedge fund performance hovered close to zero in 1H15, worsening in June 2015 (A.105). However, improvements were observed for long/short equity strategy and relative value strategy funds (A.106). The EU alternative UCITS segment received an inflow of EUR 11bn

(A.107). For all EA hedge funds, assets under management spiked in January and February but subsequently slipped back to around their end-2H14 values. In April, the value of assets under management was of EUR 291bn, exceeding the NAV and thus implying a rise in the industry's leverage (A.109). Such sharp movements were probably related to changes in derivative positions in one member state notably impacting on hedge fund leverage.

The EU **money market fund** industry started off with a strong increase in performance which, however, slowed towards the end of 1H15. The annual average rate of return (RoR) increased to 69bps, while the volatility of sector's performance grew further. These developments were related chiefly to foreign exchange dynamics across economic regions, with the euro continuing to depreciate against major currencies as expectations of monetary policy divergence persisted. Notably, gains were skewed towards bigger funds, a large proportion of which is made up by funds investing in assets denominated in USD and GBP, with the mean RoR remaining below 40bps and positive outliers going up to 1.8% (A.101). Inflows of EUR 47bn in new money market funds were observed for the first two months of the year but then strong outflows, equal to EUR -42bn, followed at the end of 1H15 (A.103). Similarly, funds focused on EU money market assets, having posted inflows at the beginning of 1H15 (EUR 45bn), registered outflows (EUR -46bn) at the end of the reporting period, probably related to a change in expectations on exchange rate movements. Money market fund leverage initially increased in the first half of 1H15, but then returned to its 2014 level of 1.02 (A.104).

In early 1H15, EU **exchange-traded funds** performed on average 0.6% stronger than in late 2H14, with the sector's performance volatility returning to low levels. As both the mean and outliers shifted similarly, the performance distribution for the sector did not change substantially (A.111). Like other index-tracking funds, ETFs experienced a slight increase in their tracking error (A.115). The moderate performance gain by EU ETFs was accompanied by a large increase in NAV. From end 2014, NAV increased by around 20%, to EUR 405bn (A.113). The majority of this growth was realised by EU equity and bond ETFs (A.114).

Recent discussions around the rising role of the asset management industry in the provision of market based funding in general and forms of

credit intermediation in particular<sup>3</sup> inadvertently give rise to questions around **potential financial stability issues** within this intermediation chain. Liquidity concerns feature prominently in this discussion, as liquidity measures for the main underlying asset classes largely fluctuated.

For the EU fund industry, the elevated performance volatility observed for all fund types indicates an increase in liquidity risks (T.20). Related fluctuations in the NAV potentially impact on investors' redemption decisions. Higher volatilities of fund flows for all investment funds corroborate these concerns, in particular for funds focussing on riskier asset classes, such as high yield bonds, emerging market bonds, and equity or bond funds concentrating on risky strategies (T.21).

T.21  
Net flows for EU BF by strategic focus  
**Volatile pattern in fund flows**



Note: Net flows for bond funds, EUR bn. Funds investing in Corporate and Government bonds that qualify for another category are only reported once (e.g. funds investing in Emerging Government bonds will be reported with the Emerging; funds investing in HY Corporate bonds will be reported with the HY). Sources: Thomson Reuters Lipper, ESMA.

Liquidity concerns in the fund industry can be divided into market and funding liquidity aspects. With regard to market liquidity, chart V.6<sup>4</sup> assesses liquidity risk for bond funds applying liquidity and maturity measures to their underlying assets. On these measures, bond funds tend to compensate longer maturities by assuming less exposure to less liquid assets. However, since 2012 bond funds have tended to reduce the liquidity of their assets while increasing their maturity. Presumably driven by search for yield incentives, they have thus taken on additional market liquidity risks. Similarly, over the medium term money market funds have

<sup>3</sup> ESMA Trends Risks and Vulnerabilities, No.1, 2015. International Monetary Fund, "Global Financial Stability Report", April 2015.

Joint Committee of the European Supervisory Agencies, "Report on Risks and Vulnerabilities in the EU Financial System", March 2015.

EU Commission, Green Paper, "Building a Capital Markets Union", February 2015.

<sup>4</sup> Haquin J. B., "Measuring the shadow banking system: a focused approach", Trends Risks and Vulnerabilities, N.2, page 37, 2015.

tended to reduce their liquidity slightly, while lengthening the average maturity of their assets (A.87, A.88). In 1H15, however, both trends were partially corrected in the short run.

Additionally, empirical evidence indicating that portfolio rebalancing decisions dominate funds' investment behaviour<sup>5</sup> places additional emphasis on existing liquidity concerns. In an environment of volatile asset prices, this type of portfolio rebalancing is likely to occur frequently for substantial fund volumes. Recent upticks in leverage ratios lend additional support to the presence of liquidity risks by increasing fluctuations in the value of assets under management and concentrating these variations on a slightly smaller NAV base.

A particularly prominent concern refers to the continued deleveraging and de-risking of EU banks,<sup>6</sup> which offers them incentives to withdraw from the provision of market making services. This could leave other participants, including investment funds, in less liquid market segments with significantly reduced liquidity. This in turn may imply increased liquidity risks for such entities and additional potential for price contagion in case of adverse shocks.<sup>7</sup> Supporting evidence includes a stable, yet slowly decreasing volume of outstanding EU repos (A.83) and reductions in gross and net trading volumes in securities for the largest 20 European banks.<sup>8</sup>

As regards funding liquidity, evidence available for the US points to redemption fees as an effective means of partially mitigating undesired withdrawals. They can be used by fund managers to manage liquidity risks alongside general fees, stress tests and buffers of liquid assets held.<sup>9</sup> Liquidity buffers, however, decreased, and delays in redemptions are not possible beyond applicable national laws or the commitment of the fund as published in the

prospectus.<sup>10</sup> Funding liquidity concerns exist in particular for bond funds, as these are exposed to assets for which secondary market liquidity might not in all cases suffice to allow for liquidation at stable prices (e.g. corporate and high yield bonds).

Increased liquidity risks within the fund industry do not per se imply their transmission to other parts of the financial system. Some fund types, however, dominate certain asset market segments, implying that any asset liquidation on their behalf is likely to result in indirect contagion via asset prices.<sup>11</sup> This is empirically backed by the observation that prices of less liquid assets are particularly sensitive to net flows to funds active in these segments and that at times of elevated stress in financial markets asset prices are more sensitive to fund flows.<sup>12</sup>

Cross-holdings between asset managers and bank conglomerates or insurers, as well as between funds and conglomerates, offer another transmission channel. Thus the positions of investment funds and money market funds in bank debt appear prominently in the EU, with recent increases observed in particular for the contribution of money market funds to short-term bank funding.<sup>13</sup> Furthermore, the size of the assets held by EU money market funds and other financial institutions relative to the assets of monetary financial institutions has risen (A.85). Securities issued by monetary financial institutions make up 10-20% of the portfolios held by EA investment funds and up to around

<sup>5</sup> International Monetary Fund, "Global Financial Stability Report", April 2015.

<sup>6</sup> Joint Committee of the European Supervisory Agencies, "Report on Risks and Vulnerabilities in the EU Financial System", March 2015.

<sup>7</sup> Bank for International Settlements, "Market making and proprietary trading: industry trends, drivers and possible implications", CGFS Paper, No. 52, analysed this issue in some depth, 2014.

<sup>8</sup> Bank for International Settlements, "Market making and proprietary trading: industry trends, drivers and possible implications", CGFS Paper, No. 52, p.17, 2014.

<sup>9</sup> International Monetary Fund, "Global Financial Stability Report", April 2015.

<sup>10</sup> Directive 2014/91/EU of the European Parliament and of the Council of 23 July 2014 amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) as regards depositary functions, remuneration policies and sanctions.

<sup>11</sup> For hedge funds, Hespeler, F., et al., "The Synthetic Dimension of Hedge Fund Illiquidity and Prime Brokerage", ESMA Working Paper, N.2, 2014 discuss this with regard to collateral provided to prime brokers.

For bond funds, International Monetary Fund, "Global Financial Stability Report", April 2015 provides evidence for the increasing domination of substantial portions of individual bond markets by the five biggest US mutual funds.

<sup>12</sup> International Monetary Fund, "Global Financial Stability Report", April 2015. Evidence can also be found in Hespeler, F., et al., "The Synthetic Dimension of Hedge Fund Illiquidity and Prime Brokerage", ESMA Working Paper, N.2, 2014 and Hespeler, F., "Monitoring systemic risk in the hedge fund industry", Trend Risk and Vulnerabilities, N.1, 2015.

<sup>13</sup> International Monetary Fund, "Global Financial Stability Report", April 2015, provides a share of EU investment funds in long-term bank bonds of around 7%, a share of EA money market funds in EA short-term bank funding of around 50% and a majority of bank and insurers among the 25 biggest global asset managers.

70% of the assets of money market funds (A.86). Recent reductions in such shares, however, signal rising diversification for both kinds of funds. Synthetic exposures not included in these figures raise the interconnectivity to even higher levels, as they generate additional counterparty risks. Finally, formal and informal support commitments, such as sponsorship of money market funds and other measures within financial conglomerates, add further potential transmission channels, even where designed to improve risk allocation in the first place.

The development of the **regulatory framework** for the investment-fund sector is ongoing, and advances are being made at the EU and international level:

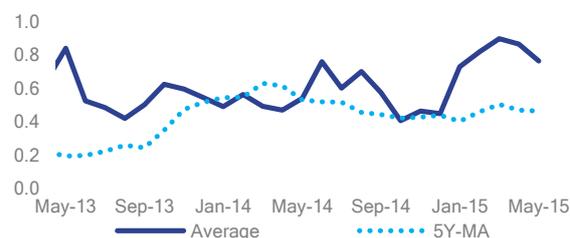
- Political negotiations on the EU Regulation on money market funds continue.
- The European Long-Term Investment Funds Regulation (ELTIF) was published in the Official Journal on 19 May. Once it starts to apply, ELTIF is expected to promote the provision of funding by investment funds to infrastructure projects, unlisted companies, or listed small and medium-sized enterprises through participations, such as equity or debt instruments, and loans provided to them. It is therefore expected to deliver beneficial effects complementary to the objectives of the EU Commission's Capital Markets Union initiative.
- With regard to alternative investment funds, ESMA is in the process of devising an opinion on the extension of passports to third-party countries. This opinion is scheduled for issue in early 3Q15.
- While stress testing has been included in the requirements of AIFMD and UCITS at EU level, recently calls for stress tests for asset managers have been advocated, most prominently by the Bank of England and the International Monetary Fund. The US SEC already prepares adequate stress testing methodologies for large asset managers that are mandated to implement stress tests by US law.<sup>14</sup>
- For large asset management entities, IOSCO considered that a full review of asset management activities and products in the

broader global financial context should be the immediate focus of international efforts to identify potential systemic risks and vulnerabilities. After the review is completed, work on methodologies for the identification of systemically important financial institutions (G-SIFIs) should be reassessed.<sup>15</sup>

## Retail investors: positive sentiment

1H15 started off positively for retail investors, both in terms of investment returns and sentiment indices. Relative to the modest returns observed through 2H14, on average the monthly returns on the representative portfolio of retail investors rose sharply (T.22). All portfolio components contributed to this strong performance, although equity appears to be the main driver. The strong performance of retail investors' portfolios appears to relate to the search for yield incentives for institutional investors acting as their intermediaries. Indeed, these are geared towards stronger performing assets while accepting additional risks.

T.22  
Portfolio returns  
Returns well above their long-term average



Note: Monthly return (%) for a representative portfolio for households. Asset weights, computed using ECB Financial Accounts by Institutional Sectors, are 37% for collective investment schemes (of which 12% mutual funds and 25% insurance and pension funds), 31% for deposits, 22% for equity, 7% debt securities and 3% for other assets.  
Sources: Thomson Reuters Datastream, Thomson Reuters Lipper, ECB, ESMA.

Both retail and institutional investors' current sentiment improved (T.23), peaking for retail investors in June at its highest level since 2011. The more recent EU sovereign debt developments and mounting concerns over the debt situation in Greece, however, should be closely monitored for their potential impact on investor sentiment and risk perceptions.

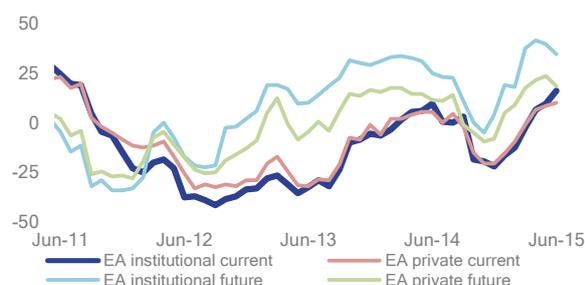
Despite the positive investor sentiment in early 1H15, underlying reported economic fundamentals still reflected an environment of improved yet subdued economic growth and moderate performance by major asset classes. Year-on-year growth in gross disposable income

<sup>14</sup> White, M., J., "Enhancing Risk Monitoring and Regulatory Safeguards for the Asset Management Industry", Speech at The New York Times DealBook Opportunities for Tomorrow Conference Held at One World Trade Center, New York, N.Y., 11 December 2014.

<sup>15</sup> OICV IOSCO, Media Release, "IOSCO: Meeting the Challenges of a New Financial World", June 2015.

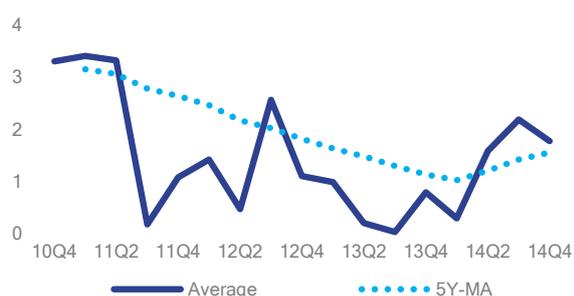
slowed from 2.2% in 3Q14 to 1.8% in 4Q14 (T.24). Income growth was negative for three EU countries (CZ, DK, and PT). The simultaneous slowdown in the year-on-year growth in household financial assets from 5% in 3Q14 to 4% in 4Q14 was most probably driven by low economic growth as well as stagnation in households' income levels (T.24).

T.23  
Investor sentiment  
Positive sentiment in 2015



Note: Sentix sentiment indicators for Euro Area private and institutional investors for a 10Y horizon. The zero benchmark marks a risk-neutral position. Monthly frequency. Sources: Thomson Reuters Datastream, ESMA.

T.24  
Gross disposable income  
Growth slowdown in 4Q14



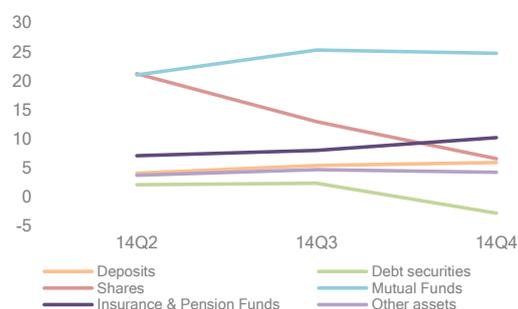
Note: Annualised growth rates of average gross disposable income in 13 EU countries (BE, CZ, DK, DE, ES, FR, IT, NL, PT, SI, FI, SE, UK), in %. Sources: Eurostat, ESMA.

Following a substantial previous increase in the growth rate of households' positions for some asset classes, growth rates stagnated or decreased in 4Q14. In particular, year-on-year growth in households' equity positions shrank from 12.9% in 3Q14 to 6.6% in 4Q14. Growth rates for other asset classes remained largely unchanged during that period, although a significant slowdown was observed for debt securities, with year-on-year growth slowing from 2.3% in 3Q14 to -2.8% in 4Q14 (T.25).

In most EU member states (15 of 21), only a minority of retail investors invested directly in securities, according to survey information obtained from NCAs (T.26). Additionally, four member states reported that retail investors rarely engaged in such investments, while in one member state a majority of retail investors invested directly in securities markets. The survey results are consistent with financial

market participation rates reported in previous issues of this report, indicating that 10% of EA households own mutual funds or shares.

T.25  
Financial asset growth  
Moderation of financial asset growth



Note: Unweighted average annualised growth in EU households' financial assets, excl. BG, CY, AT. Excluding IE, PT regarding mutual funds, DE, FR, GR, LU, MT, PL, RO regarding derivatives and LU, PL and RO regarding other assets, %. Sources: ECB, ESMA.

T.26  
Retail investment market characteristics  
Minority of retail investors invest in securities



Note: Retail investment market characteristics: direct investment in securities, by number of countries. Based on 21 NCA responses (BE, CZ, DK, DE, EE, ES, FR, HR, LT, LV, HU, NL, AT, NO, PL, PT, RO, SK, FI, SE, UK). Sources: ESMA Market Mapping Survey 2014.

# Infrastructures and services

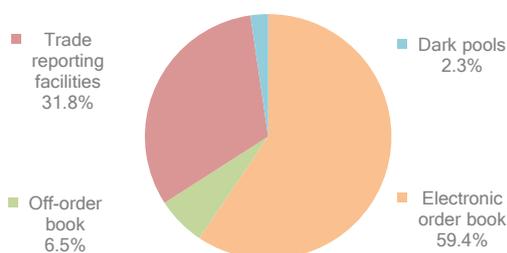
In the first half of 2015, the share of trading conducted through electronic order books on trading venues remained broadly stable. For central clearing and security depositories important regulatory structural reforms are under-way. The increasing importance and centrality of infrastructures and services makes their operational resiliency crucial in guaranteeing correct market dynamics and functioning of the financial system as a whole. More recent events related to the sovereign debt crisis in the EU as well as technical issues on some trading platforms made this even clearer as financial markets are ever more interconnected and trading has now assumed an international dimension. Against this backdrop, work progressed on further improvements in financial markets governance, with financial benchmarks, credit ratings accuracy, and business conduct as examples.

## Trading venues: increased share of electronic order books

Almost 60% of **equity transactions** occurred via electronic order books (EOB) in June 2015 (61% in December 2014). 32% of transactions were reported to trade reporting facilities<sup>16</sup> (up from 29% in December), while the share of off-order book (off-EOB) transactions in June remained low (down from 10% in December). Dark pools retained a small 2% share, close to the 2014 levels (T.27).

T.27

Equity turnover by transaction type  
Electronic order book, share increased



Note: Turnover in EUR as % of total. Data as of June 2015.  
Sources: FESE, ESMA.

Trading activity continued its uptrend in 1H15 with equity turnover peaking in April above EUR 2tn (A.127) and reaching 1.7tn in June. This is related to the EUR 949bn peak in turnover for reporting transactions in April, which had soared from record lows in February 2015 (EUR 110bn). The above category includes data on all trades that do not take place on EOB, Off-EOB or Dark Pools. The reporting transactions in fact refer to those trades that are reported to the exchange which acts as a mechanism to report the trade to the regulator.

<sup>16</sup> As from FESE definition: "Reporting transactions refer to trades reported through a Trade Reporting Facility (TRF) when only one counterparty provides information on the trade and offer dissemination services at the request of the reporting trader. The other counterparty could use this facility if reporting is mandatory."

In June 2015, unprecedented emergency market measures were taken (T.28), involving the suspension of trading for Greek securities for five weeks.<sup>17</sup> The international dimension of trading and the interconnectedness among financial markets makes the above events of crucial interest from a supervisory point of view. Market reactions, however, were relatively moderate and orderly market functioning was maintained, both during market closure and at its re-opening. Following the Hellenic Capital Market Commission (HCMC) decision of re-opening domestic market trading and clearing and settlement, no impact was observed in EU markets outside Greece. The effects on valuations remained contained to the Greek financial market. The largest losses were concentrated in the banking sector that experienced strong movements in volatilities, hitting volatility limits. Some of the heavy losses, however, after the first days of reopening were reversed.

T.28

Financial stability and orderly markets  
**Markets and infrastructure suspensions in Greece**

At the end of June, the Greek government closed down large parts of its domestic financial system, including bank and market operations. In that context, the Hellenic Capital Markets Commission (HCMC) introduced a sequence of emergency capital market measures.

- The suspension of trading in all financial instruments traded on the Athens Stock Exchange, the Multilateral Trading Facility "EN.A" and the Electronic Secondary Securities Market HDAT, from 28 June 2015 to 31 July 2015.
- The suspension of redemption of units in mutual funds authorised by HCMC and managed by Mutual Funds Management Companies operating in Greece.
- The suspension of clearing and settlement of all transactions in securities listed on the ATHEX Securities Market, derivatives traded on the ATHEX Derivatives Market and securities traded on ATHEX Alternative Market by the ATHEX Clearing House and/or the

<sup>17</sup> Hellenic Capital Market Commission, Announcement 715 and Announcement 716, 29 June 2015, Announcement 725 and Announcement 726, 3 August 2015.

Hellenic Central Securities Depository.

- Prohibition of custody transfers from a local to a foreign custodian for securities traded on ATHEX, EN.A, HAT and on regulated markets and multilateral trading facilities outside Greece;
- The temporary prohibition, in conjunction with the relevant ESMA opinion, of transactions in any financial instrument which would create, or increase, a net short position.

While these measures were unprecedented in the EU single financial market in terms of their extent, market reaction to their imposition was limited and no systemically relevant development was observed. This reflected that:

- the economic and debt situation had already largely been priced in at that time;
- only limited exposures to risks associated with Greece remained in the private sector;
- unforeseen news flows, especially on political developments, nevertheless resulted in spikes in market volatility throughout the critical period of events.

Notwithstanding the relatively moderate market reaction to the Greek emergency measures, their imposition did point to the interconnectedness of the Greek financial system with the EU single market and beyond.

For securities trading, the suspension had an international dimension as various instruments suspended in Greece were also admitted to trading in other countries of the Union. The national competent authorities of these countries also suspended the trading of the instruments except in limited cases where such suspension was deemed to cause significant damage to investors' interest or the orderly functioning of the market.

For clearing and settlement, the suspension highlighted the market's cross-border connections in so far as Greek financial institutions are clearing members to CCPs across the EU and clients of CSDs. In addition, the Greek CCP functioning as the central counterparty for transactions executed on SIBEX in Romania continued its clearing operations for that market.

Finally, the suspension raised questions related to the clearing and settlement of transactions completed before the trading suspensions became effective. The suspension of clearing and settlement of transactions by ATHEX Clear and the Hellenic Central Securities Depository CSD was waived for unsettled transactions as of 25 June and 26 June for securities listed on the ATHEX Securities Market, derivatives traded on the ATHEX Derivatives Market or securities traded on ATHEX Alternative Market. These transactions were successfully settled on 29 June and 30 June.

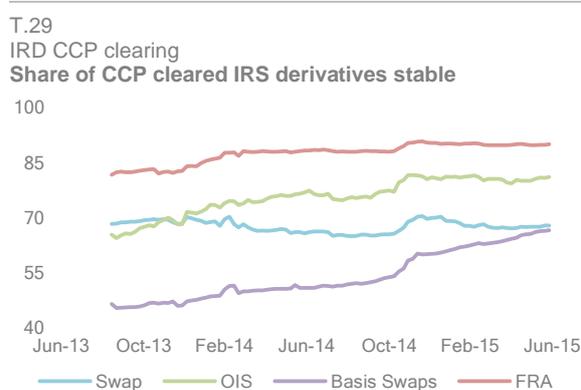
On 3 August 2015, the HCMC lifted the restrictions<sup>18</sup> introduced in June and decided to:

- re-open the ATHEX regulated market and the Multilateral Trading Facility of EN.A;
- re-open the Electronic Secondary Market HDAT, for government bonds, operated by the Bank of Greece;
- re-open ATHEXClear for all securities and derivatives instruments traded on the Greek securities and derivatives markets and the EN.A;
- re-start settlement of securities traded in Greek markets, by the Hellenic Central Securities Depository (CSD).

Redemption of mutual funds' units continued to be suspended. The prohibition of short-selling also remained. Market makers and transactions in warrants, derivatives, index derivatives and ETF related to Greek shares remained exempt from the short-selling prohibition.

## CCPs: increasing coverage

A new **CCP** was authorised in January (Athens Exchange Clearing House (AthexClear)), providing clearing services for six classes of financial instruments (debt and equity securities, equity, currency and commodity derivatives, and securities lending). Three authorised CCPs have been granted an extension to new product classes. In 1H15 16 CCPs were authorised to offer services and activities in the EU, including 13 in Continental Europe. They clear debt and equity securities, derivatives as well as repos, securities lending and collateralised deposits for more than a thousand clearing members. In June 2015, emergency measures were also taken with respect to the suspensions of clearing and settlement of transactions by ATHEX Clear and/or Hellenic Central Securities Depository CSD (T.28).



Note: OTC interest rate derivatives cleared by CCPs, % of total notional amount. Sources: DTCC, ESMA.

Notional **amounts cleared** are still dominated by derivatives and, among these, by interest rate derivatives. Overall global interest rate swap notional amounts reported to the Depository Trust and Clearing Corporation's Global Trade Repository have decreased by USD 62tn since the end of 2014. The share of cleared products over the total, however, remained stable after the increase observed in November 2014 (T.29).

## CSDs: a new regulatory environment

Regulatory initiatives, notably CSDR or Target 2 Securities (T.30), and market innovation are transforming the organisation of the **CSD industry** in the EU. Notably, an important step was taken towards reducing **settlement fails** and counterparty risk. In January 2015, a new provision entered into force requiring the settlement of transactions in transferable securities executed on trading venues to be effected at the latest on the second business day after the trading takes place.

<sup>18</sup> Hellenic Capital Market Commission, Announcement 715 and Announcement 716, 29 June 2015; Announcement 719, Announcement 721 and Announcement 722, July 2015; Announcement 725 and Announcement 726, 3 August 2015.

Notwithstanding positive and negative spikes amid lower liquidity during periods around holidays, the total value of settled transactions in the EU, as reported by the NCAs, in 1H15 remained around the same levels as in 2H14 (T.31). The occurrence of settlement fails fluctuated during 1H15 for corporate bonds in particular, probably due to intensified market sensitivity and low market liquidity (T.32).

T.30

#### Regulatory initiatives CSD regulation

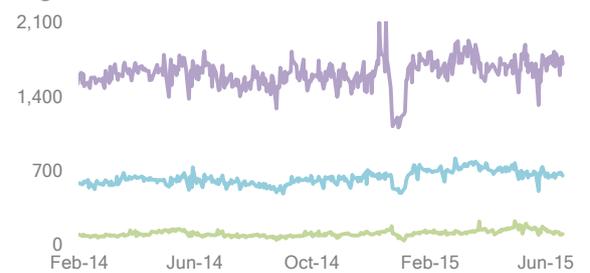
CSD regulation (Regulation (EU) No. 909/2014, published in the Official Journal on 28 August 2014 and in force since 17 September 2014) addresses important remaining barriers to a single EU post-trade market and provides a framework aimed at reinforcing the soundness and stability of securities settlements and the CSD industry. It amends Directive 98/26/EC and complements MiFID II and EMIR. Together with EMIR and MiFID II, CSDR will form a framework within which systemically important securities infrastructures (trading venues, central counterparties, trade repositories and CSDs) are subject to common rules at a European level. The new regulation has three main objectives: i) to increase the resilience of and access to CSDs by introducing a set of common rules and prudential requirements for CSDs; ii) to improve the safety and efficiency of securities settlement, in particular regarding cross-border transactions, by introducing common rules for securities settlement; iii) to harmonise settlement discipline measures – ex ante measures to prevent settlement fails, and ex post measures to address settlement fails.

#### Target2-Securities (T2S)

T2S is a project launched by the Eurosystem to create a common pan-European platform for securities settlement in central bank money to support CSDs in providing borderless securities settlement services in Europe. T2S will ensure real-time delivery versus payment and settle across borders by employing the so-called “integrated model”: both securities accounts and cash accounts will be integrated on one single IT platform, so that only one interface will be necessary between the CSDs and the T2S platform. T2S will accommodate both the market participants’ securities accounts, held at either one or multiple CSDs, and their dedicated central bank cash accounts, held with their respective national central bank. The dedicated cash accounts will be used exclusively for settlement purposes in T2S and linked to the participants’ cash accounts held in TARGET2 or another non-euro central bank real-time gross settlement (RTGS) account. Participation in the T2S initiative is on a voluntary basis. Expected benefits of T2S include enhanced post-trading efficiency via: i) advanced optimisation algorithms and straight-through processing; ii) liquidity savings due to liquidity pooling and auto-collateralisation iii) direct connectivity, i.e. the possibility for banks with large settlement volumes to have a direct network connection to the platform (under the rules and procedures defined by their CSD). Migration to T2S will take place in waves (including a contingency wave foreseen by May 2017), beginning with the first wave launched on 22 June 2015. Four central securities depositories (Bank of Greece Securities Settlement System (BOGS), Depozitarul Central (Romania), Malta Stock Exchange and SIX SIS (Switzerland)) migrated to T2S on 22 June 2015. Monte Titoli (Italy) will follow suit on 31 August 2015.

T.31

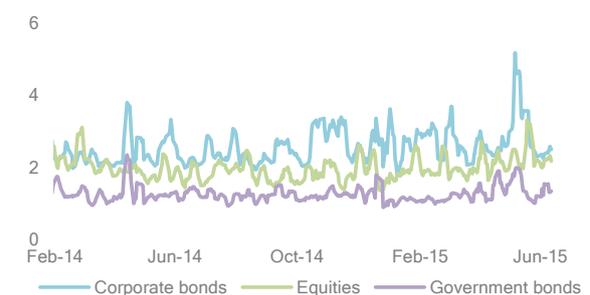
#### Settlement activity Slight fluctuation



Note: Total value of settled transactions in the EU as reported by NCAs: daily values in EUR mn for government and corporate bonds as well as equities. Free-of-payment transactions not considered. Data until 19/06/2015.  
Sources: National Competent Authorities, ESMA .

T.32

#### Settlement fails Fluctuation

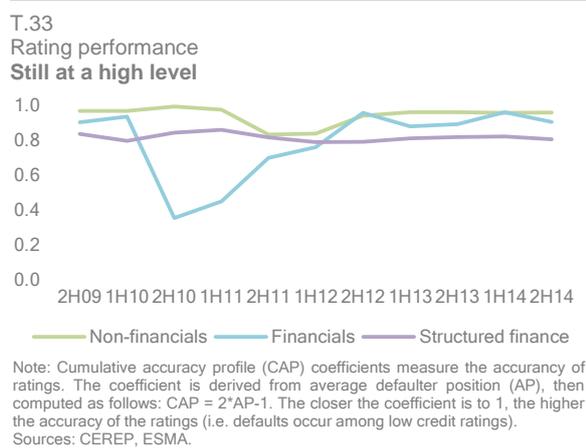


Note: Share of failed settlement instructions in EU, % of value, 5D MA. Free-of-payment transactions not considered. Cut-off date 19/06/2015.  
Sources: National Competent Authorities, ESMA .

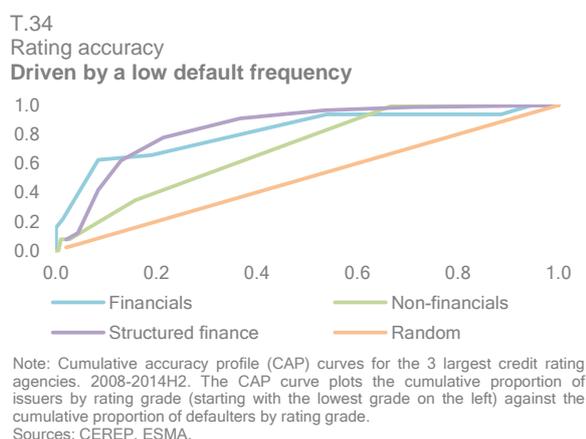
## Credit rating agencies: higher ratings accuracy

In an environment of low interest rates and heterogeneous liquidity conditions on bond markets, credit rating agencies fared relatively well during 2H14 in terms of the accuracy of their ratings (AR). On short-term horizons (one year) AR depicted the overall solid **performance of ratings** across the asset classes. AR for non-financial corporates was the highest in the last period (96.1%) followed by financials (90.5%) and structured finance (80.5%) (T.33). Such results reflect the fact that structured finance instruments have a relatively higher tendency to experience defaults in higher rating classes; moreover, the overall default frequency is also higher. In contrast, defaults by financials and non-financials have been rare. The longer the time horizon, the lower the AR typically is. This is well reflected by the 5-year (2010-2014) cumulative accuracy profile (CAP)<sup>19</sup> for the same asset classes (T.34).

<sup>19</sup> CAP is a measure of rank-ordering capability of a rating scale. It has a corresponding Accuracy Ratio (AR) measuring the area between the CAP and a “Random” curve (a 45-degree line). For the purpose of operational efficiency of CRAs, 5-year CAP and 1-year AR for three asset classes (non-financial corporates, financials and



The corresponding five year AR for non-financial corporates, financials and structured finance is 63.1%, 40.6% and 68.4% respectively. The shape of CAP and low value of AR for financials is driven by high incidence of defaults in the highest rating classes over the time horizon.



The results are, however, heavily influenced by the frequency of defaults themselves which has been low (26 recorded defaults in the five year sample). Like financials, the sample of non-financial defaults has been small (32 compared to 1,042 recorded for structure finance) over the last five years.

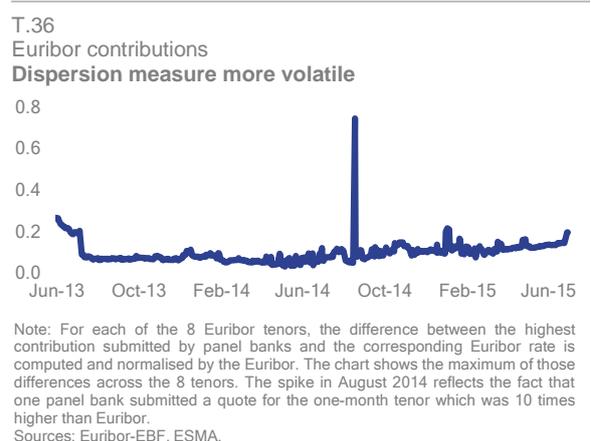
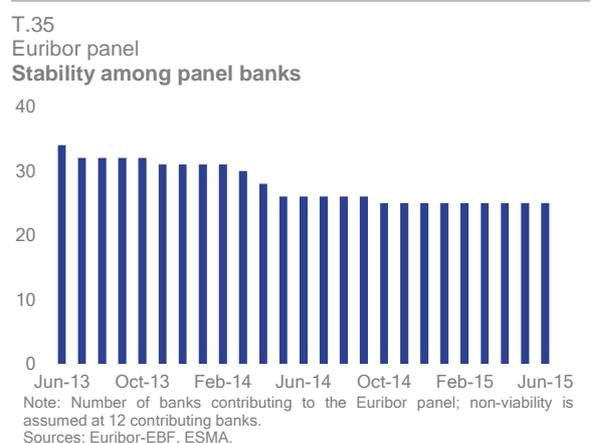
### Financial benchmarks: enhanced governance

The **continuity of financial benchmarks** in the EU remained a key concern in 1H15. Administrators of key reference rates made significant progress in enhancing governance, quality, methodology and accountability of their benchmarks. The legislative process on an EU legal framework for benchmarks is ongoing, as is the conduct of reviews aimed at informing the regulators of the risks posed by benchmarks

structured finance) are presented. The reliability of these measures is highly dependent on occurrence of defaults.

(T.38). The European Parliament's Economic Affairs Committee voted in favour of a draft EU law aimed at improving administrators' governance and methodologies, which will introduce for the first time EU-wide direct supervision of benchmarks such as interbank reference rates and other indices. Meanwhile, in the EU and elsewhere, investigations into potential manipulations of interbank interest reference rates, derivatives prices, oil price benchmarks and exchange rates are ongoing. Authorities also monitor submission patterns to address data quality concerns.

Regarding benchmark panels, in January the Eurepo index was discontinued with no significant market impact. The **Euribor panel** remained stable between October 2014 and June 2015, with 25 banks composing the panel (T.35).



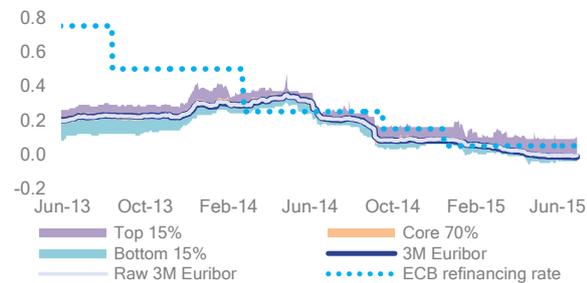
**Dispersion** of submitted quotes to the Euribor has increased since July 2014. Potential explanations are the drop in the level of inter-bank offered rates and increased volatility in money markets in recent months. The heightened volatility of dispersion at the beginning of the reporting period is due to higher levels of spreads in the panel banks' contributions to the one-week tenor. In 1H15,

increased dispersion of submitted rates was observed among panel banks, also for the three-month tenor. This is because few banks reported positive rates, while most reported all-time lows, even negative rates, especially for the one-week tenor segment (T.36).

Enhanced governance and submission rules at administrator and panel bank level offer some assurance that the quality and reliability of contributions has nevertheless improved. Few banks reported positive rates despite a downward trend leading the majority of panel banks to quote all-time low rates – indeed, even negative rates in a few cases. For the calculation of Euribor, the calculation agent eliminates the top and bottom 15% of submitted rates in order to reduce the influence of an outlier contribution. The gap between the actual Euribor and the non-trimmed average rate for the three-month tenor has narrowed continuously since 2H12. Low volatility in the underlying rates tends to reduce the dispersion of individual quote submissions and hence the gap between Euribor and its non-trimmed counterfactual (T.37).

T.37

Dispersion of submission levels

**Stable or slight drop**

Note: Dispersion of 3M Euribor submissions, in %. The "Raw 3M Euribor" rate is calculated without trimming the top and bottom submissions of the panel for the 3M Euribor.

Sources: Euribor-EBF, ESMA.

On average in 1H15, 82% of banks decided to keep to their previous-day submission, while 6% decided to raise their quote and 12% chose to lower it. Overall, the reporting of lower rates from day to day around January and March 2015 translated into a marked decrease in the levels of the three-month Euribor. Finally, for the first time since November 2013, the three-month Euribor fell to lower levels than the ECB interest rate for main refinancing operations (A.142).

T.38

Reform under-way

### Review of the implementation of IOSCO's Principles for Financial Benchmarks

IOSCO published a Review of the implementation of its Principles for Financial Benchmarks. IOSCO's Review is based purely on administrators' self-assessments of their compliance with the Principles. The majority of administrators stated that they started implementing at least some of the Principles; many reported the analysis of benchmark design. Some stated that they had moved from a benchmark based on submissions to one anchored in transactions. Around half of the administrators stated that they had applied proportionality in their implementation of the Principles. Administrators of equity benchmarks reported the highest level of compliance, with most having published a statement of compliance. Administrators of fixed income and commodity benchmarks exhibited the highest reported levels of transition to new administrators with less than half being aligned with the Principles.

### EU legal framework for benchmarks

The development of an EU legal framework for benchmarks is in progress. The September 2013 EU Commission "Proposal for a Regulation on indices used as benchmarks in financial instruments and financial contracts" states that:

- benchmark administrators should be regulated, and supervised by national competent authorities, and, for critical benchmarks, by colleges of national supervisors;
- all entities calculating benchmarks or contributing information used in their calculation should be required to tighten up their governance and scrutiny procedures, in particular to prevent conflicts of interest;
- data for the calculation of benchmarks would have to be publicly available, as well as information on the intended purposes of each benchmark measure;
- banks would have to assess the suitability of the benchmarks they use before entering into any financial contract, such as a mortgage.

Following deliberations in Parliament and the Council, tripartite negotiations are expected to start in 2H15 towards a final compromise text and adoption of the Regulation.

# Risks

# ESMA Risk Dashboard

R.1

## ESMA risk assessment

Business area risks	Risk categories				Risk sources		
	Risk	Risk	Change	Outlook	Change		
Overall ESMA remit	Orange	Liquidity	Orange	→	↗	Macroeconomic environment	→
Systemic stress	Yellow	Market	Red	↗	→	Low interest rate environment	→
Securities markets	Red	Contagion	Orange	→	→	EU sovereign debt markets	↗
Investors	Yellow	Credit	Red	→	→	Funding patterns	↗
Infrastructures and services	Yellow	Operational	Yellow	→	→	Market functioning	→

Note: Assessment of main risks by business areas for markets under ESMA remit since last assessment, and outlook for forthcoming quarter. Assessment of main risks by risk categories and sources for markets under ESMA remit since last assessment, and outlook for forthcoming quarter. Risk assessment based on categorisation of the ESAs Joint Committee. Colours indicate current risk intensity. Coding: green=potential risk, yellow=elevated risk, orange=high risk, red=very high risk. Upward arrows indicate an increase in risk intensities, downward arrows a decrease, horizontal arrows no change. Change is measured with respect to the previous quarter; the outlook refers to the forthcoming quarter. ESMA risk assessment based on quantitative indicators and analyst judgement.

Systemic stress eased in 2Q15 but remained volatile, signalling continued underlying market uncertainty. On the one hand, lower levels of systemic stress may be related to improvements in the EU economic outlook and sustained market confidence in an environment of low oil prices, expansionary monetary policy and weaker exchange rates for euro. On the other hand, concerns surrounding the mispricing of risks, excessive risk taking, deteriorating liquidity, potential amplification of market distortions and risks to financial stability intensified. Underlying drivers were the continued low interest rate environment and still fragile – albeit improved – economic conditions, as well as expectations of monetary policy divergence at an international level and volatile exchange rates.

## Risk summary

Risk levels in the markets under ESMA remit remain high, reflecting elevated risks for investors, infrastructures and services, and the financial system at large, as well as high risks in the securities markets. The latter corresponds to our assessment of market risks which we currently consider very high, following a sustained build-up in the preceding quarters. Our credit risk assessment remains unchanged at very high levels. While still at a lower level, liquidity risk is likely to intensify further going forward, while contagion and operational risk remain unchanged at high and elevated, respectively. Key risk sources remain: the improved but uneven economic outlook, ultra-low interest rates, the fiscal crisis in the euro area, funding patterns, and potential weaknesses in market functioning.

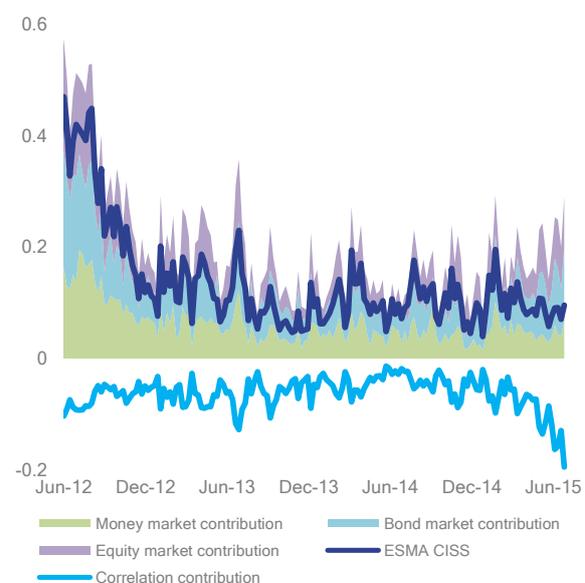
**Systemic stress** decreased at the beginning of 2Q15, only to tick up again slightly at the end of the quarter (R.2). Bond and money markets were the main drivers of the fluctuations in systemic risk. The commonalities in sub-indices were reflected in an increase in the correlation contribution as well as the total of the different sub-indices. To avoid an overestimation of

systemic stress, the composite index therefore corrects for the observed commonality.

R.2

Systemic stress indicator

### Systemic stress lower in aggregate but volatile



Note: ESMA version of the ECB-CISS indicator measuring systemic stress in securities markets. It focuses on three financial market segments: equity, bond and money markets, aggregated through standard portfolio theory. It is based on securities market indicators such as volatilities and risk spreads.

Sources: ECB, ESMA.

## Risk sources

**Macroeconomic environment:** In the EU, macroeconomic conditions improved slightly, probably as a result of the combined effect of additional monetary policy support and still-low oil prices. Growth, however, remained uneven<sup>20</sup> and concerns over recent sovereign debt developments deepened. At a more global level, emerging economies have been hit by both low commodity price dynamics and increasingly volatile exchange rates, with also noticeable effects on capital flows. Overall, concerns relating to vulnerabilities in emerging financial markets intensified. Markets anxiously followed the rapid price decline on China's equity market and subsequent emergency measures implemented by the authorities, but no significant spill-overs were observed in EU markets.

**Low-interest-rate environment:** To counteract deflationary risks and keep the money market liquid, monetary policy measures and low interest rates were maintained in the Euro Area. This contributed to strong market valuations across key parts of the securities markets. For several euro zone countries, sovereign debt traded at negative nominal yields. Indeed, in several countries sovereign bond yields were also negative in real terms, despite the prevailing low inflation environment. Such a situation may have unintentional negative consequences, including excessive risk-taking or capital misallocation. Signs of intensified risk perceptions remained. Market clustering was observed for sovereigns amid significant dispersion in yield correlations, driven by several more vulnerable countries, reflecting market concerns about national developments.

**EU sovereign debt markets:** Renewed concerns surfaced in 2Q15 mounting at the end with regard to the fiscal situation in the euro area and the ensuing political deliberations on Greece. Towards the end of the reporting period the situation worsened, sparking higher securities market volatility but having no extensive price impact. At the end of June, the Greek government closed large parts of its domestic financial system, including bank and market operations. In this context the Hellenic Capital Markets Commission introduced a series of emergency capital market measures including the suspension of trading in all securities, the redemption of units in mutual funds and clearing

and settlement, and including the temporary prohibition of net short positions. While these measures were unprecedented in the EU single financial market in terms of their extent, market reaction to their imposition was limited and no systemically relevant development was observed.

**Funding patterns:** In a context of moderate bank lending, market-based financing has continued to grow. In April and May 2015, IG and HY issuance was EUR 98.3bn and EUR 19bn respectively (EUR 24bn and EUR 10bn more than same period in 2006). Issuance, however, slowed at the very end of 2Q15, probably in response to recent events in the EU. Leverage ratios increased, as did volatilities in returns in several fund segments (R.22). In a market environment of this kind substantial imbalances may arise as the risk of portfolio rebalancing and liquidity risk intensify.

**Market functioning:** Systems resilience remained a key concern as demonstrated by a system outage at one of the most important providers of real-time financial information. Benchmark manipulation continued to be under supervisory focus with new developments related to the enforcement of rules and good conduct. The events associated with the lifting of the CHF/EUR cap at the beginning of the year also had notable repercussions on retail investors, especially with regard to mortgage loan denomination. This raised concerns over the conduct of financial institutions, in particular in terms of transparency and risk disclosure. Moreover, the unprecedented emergency market measures taken in Greece in June 2015 and their subsequent lifting in August 2015 were carefully monitored.<sup>21</sup> The international dimension of trading and the interconnectedness among financial markets makes events like this of crucial interest from a supervisory point of view.

## Risk categories

**Market risk – very high:** We currently consider market risk to be very high, following a sustained build-up in the preceding quarters. The solid EU equity market performance in 2Q15 raised concerns related to excessive asset valuation, as search for yield continued to be sustained by historically low interest rates. Volatility, abated in

<sup>20</sup> EU Commission, European Economic Forecasts, Spring 2015.

<sup>21</sup> Hellenic Capital Market Commission, Announcement 715 and Announcement 716, 29 June 2015; Announcement 719, Announcement 721 and Announcement 722, July 2015; Announcement 725 and Announcement 726, 3 August 2015.

1Q15, increased in 2Q15 especially at the end of the quarter, as markets priced in the uncertainty linked to the sovereign debt developments in the Euro Area. In EU sovereign bond markets, yields remained at low levels. Signs of mounting market concerns, however, surfaced at the end of the quarter as strong fluctuations in valuations were observed in bond markets. Sovereign yields broadly increased both in core countries (e.g. German Bunds) and in more vulnerable economies (R.8). Bond market volatilities fluctuated significantly (R.6). These movements were related partly to higher than expected inflation figures and partly to increasing concerns about low secondary market liquidity and the situation around Greece. Notwithstanding this high market sensitivity, risk appetite persisted. Risk premia for corporate bonds remained low, although they did increase at the end of the quarter. In this scenario, increasing variability in the foreign exchange market deepens concerns over materialisation of the above risks (R.7). Overall, the potential for disorderly unwinding of market imbalances intensified and may continue to do so depending most importantly on monetary policy stances in key economies.

**Liquidity risk – high:** In 2Q15, liquidity pressures remained elevated. The equity illiquidity index fluctuated significantly around the long term average rising at the end of 2Q15 (R.4). Bid-ask spreads for sovereigns remained broadly stable, but increased for more vulnerable countries at the end of 2Q15, probably due to the heightened uncertainty related to recent developments in the Greek situation (R.9). Volatilities fluctuated across markets, particularly in fixed income markets (R.6). In 1H15, thin liquidity and the associated risks were at the centre of debate, both among market participants and regulators. Structural market changes may have modified costs and incentives for market makers in the provision of liquidity services, with market based funding intermediation assuming an increasing role. Such developments are a source of apprehension especially in an environment of sustained flows to riskier investments and increasing leverage among various fund types (R.23). The potential for risk reassessments and portfolio rebalancing remained significant.

**Contagion risk – high:** Signs of market clustering were observed (R.12, R.13). Dispersion was high for correlations in sovereign yields, led by some peripheral countries, reflecting heightened concerns around the recent developments in EU sovereign debt markets. For the hedge fund

sector, intra-sector contagion between hedge funds remained low in 2Q15, both for funds balancing the sector's performance trend and for those reinforcing it (R.26). Simultaneously, the sector's performance dispersion increasingly impacted on individual fund performances, presumably mainly because higher exposure to volatility made more funds vulnerable. Looking at the financial system overall, the likelihood increased of systemic effects materialising, especially in the presence of cross-holdings between asset managers and banking institutions. Furthermore, low liquidity can exacerbate run risks for investment funds, especially in the event of liquidity mismatches between the assets invested in and shares issued.

**Credit risk – very high:** Sovereign and corporate debt issuance was limited in 2Q15 with the exception of ABS and MBS (R.14). Signs of higher risk perceptions emerged in the fixed income market, associated with increased uncertainty about debt and fiscal sustainability. Within the fund sector, leverage broadly increased. This created unease, especially in an environment of sustained volatility (R.22) and increasing flows into more risky investments. The heightened risk sensitivity is also mirrored in the high correlation between corporate and sovereign bond yields (R.13).

**Operational risk – elevated:** Operational risk, including technology and conduct risks, is an area of increasing supervisory and regulatory attention. Recent events have again highlighted the importance of safeguarding the efficiency and integrity of market infrastructures and of ensuring correct market practices. At the beginning of 2Q15, several markets were significantly affected by the temporary failure of one major financial market data provider, whose outage had a considerable impact on trading. The lack of information flowing into the market caused palpable delays in trading across market segments. In addition to technical weaknesses, risks from cyber-attacks on financial systems are coming under increasing scrutiny. Besides monitoring and prevention, the strengthening of business continuity is another key concern.<sup>22</sup> In terms of financial benchmarks, the departure of a bank from the Euribor panel in May interrupted the panel stability achieved since issuance of the EBA-ESMA principles and other policy initiatives.

<sup>22</sup> OICV-IOSCO, "IOSCO consults on business continuity plans for trading venues and intermediaries", IOSCO/MR/15/2015, April 2015.

# Securities markets

R.3

## Risk summary

Risk level



Risk change from 1Q15



Outlook for 3Q15



## Risk drivers

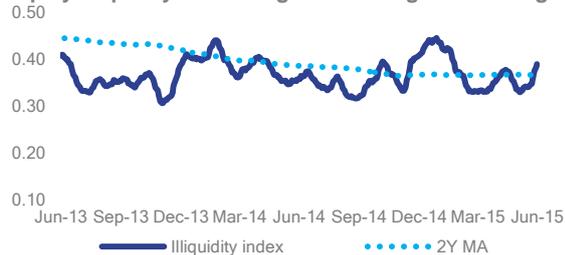
- Low-interest-rate environment and high market asset valuations
- Significant market risk sensitiveness
- EU fiscal and political developments, geopolitics
- EM financial market performance, growth

Note: Assessment of main risk categories for markets under ESMA remit since past quarter, and outlook for current quarter. Systemic risk assessment based on categorisation of the ESA Joint Committee. Colours indicate current risk intensity. Coding: green=potential risk, yellow=elevated risk, orange=high risk, red=very high risk. Upward arrows indicate a risk increase, downward arrows a risk decrease. ESMA risk assessment based on quantitative indicators and analyst judgement.

R.4

## Equity illiquidity

### Equity illiquidity fluctuating around long-term average

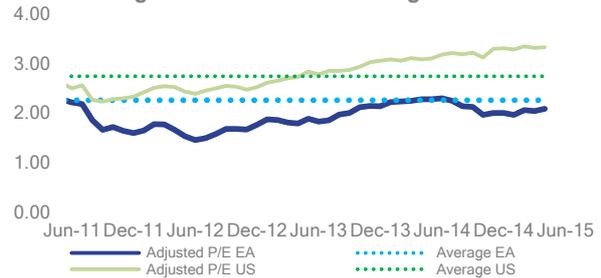


Note: Composite indicator of liquidity in the equity market for the Eurostoxx 50 constituents, computed by applying the principal component methodology to six input liquidity measures (Amihud illiquidity coefficient; bid-ask spread, Hui-Heubel ratio, turnover value, inverse turnover ratio, MEC). The indicator range is between 0 (higher liquidity) and 1 (lower liquidity).  
Sources: Datastream, ESMA.

R.5

## Equity valuation

### Price-earnings ratio stable or increasing

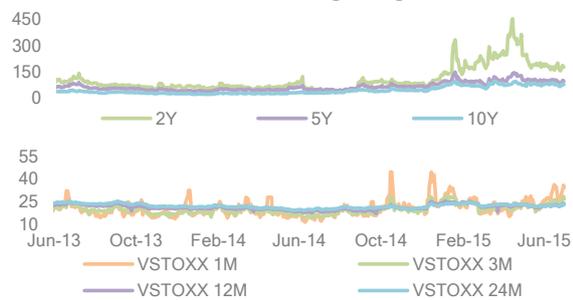


Note: Monthly earnings adjusted for trends and cyclical factors via Kalman filter methodology based on OECD leading indicators; units of standard deviation; averages computed from 8Y. Data available until the end of April 2015.  
Sources: Thomson Reuters Datastream, ESMA.

R.6

## Financial instruments volatilities

### Short term volatilities fluctuating at high levels



Note: Top panel reports 1M forward Euro-Euribor swaptions implied volatilities; low panel reports Eurostoxx50 implied volatilities measured as indices, %.  
Sources: Thomson Reuters Datastream, ESMA.

R.7

## Foreign exchange volatilities

### Mounting uncertainty

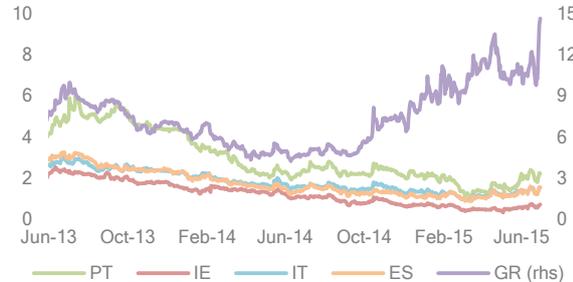


Note: Implied volatilities for continuous options on exchange rates traded in the Chicago Mercantile Exchange. 5Y-MA EUR is the 5 years moving average for the implied volatility for the option on the USD / EUR exchange rate.  
Sources: Thomson Reuters Datastream, ESMA.

R.8

## Sovereign risk premia

### Increases for vulnerable countries

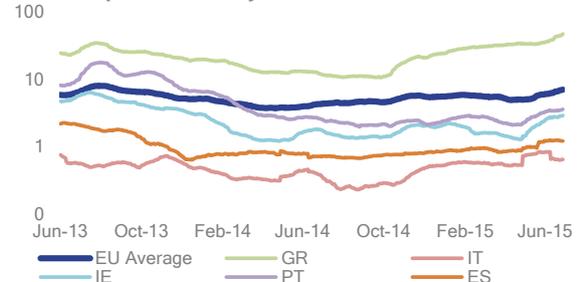


Note: Selected 10Y EA sovereign bond risk premia (vs. DE Bunds); percentage points.  
Sources: Thomson Reuters Datastream, ESMA.

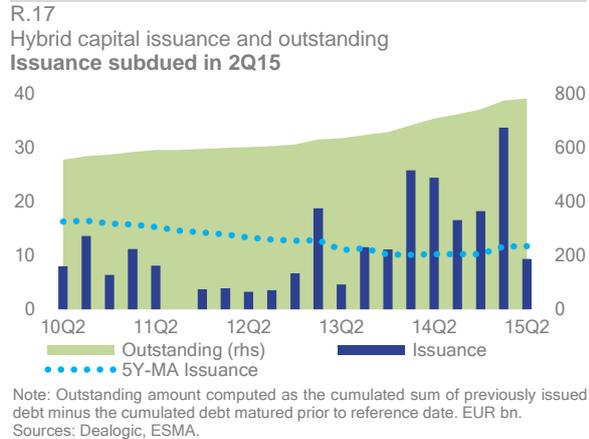
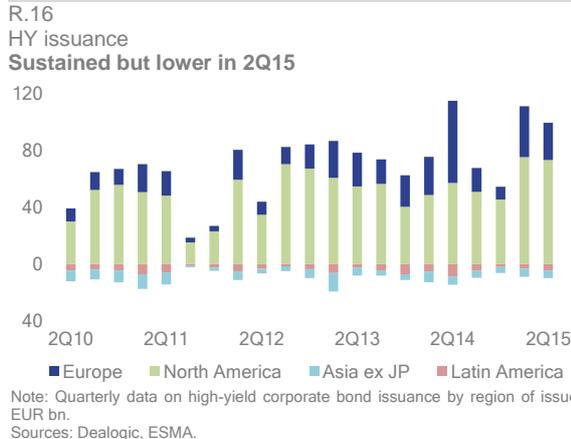
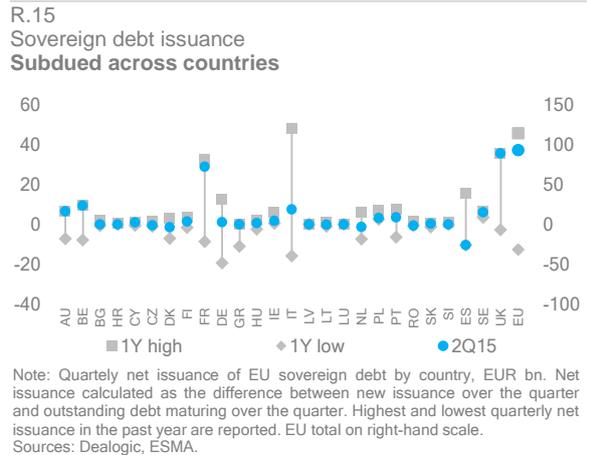
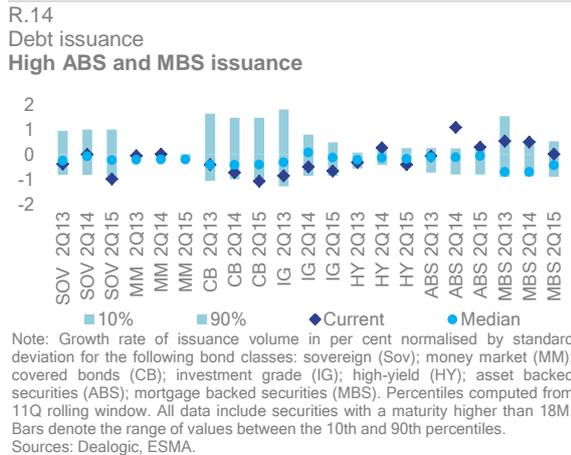
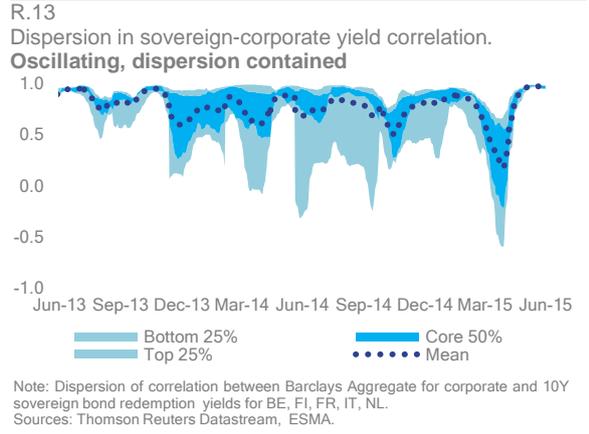
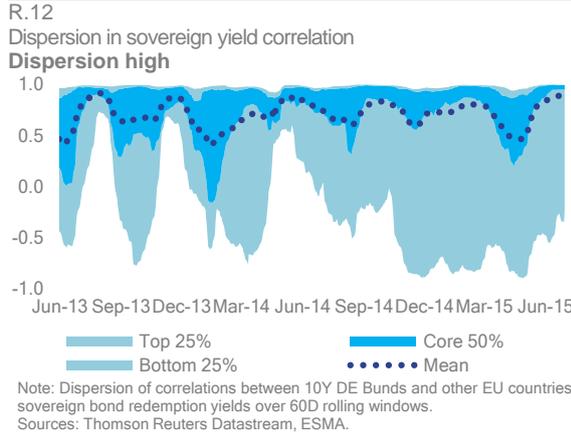
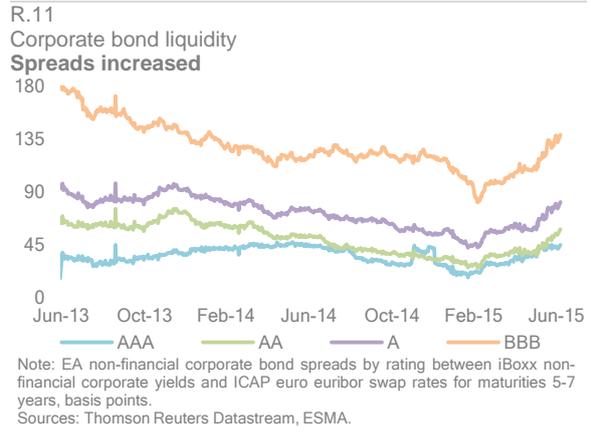
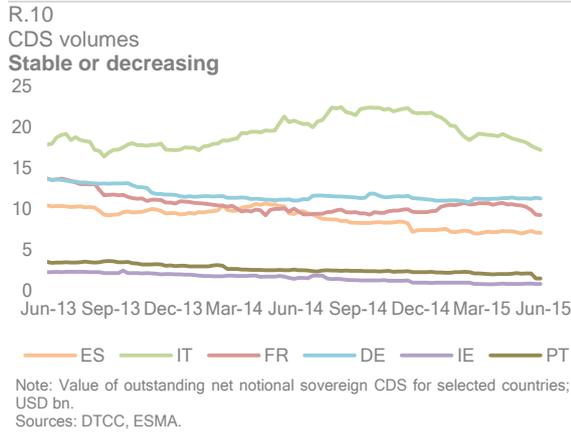
R.9

## Sovereign liquidity

### Bid-ask spreads broadly stable



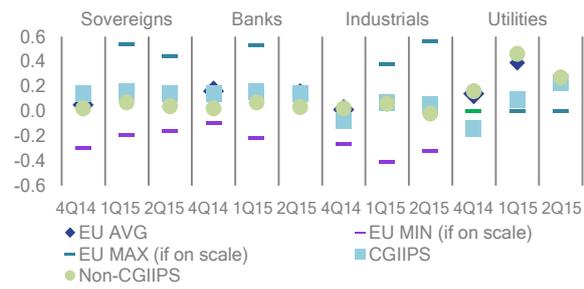
Note: Liquidity measured as difference of ask and bid yields for 10Y sovereign bonds, in basis points. EU Average computed using data for 22 countries. Logarithmic scale.  
Sources: Bloomberg, ESMA.



R.18

Debt maturity

**Stable or lengthened maturity profiles**

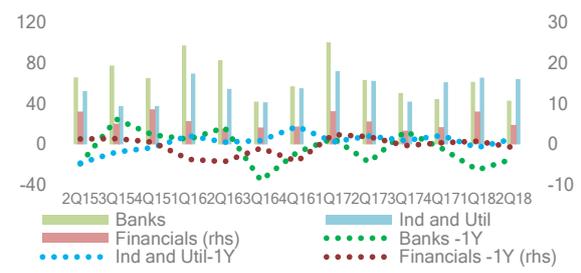


Note: Quarterly change in maturity of outstanding debt by sector and country groups in the EU, years. CGIIPS include CY, GR, IT, IE, PT and ES. Min and Max may not be displayed where they are out of the scale provided in the graph. Sources: Dealogic, ESMA.

R.19

Debt redemption profile

**Reduced medium-long term redemption profiles**



Note: Quarterly redemptions over a 3Y-horizon by European private corporates (banks, non-bank financials, and industrials and utilities), current and change over last year (dotted lines), EUR bn. Excluding bank redemptions to central banks. Sources: Dealogic, ESMA.

# Investors

R.20

## Risk summary

Risk level ●

Risk change from 1Q15 ➔

Outlook for 3Q15 ➔



## Risk drivers

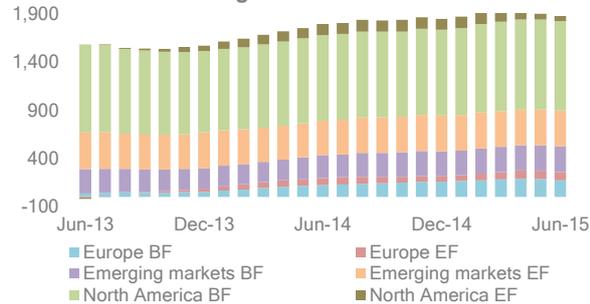
- Elevated risk as role of asset managers in capital markets increases
- Increasing risk outlook as risk aversion is low and search for yield strategies sustained
- Increased leverage and volatilities of returns across fund types

Note: Assessment of main risk categories for markets under ESMA remit since past quarter, and outlook for current quarter. Systemic risk assessment based on categorisation of the ESA Joint Committee. Colours indicate current risk intensity. Coding: green=potential risk, yellow=elevated risk, orange=high risk, red=very high risk. Upward arrows indicate a risk increase, downward arrows a risk decrease. ESMA risk assessment based on quantitative indicators and analyst judgement.

R.21

## Cumulative investment fund flows

### Inflows for funds with global or EU investment focus



Note: Cumulative net flows into bond and equity funds (BF and EF) over time since 2004 by regional investment focus, EUR bn. Sources: Thomson Reuters Lipper, ESMA

R.22

## RoR volatilities by fund type

### Volatility fluctuation

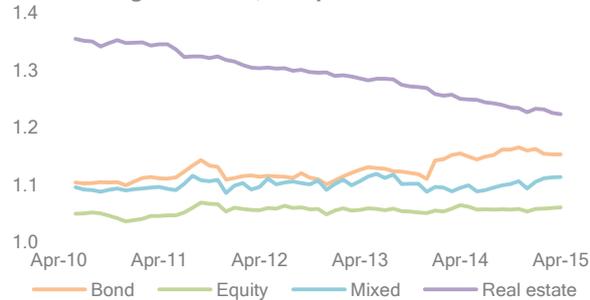


Note: Annualised 40D historical return volatility of EU domiciled mutual funds, %. Sources: Thomson Reuter Lipper, ESMA.

R.23

## Leverage by fund type excluding HFs

### Stable or slight increase, except for real estate

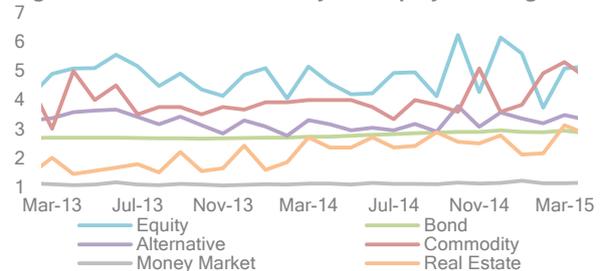


Note: EA Investment funds' leverage by fund type computed as the AuM/NAV ratio. Sources: ECB, ESMA.

R.24

## Retail fund synthetic risk and reward indicator

### Highest risks in the commodity and equity fund segments

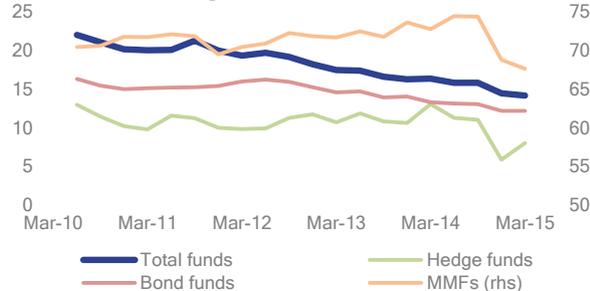


Note: The calculated Synthetic Risk and Reward Indicator is based on ESMA SRRI guidelines. It is computed via a simple 5 year annualised volatility measure which is then translated into categories 1-7 (with 7 representing higher levels of volatility). Sources: Thomson Reuters Lipper, ESMA.

R.25

## Financial market interconnectedness

### Stable or decreasing

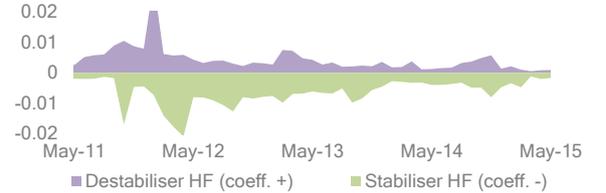


Note: Loan and debt securities vis-à-vis MFI counterparts, as a share of total assets. EA investment funds and MMFs, in %. Sources: ECB, ESMA.

R.26

## Hedge fund interconnectedness

### HF interconnectedness at low levels.



Note: Systemic stress indicator based on products of fractions of regressions with positive (negative) estimated coefficient of individual fund return's impact on average return of sector significant at 99% level and respective average estimators. Coefficients stem from VAR models regressing individual fund returns on lags and general financial markets indices. Measures aggregated across individual regressions. Destabiliser HF (Stabiliser HF) is the fraction of EU hedge funds having a positive (negative) impact on future hedge-fund industry returns. Data until May 2015. Sources: Barclayhedge, Eurekahedge, TASS, HFR, ESMA.

# Infrastructures and services

R.27

## Risk summary

Risk level ●  
 Risk change from 1Q15 ➔  
 Outlook for 3Q15 ➔

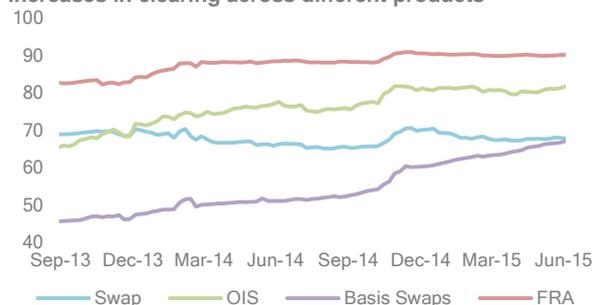
## Risk drivers

- Operational risks, including system outages, interruption of services, cyber-attacks
- Conduct risk, including intentional or accidental behaviour by individuals, market abuse
- Systemic relevance of individual operations, including size, market share, complexity of operations, interconnectedness with other infrastructures or financial activities and entities, substitutability of systems

Note: Assessment of main risk categories for markets under ESMA remit since past quarter, and outlook for current quarter. Systemic risk assessment based on categorisation of the ESA Joint Committee. Colours indicate current risk intensity. Coding: green=potential risk, yellow=elevated risk, orange=high risk, red=very high risk. Upward arrows indicate a risk increase, downward arrows a risk decrease. ESMA risk assessment based on quantitative indicators and analyst judgement.

R.28

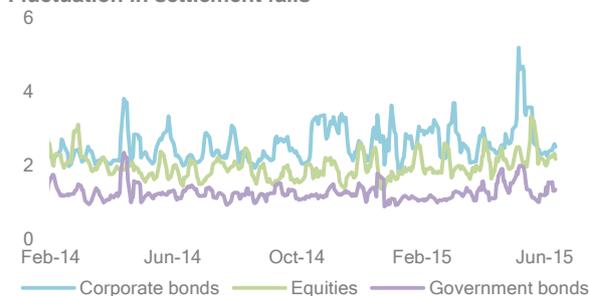
## IRS clearing Increases in clearing across different products



Note: OTC interest rate derivatives cleared by CCPs, % of total notional amount. Sources: DTCC, ESMA.

R.29

## Settlement fails Fluctuation in settlement fails



Note: Share of failed settlement instructions in EU, % of value, 5D MA. Free-of-payment transactions not considered. Cut-off date 19/06/2015. Sources: National Competent Authorities, ESMA.

R.30

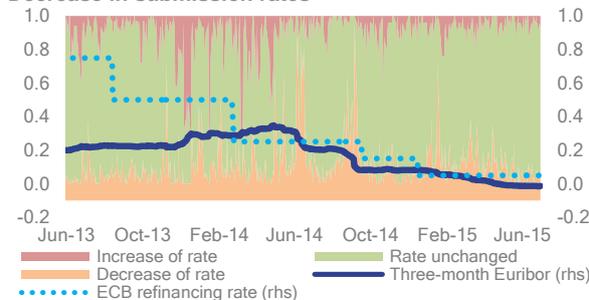
## Euribor contribution: Dispersion Slight increase in volatility



Note: Normalised difference in percentage points between the highest contribution submitted by panel banks and the corresponding Euribor rate. The chart shows the maximum difference across the 8 Euribor tenors. The increase since 2013 is linked to technical factors such as low Euribor rates. The spike in August 2014 reflects the fact that two panel banks submitted respectively a quote for the two-week tenor which was 7 times higher than Euribor and a quote for the 1M tenor which was 10 times higher than Euribor. Sources: Euribor-EBF, ESMA.

R.31

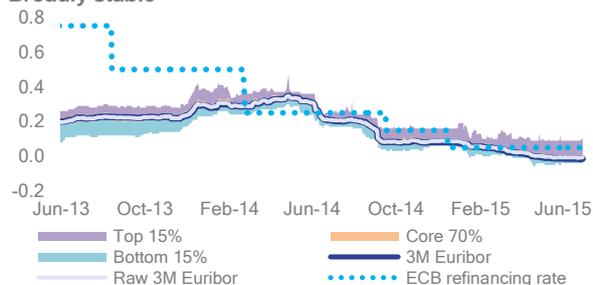
## Euribor – Variation in daily changes Decrease in submission rates



Note: Number of banks changing their three-month Euribor submission from day to day, %. Sources: Euribor-EBF, ESMA.

R.32

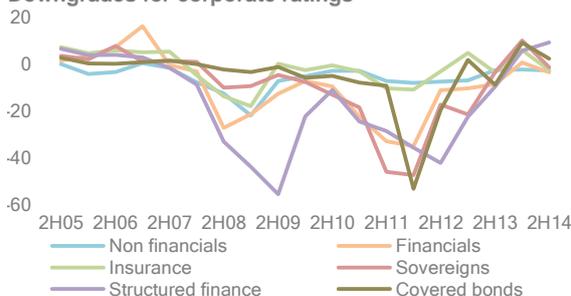
## Dispersion of submission levels Broadly stable



Note: Dispersion of 3M Euribor submissions, in %. The "Raw 3M Euribor" rate is calculated without trimming the top and bottom submissions of the panel for the 3M Euribor. Sources: Euribor-EBF, ESMA.

R.33

## Rating changes Downgrades for corporate ratings



Note: Drift of ratings from all credit rating agencies by asset class computed as percentage number of upgrades minus percentage number of downgrades, %. Sources: CEREP, ESMA.

# Vulnerabilities

## Financial stability

# Measuring the shadow banking system – a focused approach

Contact: jean-baptiste.haquin@esma.europa.eu<sup>1</sup>

Following the original commitment of the G20 leaders in 2011, international policy makers have been engaged, through the Financial Stability Board (FSB), in a global project to monitor and measure shadow banking, and to adapt the regulatory framework to better address shadow banking risks. The shadow banking system is hard to define and subject to data limitations: bridging the existing gaps is one aim of the new regulations (e.g. AIFMD, SFT regulation) which provide for the collection of data. On the basis of the methodology initially designed by the FSB, supervisors and regulators have also developed shadow banking metrics aimed at improving the monitoring of market trends and risks. The following paper contributes to this effort and proposes indicators to identify entities at the core of the shadow banking system. This includes the design of a simple liquidity risk indicator for bond funds: compared to other types of funds, bond funds are those more likely to perform liquidity and maturity transformation, thus being exposed to potential mismatches. Our indicator, however, shows a trade-off at fund level between liquidity and maturity transformation (i.e. funds generally compensate long term exposure by holding highly liquid assets). Eventually, this indicator helps to differentiate between funds performing traditional asset management activities and those which engage in bank-like activities.

## The shadow banking system

The definition and size of shadow banking is subject to ongoing discussion within markets, the regulatory community and in academia as well.<sup>2</sup> The FSB has been carrying out extensive work on the topic and developed a widely used definition according to which shadow banking is considered as “credit intermediation that involves entities and activities fully or partially outside the regular banking system”.<sup>3</sup> In a narrower definition, it focuses more specifically on entities that raise:

- systemic risk concerns, in particular by providing maturity and liquidity transformation, leverage and credit risk transfer;
- regulatory arbitrage concerns.

This definition may include ad hoc entities, such as securitisation vehicles or conduits, and money market funds, as well as investment funds that provide credit or are leveraged, such as certain hedge funds. Certain insurance or reinsurance undertakings that issue or

guarantee credit products may also be included, provided that risks related to these products are not covered in their own regulation. Shadow banking also includes activities, in particular securitisation, securities lending and repurchase transactions, which constitute an important source of funding for financial institutions.

## Measuring shadow banking: activity-based and entity-based approaches

Based on these definitions the FSB established a dual approach to map and monitor shadow banking risks, either coming from financial institutions (“entity-based approach”) or from their activities (“activity-based approach”).

- The entity-based approach consists of aggregating balance sheet data of financial intermediaries taken from national financial accounts.<sup>4</sup> In an initial step, the “broad measure” includes all entities except banks and insurances. The aim is to cover all the areas where shadow banking-related risks to the financial system might potentially arise. In a second step, the focus is narrowed down to entities involved in credit intermediation activities that have the potential to pose systemic risk. It is constructed by excluding entities that have no direct relation to credit intermediation

<sup>1</sup> This article was authored by Jean Baptiste Haquin, Massimo Ferrari, Giuseppe Loiacono.

<sup>2</sup> A number of definitions for shadow banking have been proposed and are used in regulatory analytical work in this area. Debate focuses around two dimensions in particular: the perimeter, which institutions and activities are to be included in the definition; and the method, devising institutional and activity-based assessment methodologies.

<sup>3</sup> Financial Stability Board, “Shadow Banking: Strengthening Oversight and Regulation” 2011.

<sup>4</sup> Examples of activity-based approach in FSB, 2014.

“Global Shadow Banking Monitoring Report”; ECB, Financial Stability Review, May 2015.

(e.g. equity investment funds) or that are already prudentially consolidated into banking groups.

- The activity-based approach<sup>5</sup> aims at capturing bank-like activities taking place outside of the banking sector. Such activities include in particular SFTs, securitisation and MMF activities (V.1). Although the types of risk embedded in shadow banking activities are similar to those of shadow banking entities, the intrinsic differences between financial markets and financial institutions make this approach complementary, so that all segments of the shadow banking system are covered. In addition entities which are not captured under the entity-based approach but engage in some shadow banking activities are captured with the activity-based approach (e.g. insurance companies engaging in SFTs).

#### V.1

##### Shadow banking activities: Risks

Repos and securities lending generate interconnections in the financial system and allow asset managers to perform leverage, maturity and liquidity transformation. Banks benefit from on-balance sheet netting, which reduces capital requirements and lowers the cost of funding, either by lending their own assets or by re-pledging the collateral received from other sources. The use of collateral in the repo market can generate instability since the use of leverage may force the borrower to sell assets massively, even if only confronted with a small change in price. Not only lenders, but also borrowers, can trigger a run if they fear that the lender may not be able to return the collateral. Securities lending transactions also tend to facilitate maturity and liquidity transformation by market intermediaries. The re-use of collateral creates collateral chains and interconnectedness.

Securitisation products such as ABCP and ABS were at the root of the 2007 financial crisis. Investors gain exposure to the underlying assets, namely loans, while issuers obtain funding and, under certain conditions, can deconsolidate the exposure and reduce capital requirements. Thus, there is scope for arbitrage and flawed credit transfer, although the regulation has been dramatically strengthened to limit abuses (e.g. CRD3, CRA3). In addition, securitised products can generate maturity or liquidity transformation. For example, ABCP are generally short term commercial papers backed by short term assets, but they have also been used for financing long term assets.

## Shadow banking activities in the EU

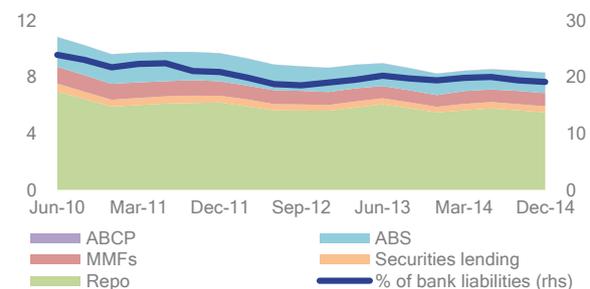
ESMA has drawn on its collaboration with the ESRB and on the FSB methodology to monitor shadow banking activities and shadow banking entities.

According to the activity-based approach, the size of the EU shadow banking system has been

shrinking since 2H10 and amounts to approximately 19% of banks liabilities. Repos are at the core of the EU shadow banking system with a size estimated at EUR 6tn (V.2).

#### V.2

##### EU shadow banking liabilities Decline across asset classes

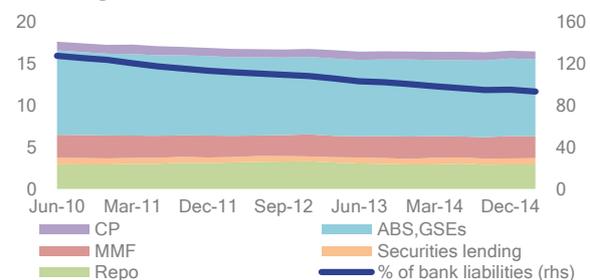


Note: Size of shadow banking system proxied by amounts of ABS and ABCP outstanding, size of the EU repo market and EU securities on loan (collateralised with cash), and liabilities of MMF, in EUR tn. % of bank liabilities on rhs. Sources: ECB, AFME, ICMA, Markit Securities Finance, ESMA.

In comparison, the US shadow banking system is more developed, although it has been steadily declining. At the end of 2014, it represented 16.5tn USD and 95% of bank liabilities, down from a peak of 170% in 2007. In contrast to the EU, the ABS segment still forms the bulk of the US shadow banking system, totalling 9.3tn USD (V.3).

#### V.3

##### US shadow banking liabilities Declining but substantial



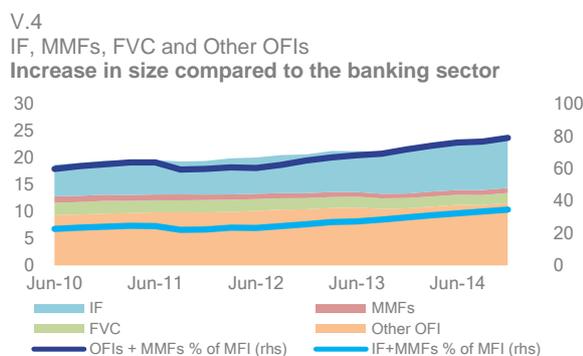
Note: Size of shadow banking system proxied by liabilities of ABS issuers, GSEs and pool securities, open commercial paper (CP), size of the US repo and securities lending (collateralised with cash) markets, and liabilities of Money Market Funds, USD tn. % of bank liabilities on rhs. Sources: Federal Reserve Flow of Funds, Thomson Reuters Datastream, ESMA.

Beyond data uncertainties this difference also reflects the smaller role played by securitisation in the EU and more prominent part played by banks in the financial system.

Regarding the entity-based approach, the size of the Other Financial Intermediaries (OFIs, i.e. the financial sector outside banks, insurance corporations and pension funds) can provide a broad assessment of credit intermediation. It includes ad hoc entities such as financial vehicle corporations (FVC) engaged in securitisation transactions, MMFs and hedge funds that provide credit or are leveraged. But it also reflects the general development of market based funding, which compensates the relative

<sup>5</sup> Example of activity-based approach in Pozsar, Zoltan and Singh, Manmohan, "The Nonbank-Bank Nexus and the Shadow Banking System", IMF Working Paper, 2011.

decline in bank lending. Since regulated investment funds cannot be subsumed under shadow banks in a generalised way, this approach overestimates the size of the shadow banking system and should be seen as a complementary indicator to the activity-based measure.



Note: Total assets for EA Money Market Funds (MMFs) and other financial institutions (OFI): investment funds (IF), financial vehicle corporations (FVC), other OFI estimated with ECB Quarterly Sector Accounts MFUA. EUR tn. Ratios computed as assets in % of credit institutions' assets in the rhs.  
Sources: ECB, ESMA.

Indeed, the entity-based approach shows that the size of the OFI sector has been constantly increasing, while according to the activity-based approach shadow banking activities have actually decreased since 2010.

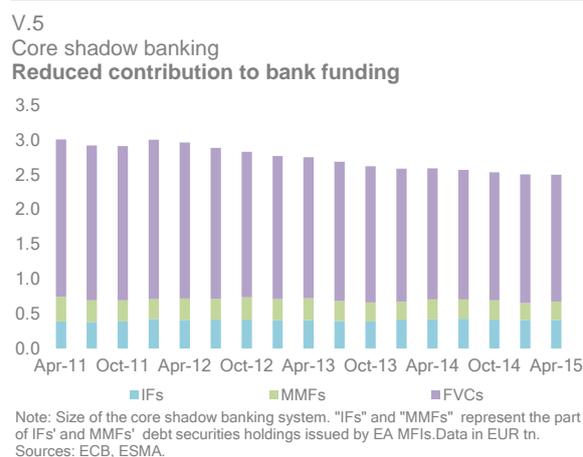
## Core shadow banking

The aim of narrowing the entity-based approach is to reflect more accurately the size, composition and risks of the shadow banking sector.

Our first proposal is to define a "core" perimeter of shadow banking focusing on institutions whose main activity belongs to credit intermediation where credit intermediation is intended to finance credit institutions (V.5). Although this approach will exclude relevant entities, it will also reduce the number of "false positives", such as investment funds, and help focus on the most relevant financial stability issues. This narrow entity-based measure includes MMFs, FVC and investment funds providing wholesale funding to MFIs.

By this definition, the core part of the shadow banking sector represents EUR 2.5tn, approximately 11% of the entire OFI sector. Unlike the OFI sector, core shadow banking has steadily decreased since 2010. This is mainly due to the drop in of FVC and MMFs and is consistent with efforts made by banks to reduce their wholesale funding needs. With regard to investment funds, it reflects the fact that the noticeable growth in the sector observed in

recent years is not attributable to their involvement in MFI wholesale funding.



## Identification of bank-like activities: a new liquidity indicator

Our second proposal is to define a specific risk indicator for bond funds, focusing on liquidity and maturity transformation. Bond funds are financial institutions that at first sight may look similar to banks. Compared to other types of funds, they are more likely to perform liquidity and maturity transformation. Their liabilities (i.e. fund shares) are redeemable on demand, and they invest in long term debt products, thus allowing for a comparison with banks which take short term deposits to grant long term loans. Funds, however, act as agents for the investors, who own the assets and agree to accrue gains and bear losses. In contrast, banks typically act as principals, subject to market risks, while depositors have a guarantee of redemption at par and on demand.

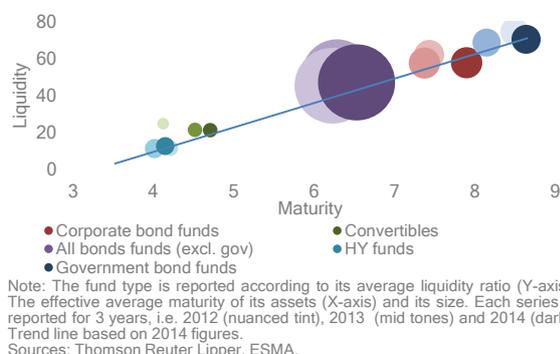
Liquidity mismatches can however pose other problems to investors and financial stability. The International Monetary Fund estimated recently that corporate and emerging market debt funds were particularly exposed to run risk, which in turn may lead to fire sales and contagion if funds are obliged to sell assets at a discounted price to meet redemption requests.<sup>6</sup>

To evaluate this liquidity risk we propose a differentiated approach as bond funds have access to and invest in a variety of assets. The risks involved in the different types of assets vary in nature and magnitude. For example, funds investing in sovereign bonds are not necessarily expected to hold their securities until

<sup>6</sup> International Monetary Fund, "Global Financial Stability Report", World Economic and Financial Surveys, April 2015.

maturity and should be able to trade them before, if necessary. Differently, loan funds may be more inclined towards a “buy and hold” strategy as the underlying market is less liquid.

V.6  
Liquidity and maturity transformation by bond funds  
Higher transformation compensated by higher liquidity



Based on the new liquidity indicator presented above (V.6) and explained in V.7, we observe a trade-off between liquidity and maturity transformation.

V.7  
Construction of a bond fund liquidity indicator

Fund regulation does not express liquidity requirements in terms of ratio. In the context of shadow banking and to draw a parallel with the banking regulation, we have constructed a simple liquidity indicator for bond fund asset portfolios. Each security is weighted according to its liquidity, as defined in the banking regulatory framework: a weight of 80% for a security indicates that, under stress circumstances, the fund should be able to sell the security immediately for more than 80% of its market value. Finally the ratio is calculated as  $\sum \text{weighted assets} / \text{AuM}$ , and expressed in percentage terms. It represents the part of the portfolio that could be sold immediately in a stressed environment.

Asset	CQS 1	CQS 2	CQS 3	<CQS 3
Cash	100	100	100	100
Sovereign bonds	100	85	50	0
Corporate bonds	85	50	50	0
Shares	50	50	50	50

Note: CQS, Credit Quality Step.

Funds focussing on less liquid corporate debt invest in securities with a shorter than average term, while funds investing in liquid sovereign bonds tend to perform more maturity transformation. Therefore, a fund investing in long term liquid assets should be able to sell them at any time, while a fund investing in short term illiquid assets should be able to roll over its portfolio frequently, thus limiting its liquidity risk.

Using this combination of criteria, we can identify two patterns of relevance for financial stability risks:

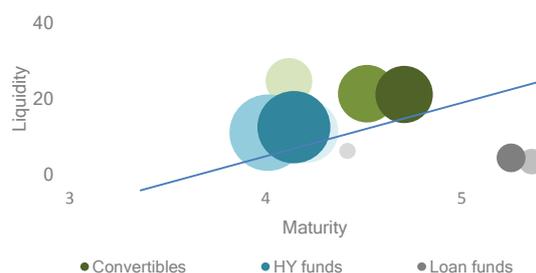
- First, we observed that risk increased in 2014 since the higher maturity transformation observed for most bond funds was not compensated by an improved liquidity measure. This pattern is consistent with the search for yield strategy observed in the asset management sector, although liquidity risk itself remains mitigated by the safeguards included in EU regulation (V.8).

V.8  
Regulatory measures to mitigate liquidity risk for funds

EU regulation contains provisions aimed at mitigating liquidity risk for investment funds:

- UCITS funds are designed to suit retail investors and generally offer them daily liquidity. They are authorised, as part of their investment objective, only to invest in transferable securities or other sufficiently liquid financial instruments. Under certain conditions they may also use financial derivative instruments, based on an eligible UCITS asset or an approved financial index. UCITS are also subject to diversification rules, such as the so-called 5/10/40 rule. This states that a maximum of 10 per cent of a fund’s net assets may be invested in securities from a single issuer and that investments of more than 5 per cent with a single issuer may not make up more than 40 per cent of the whole portfolio. There are some exceptions to this rule. For example, where the fund is replicating a stock market or other indices, the maximum limit per issuer is 20 per cent of net assets (or 35 per cent in exceptional circumstances).
- Alternative investment fund managers need to implement appropriate liquidity management systems and adopt procedures to monitor the liquidity risk. For each alternative investment fund they manage, they must establish and maintain a liquidity management system, set appropriate limits for liquidity risk, conduct regular stress tests and ensure that the investment strategy, liquidity risk and redemption policies are all consistent with each other for each alternative investment fund.

V.9  
Liquidity and maturity transformation  
Loan fund maturity and liquidity transformation



- Second, HY corporate bond funds, loan funds and convertible bond funds have a liquidity ratio of less than 25%, compared to 58% on average for corporate bond funds and 70% for sovereign bond funds. Loan funds, especially, combine very low liquidity with some maturity transformation (V.9). Even though they represent only a small

part of the industry, they seem to be the category that engages most in credit intermediation.

## Conclusion

Measuring the shadow banking system is challenging by definition. ESMA currently uses indicators that follow the methodology designed by the FSB at the global level and will benefit in the future from data collection on alternative funds and SFTs, to bridge some of the remaining data gaps. In the meantime, this article proposes to improve the existing framework by focusing on the entities that are more likely to pose financial stability risk. First, the “core shadow banking indicator” gives an indication of that part of the OFI sector which contributes directly to the wholesale funding of banks. It shows that this core shadow banking has not expanded like the rest of the non-bank financial system. Second, the liquidity indicator aims to identify liquidity mismatches in the bond fund universe. It shows that liquidity risk has increased in the bond fund sector, although there are strong mitigants in the regulation. It also indicates that bond funds investing in long term assets generally compensate by holding a highly liquid portfolio. Conversely, HY corporate bond funds and convertible bond funds hold relatively illiquid assets with a short maturity. Finally, loan funds are the category which seems to combine both liquidity and maturity transformation, thus potentially engaging in banking-like credit intermediation. Those two indicators will be included in future ESMA risk monitoring.

## Orderly markets

# Primary dealer funding constraints and sovereign bond liquidity

Contact: [massimo.ferrari@esma.europa.eu](mailto:massimo.ferrari@esma.europa.eu)

This article is based on research that analyses the impact of primary dealers' financial constraints on the liquidity and pricing of sovereign bonds for nine European countries before and during the financial crisis as well as during the sovereign crisis. It uses a dataset containing liquidity characteristics of individual sovereign bonds and a proxy for funding constraints of market makers in these sovereign bonds. Empirical evidence shows that primary dealers' funding costs matter for sovereign bond liquidity. The article also highlights that primary dealers' financial constraints may generally lead to less liquid sovereign bond markets, though these effects depend on the time-period, the issuer and the dealers' origin.

## Introduction

Primary dealers (PDs) are highly qualified financial intermediaries. They enter into an agreement with national debt management offices to promote primary placement and secondary trading of government securities in exchange for specific rights and privileges. As such, PDs are contractually obliged to submit bids at auctions on the primary market and act as market makers to place government securities with end investors and maintain liquidity in the secondary market (see V.1 for more details).

The purpose of this study is to provide an assessment of the impact of market makers' funding costs on the liquidity of bonds for which they are PDs. Previous studies argued that all market participants could take advantage of the enhanced liquidity.<sup>1</sup> The main idea is that large banks act as market makers. To do so, they have to hold inventories of sovereign bonds in order to be funded. Increasing funding costs, as during the crisis, are therefore likely to oblige PDs to take up positions, reducing sovereign bond liquidity. The empirical analysis discussed here is based on the theoretical framework presented by Gromb and Vayanos (2010) and Brunnermeier and Pedersen (2009), who model the link between dealers' financial strength and market liquidity. Gromb and Vayanos (2010) show that market liquidity increases with the level of intermediary capital. Brunnermeier and Pedersen (2009) conclude that traders' ability to maintain market liquidity depends on their funding availability. Results show that increasing financial constraints for dealers affected sovereign bond liquidity before and during the financial and sovereign crises. Moreover, in the

latter period, the effects were asymmetric for crisis and non-crisis countries.

## Primary dealers in Europe: duties and privileges

European countries define, in different degrees of detail, the auction process and the general rules of conduct for market makers in the sovereign bond market. Although the obligations and rights are supervised by national debt authorities, many of them are common across countries. In particular, PDs have not only to bid at auction on the primary market but are also responsible, being appointed as market makers, for enhancing liquidity in the secondary market. The latter is achieved by requiring PDs to quote continuously two-way prices for a minimum size, with a certain spread and for a number of hours per day. The ultimate goal of these price-quoting obligations is to increase and ensure the effectiveness of price transparency. PDs are typically obliged to trade directly with national debt authorities and to provide them advisory support on debt management strategy as well as information on market developments. Another distinctive obligation for PDs is to report regularly to the national debt management office on their activity in the secondary market. This information, in turn, is used to assess the quality of PDs and evaluate their performance as market makers. Moreover, to ensure they perform efficiently, national debt authorities grant them different privileges, which vary across countries. In the secondary market, as a means of supporting their market making activity, access to securities lending facilities is crucial, a recognised special right aimed to help with inventory management. In addition, the publication of rankings and lists of the best performing PDs in both the primary and

<sup>1</sup> See Pagano and von Thadden, 2004.

secondary markets can be deemed a privilege, given that it can confer attractiveness and increase the marketing value of the PD status with respect to final investors. Duties and privileges are largely similar across different European countries with some country-specific deviations, including the minimum secondary market share and minimum participation in primary auctions.

#### V.1

##### Primary dealers: The sovereign bond market

PDs are appointed by national authorities for the purpose of pursuing a common strategy to stimulate the activity and development of the government debt securities market. PDs are expected to build and sustain demand for government securities by submitting bids at auctions, as they are in most cases the primary source of liquidity. PDs are also required to perform all operations deemed necessary to reduce market and refinancing risks and broaden the final investors' base. In addition, PDs are tasked on the secondary market with improving market liquidity, which should ultimately lower funding costs for the issuer.

The economic rationale behind the adoption of a system of PDs can be seen as a response by government to a market failure. In the absence of a system of PDs, the incentives to potential dealers may be insufficient to ensure effective market functioning. Government intervention in the form of granting some market makers preferential access helps to align government objectives with incentives for PDs. In addition, the existence of a PD system is likely to be perceived as indicative of a sustainable public debt strategy, increasing investors' confidence in government securities. In this context, the combination of duties and privileges of PDs has a direct impact on the efficiency of the government securities market and the market's ability to accommodate public sector borrowing needs.

## Sovereign bond markets: the case of MTS

The evolution of liquidity in European sovereign bond markets is evaluated by analysing data from MTS (Mercato Telematico dei Titoli di Stato). MTS is the largest wholesale interdealer trading system for eurozone government bonds, largely based on electronic transactions. The MTS interdealer trading system is fully automated and works as a quote-based electronic limit order market.

First introduced by the Italian Treasury in 1988, the MTS trading model has expanded to other euro-denominated countries, making up a set of domestic MTS markets. EuroMTS is a pan-European trading platform for government benchmark bonds as well as high quality non-government bonds covered by either mortgages or public sector loans. It was launched in 1999 to bring together issuers and dealers and induce them to undertake commitments to each other so as to foster secondary market liquidity and improve market transparency. This mutual commitment has the label of a "liquidity pact": market makers post buy and sell limit orders

above a minimum size, within a maximum bid-ask spread, observing requirements, for a given minimum number of hours each day.

In some countries, government debt management offices take into account quoting and trading operations on MTS platforms for the admission of market PDs to their pool of specialists. Indeed, although the MTS model uses a common trading platform, national authorities have regulatory responsibilities and may set different electronic trading rules to those in force in other countries. Market participants can be broadly classified as market makers or market takers. The former have market-making obligations, namely to quote all bonds they are assigned in a two-way proposal for at least five hours per day and for a certain minimum quantity.

While EuroMTS is the reference market for bonds with an outstanding amount of at least EUR 5bn, on the MTS domestic platforms the whole yield curve of the respective country's government bonds is listed. PDs have market-making obligations that require each one of them not to diverge from the average quoting times and spreads calculated among all market makers. Large market makers are generally active on both platforms, while smaller market makers tend to operate only on the local platform. The former can therefore choose parallel quotation, posting proposals on the domestic and EuroMTS platforms simultaneously. PDs can be on the passive side, when their proposals are hit, or on the active side of the market, when they submit orders aimed at hitting another primary dealer's standing quote. Other dealers, since they have no market making obligations, trade only by hitting market makers' proposals. Pellizon *et al.* (2013) claim that market makers are active on more than 90% of the total trades.

For clearing purposes, all trades are anonymous, and the identity of the counterpart is revealed only after the trade has been executed. The proposals quoted are firm and immediately executable, according to price priority and time priority. In this sense, the MTS system is fully automated and works as a limit order book. Moreover, market makers are not required to show the maximum quantity they are willing to trade, only a non-negative fraction of it known as "drip quantity". The maximum quantity is communicated to the platform but never disclosed to other market participants.

## The dataset

As previously mentioned, the purpose of this study is to provide an assessment of the impact of market makers' funding costs on the liquidity of the bonds for which they are PDs. Our empirical approach models the link between intermediaries' funding positions with the market liquidity of sovereign bonds for nine euro area countries. The dataset used is therefore composed of data on government bond trading on MTS domestic platforms for 9 EU member countries: Austria, Belgium, Finland, France, Greece, Italy, Netherlands, Portugal and Spain, from April 2004 to December 2012. This long time period allows comparison of the liquidity drivers of the European government bond markets over three sub-periods: the period before the financial crisis; the crisis itself culminating in the Lehman event and the eurozone sovereign debt crisis. Indeed, in the latter sub-period dealers also witnessed the increase in the bond yield spread over German Bunds and the sovereign CDS spread of several European government debt instruments.

The MTS dataset enables identification of each security and provides information on the issuing country, maturity, coupon, and trade and quote information. In particular, for each bond – together with its specific characteristics – it is possible to retrieve information on the actual flat price for the last trade, the price quote based on the average best bid-offer prices, and other summary measures.<sup>2</sup> The number of government bonds traded both on domestic and EuroMTS platforms, together with the average number of trading days for each bond by country per month, are shown in Table V.2.

Compared to EuroMTS, the range of securities traded on the domestic platform is much larger, as every government bond is quoted on the respective domestic market, while only benchmark bonds are listed on the pan-European platform. While it is possible for benchmarks to be traded on the same day on both domestic and EuroMTS markets, it is evident that trading may not occur on a daily basis for some securities. Despite the apparent fragmentation and the fact that the two markets are not formally linked, they form a single venue.<sup>3</sup> This analysis is nevertheless focused on

the MTS domestic platforms, as the higher trading activity on these markets plays a key role in the disclosure of information about the efficient price of government securities<sup>4</sup> and the higher number of bonds traded on the MTF domestic platforms.

### V.2

Number of bonds and trading days

Heterogeneity across countries

	Number of bonds		Average monthly trading days	
	MTS Domestic	Euro MTS	MTS Domestic	Euro MTS
Austria	28	25	6	1
Belgium	220	32	10	2
Finland	21	15	8	3
France	752	501	8	2
Greece	122	57	8	4
Italy	488	336	16	4
Netherlands	175	31	9	3
Portugal	94	22	9	3
Spain	310	128	8	3

## Empirical approach

In this section, the estimation strategy is outlined in detail. To test for the effect on sovereign bond market liquidity of financial constraints faced by market makers, the following specification is estimated:

$$(1) \text{Illiquidity}_{it} = \alpha_i + \beta_1 \text{Fin.Constraint}_{ct} + \beta_2 \text{Sov.Risk}_{ct} + \beta_3 \text{Controls}_{it} + \varepsilon_{it}$$

where  $\alpha_i$  is a bond specific fixed effect. Illiquidity<sub>it</sub> is a measure of bond *i* liquidity on day *t* which is further defined below. Vayanos and Wang (2012) and Comerton-Forde *et al.* (2010) subscribe to the idea that market liquidity is determined by demand and supply for immediacy.<sup>5</sup> Following this logic, measures of liquidity are deemed to capture the cost or compensation inherent in the trading activity. Against this background and because of data limitations, the focus is on two liquidity dimensions – the width and the depth – which are closely related to the cost of demanding liquidity and the quantity of liquidity supplied. The market liquidity of an asset should thus be analysed by considering more than one single dimension of liquidity. Following the relevant

<sup>2</sup> These include the total traded volume, the average size of trades and the imbalance of trades defined as the difference between the aggregate buy initiated volume and the aggregate sell initiated volume.

<sup>3</sup> See Cheung, de Jong and Rindi, 2005.

<sup>4</sup> See Caporale and Girardi, 2013.

<sup>5</sup> See Grossman and Miller, 1988.

literature, the width of liquidity is measured by the effective spread, because in secondary OTC markets trading activity typically occurs inside the prevailing best quotes:

$$(2) \text{ Effective Spread} = |p(t) - p_{mid}(t)| = \\ = |p(t) - (p_{ask}(t) + p_{bid}(t))/2|$$

The Amihud (2002) illiquidity ratio, which reflects the sensitivity of an asset price to the traded volume, is chosen to measure the depth of liquidity. The rationale behind this price impact measure is that in a liquid market the price is not expected to move much when trading occurs. Hence, a higher price impact is associated with a less liquid asset. The Amihud ratio is measured on a daily basis given by:

$$(3) \text{ Amihud Illiquidity}_{it} = |R_{it}| / \text{Volume}_{it}$$

Previous studies have reported that the Amihud illiquidity ratio performs better than other impact measures estimated with daily data, and even intraday data, in capturing the price impact of trading.<sup>6</sup>

The *Fin.Constraint* variable in eq. (4) is a proxy for PDs' financial constraints which vary over time and across countries. The financial constraints of PDs are proxied by using daily spreads of single-name five-year senior CDS contracts<sup>7</sup> having a primary dealer active in the sovereign bond market of country *c* as the underlying entity. Given that credit risk is a major determinant of a bank's funding costs and CDS spreads are commonly used as an indicator of a bank's riskiness, their use is considered appropriate to proxy market makers' funding costs.<sup>8</sup> While individual transactions by PDs are not available, trades at the bond level are used to compute an equally weighted CDS spread index across all PDs active in a specific government bond market:

$$(4) \text{ Fin.Constraint} = \text{PDs' CDS Index} = \\ = 1/N_c \sum_{i=1, \dots, N_c} \text{PDs' CDS}_i$$

where *c* indicates the country and *N<sub>c</sub>* is the total number of PDs in country *c*.<sup>9</sup> Additional controls

are included to account for the effects on bond liquidity of:

- sovereign risk;
- credit risk and bank funding;<sup>10</sup>
- bond characteristics;
- country trading effects;<sup>11</sup>
- on-the-run bonds.<sup>12</sup>

To examine the relation between illiquidity, PDs' financial constraints, sovereign credit risk and various bond characteristics, bond fixed effects regressions are run, based on the above empirical specification for the whole sample of countries across three sub-periods: the pre-crisis, financial crisis and the sovereign crisis separately.<sup>13</sup>

## Results

Results (V.3), are in line with the hypothesis that financially constrained PDs reduce the liquidity in sovereign bond markets.

### V.3

#### Baseline model results

#### Impact across sub-periods

	Pre-crisis		Financial crisis		Sovereign crisis	
	Eff. Sp.	Am.	Eff. Sp.	Am.	Eff. Sp.	Am.
FC	+	+	+	+	+	-
	***	***	**	**	**	***
Sov CDS	-	-	+	+	+	+
	**			***	***	***

Note: Impact on the effective spread and the Amihud illiquidity ratio across sub-periods. FC=Financial constraint; Eff. Sp. = Effective Spread; Am = Amihud. The sign of the estimated coefficient positive (+) or negative (-) is reported. Robust standard errors \*\*\* indicates statistical significance at  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

<sup>6</sup> Friewald et al., 2012, employ the Amihud measure, together with bond characteristics and transaction measures, to show that liquidity effects have a more pronounced impact on corporate bond yields in periods of financial crises.

<sup>7</sup> The 5-year senior CDS contracts are those with the potentially highest liquidity.

<sup>8</sup> See Chui et al., 2010.

<sup>9</sup> Similarly, we construct separate sub-indices for PDs headquartered in the country for which they are active as PDs, as well as PDs headquartered inside and outside the EU.

<sup>10</sup> The above specification also controls for the impact of sovereign risk on the liquidity of MTS domestic sovereign bond markets using the sovereign 5-year CDS of each country and the 3-month Euribor-OIS spread, which captures the level of counterparty credit risk in international funding markets (see Kwan, 2009).

<sup>11</sup> The ratio of the total imbalance of trades to the total traded volume at the country level is used. Chordia et al., 2002, show that imbalances are strongly related to trading costs and market returns. Because MTS is a wholesale market, the ratio of imbalances to the traded volume directly reflects the interdealer order imbalances.

<sup>12</sup> A bond "on-the-run" is the newly issued security of a given maturity. It has been well documented that most recently issued government bonds of a certain maturity are generally more liquid than previously issued (i.e. off-the-run) bonds. See Goldreich, Hanke and Nath, 2005, among others.

<sup>13</sup> The pre-crisis sub-period is defined as 1 April 2004 - 9 August 2007. On this date, BNP Paribas stopped redemptions/withdrawals from three of its hedge funds exposed to the sub-prime crisis owing to a "complete evaporation of liquidity" in the market. The end of the financial crisis is set more arbitrarily, starting with the sovereign crisis on 1 March 2010. All the sovereign events take place after this date.

The PDs' CDS Index, our proxy for PDs' constraints, shows a significant and positive impact on our illiquidity measures for the three sub-periods, which seems stronger in quiet than in stressed market conditions. Moreover, the variation in the financial constraints was higher in the financial and sovereign crisis periods than in the pre-crisis period.<sup>14</sup>

One anomaly, however, is the negative effect of financial constraints on the Amihud illiquidity ratio that is our proxy for depth of liquidity in the sovereign crisis period. To investigate this, the sovereign crisis sample is split into crisis and non-crisis countries (V.4).

V.4  
Analysis results  
Focus on sovereign crisis period

Panel A

	Crisis countries		Non-crisis countries	
	Eff. Sp.	Am.	Eff. Sp.	Am.
FC	- ***	- ***	+ ***	+ ***
Sov CDS	+ ***	+ ***	-	+ *

Panel B

	Crisis countries		Non-crisis countries	
	Eff. Sp.	Am.	Eff. Sp.	Am.
FC domestic	+ **	- ***	-	+ ***
FC foreign	+ ***	-	+	- **
FC foreign non-EU	- ***	- ***	+ ***	+ ***
Sov CDS	+ ***	+ ***	+	+

Note: FC=Financial constraint; Eff. Sp. = Effective Spread; Am = Amihud. The sign of the estimated coefficient positive (+) or negative (-) is reported. Robust standard errors \*\*\* indicates statistical significance at p<0.01, \*\* p<0.05, \* p<0.1.

Interestingly, PDs' financial constraints affect sovereign bond liquidity asymmetrically in the two subsets. For non-crisis countries, the PDs' CDS Index has the expected significant and positive effect. For crisis countries, however, the effect is significant and negative (V.4, Panel A).

To understand the origin of this asymmetric effect, the PDs' CDS Index has been split into sub-indices for domestic PDs, foreign PDs domiciled in the EU, and other foreign PDs (V.4, Panel B). In non-crisis countries, the overall positive effect seems to be driven by domestic and non-EU PDs, while foreign PDs domiciled in EU countries show a negative effect. For crisis countries, the pattern is basically the opposite

with the exception of a positive coefficient for domestic PDs in the regression for the effective spread.

This result indicates that in non-crisis countries domestic and non-EU PDs behave in line with the formulated hypothesis. In contrast, PDs from other EU countries have a positive liquidity effect. In crisis countries, it was the domestic PDs and PDs from non-EU countries that contributed to liquidity in sovereign bond markets during the sovereign crisis, while the PDs from other EU countries seem to have retracted, possibly shifting to non-crisis countries.

The result for the impact of sovereign CDS on liquidity is also worth noting. In line with intuition and previous findings in literature, the sovereign default risk had an extremely positive impact on both the effective spread and the Amihud illiquidity ratio during the financial and sovereign crises, suggesting that lower credit quality reduces the liquidity of sovereign bonds. The effect was stronger in the sovereign crisis than in the financial crisis and also stronger for crisis countries than for non-crisis countries. For the pre-crisis period, however, the sovereign CDS exhibited a negative coefficient for the effective spread, indicating that sovereign bonds perceived as more risky were more liquid. This effect, while counterintuitive, is potentially a reflection of the search for yield, the underpricing of risk and the lack of risk differentiation by market participants prevalent in the pre-crisis period.

Finally, it is worth mentioning that for the financial crisis sub-sample, neither the round-trip cost nor the price impact are affected if a bond is "on-the-run", while this characteristic was positively correlated with a higher price impact during the European sovereign debt turmoil.

## Conclusion

This study investigated the impact that PDs have on sovereign bond liquidity in their capacity as market makers. It can be shown that market makers' financial constraints are generally passed through to lower liquidity. Results indicate that dealer financial constraints affect sovereign bond liquidity asymmetrically. For non-crisis countries, financially constrained market makers seem to reduce the liquidity provision for sovereign bonds (i.e. financial constraints have a significant and positive effect on our illiquidity measures). For crisis countries, however, this effect is inverted. With respect to

<sup>14</sup> The results indicate that an increase in the PDs' CDS Index by one-standard deviation increased the effective spread by about 0.5 basis points in the pre-crisis period and by 0.6 basis points in the sovereign crisis.

sovereign risk, findings point to a very positive impact on both the effective spread and the Amihud illiquidity ratio during the financial and sovereign crises, suggesting that lower credit quality reduces sovereign bond liquidity. In terms of economic significance, sovereign risk is materially more important than PDs' funding costs. Regarding the impact of the direction of trading on liquidity, while more buyer-initiated trades lowered bond liquidity in the pre-crisis, this effect is less apparent during the financial crisis and was even reversed during the sovereign crisis.

Our findings have several broad policy implications:

- A well-diversified network of PDs would appear beneficial for sovereigns: having PDs from different countries and regions will generally result in more stable liquidity in sovereign bonds in crisis situations.
- A more stringent regulatory framework for PDs alone will not entirely prevent financial strains spilling over from market makers to the sovereign bond market.
- While financial strains in the banking sector lead to higher costs for the sovereign and lower market liquidity, sovereign default risk is materially more important for sovereign bonds than PDs.

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## Investor protection

# Bank loan mutual funds – US case and implications for Europe

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Recent years have seen the increased presence of loan origination and participation fund vehicles across a number of member states. For the greater part, those activities are taking place within institutional separate accounts or within the Alternative Investment Fund Managers (AIFM) platform targeting professional investors. We analyse the related sector of retail offered loan participation funds that have existed for 25 years in a securities market and fund wrapper not dissimilar to the European UCITS, namely the US 1940-Act market. This article seeks to understand the features, regulation performance, supply and demand factors, and risks of loan participation funds. It also examines this asset class from an investment standpoint to determine how the addition of bank loans to a traditional asset allocation serves to alter the risk return ratio. In short, we conclude that the asset class has unique risks that need to be understood by the investor though offering an appealing investment choice for certain investor profiles. The topic of alternative sources of lending to complement traditional bank lending is a timely one within the EU.

## Background

This article complements our analysis published in the ESMA TRV No.1 2015.<sup>2</sup> Whereas the focus of the previous article was on the relatively new and modest presence of loan origination and participation funds in Europe, this article concentrates on the comparatively large and mature loan participation fund market in the US. Moreover, while the earlier article recognised that the investor base of the European loan fund market was primarily institutional, in the US, on the contrary, the market is chiefly retail. In turn, the present article examines the topic more through the prism of investor protection issues rather than that of financial stability.

## Senior secured bank loans

In traditional bank lending, the borrower and lender entered into a loan agreement which defined the terms of the deal and remained confidential. The bank generally underwrote the entire loan and kept the loan on its books through to maturity. Bank lending was a closed sector, open only to traditional banks where non-bank lenders were excluded. This began to change in the mid-1980s when the US experienced the leveraged buyout era. Private equity investors turned to banks to provide the financing needed for targeted mergers, acquisitions and buyouts. Banks were attracted

to this form of lending owing to the high margins it generated when compared to traditional bank lending. Given the size of many of the buyouts, however, single bank lending proved insufficient and instead banks formed syndicates to provide a syndicated loan<sup>3</sup>. During the same period, within Europe, there was a more limited level of buyout activity. Whereas the buyout era in the US spawned an increased number of shadow bank players, Europe remained a largely bank-based credit market.

The nature of syndicates required higher transparency around the nature and terms of the loan agreements that in turn would encourage the growth of a more active and liquid secondary market. Information, previously subject to strict confidentiality agreements, was made increasingly public in order to let trading desks provide interested investors not party to the agreements with needed credit and investment information. Such a market allowed greater participation on the part of loan funds and insurance firms while at the same time enabling banks to sell down their large portfolios of highly leveraged transactions.

By the early 2000s, the senior secured bank loan market was increasingly entering the mainstream of the investment debt sector. Further erosion of the private nature of the senior secured bank loan sector was supported by the augmented use of credit ratings for senior

<sup>1</sup> This article was authored by Patrick Armstrong and Anela Turulja.

<sup>2</sup> Haquin J. B., 2015, "Fund investments in loan participation and loan origination - nascent market, big risks?", ESMA TRV No.1, 2015.

<sup>3</sup> A syndicated loan is a bank loan where at least two entities are providing funding to a firm. In most instances, there are multiple entities known as 'syndicate members' involved in the syndicate.

secured bank loans, increasing the public kind of the transaction. In addition, the presence of non-bank participants in the market, in particular loan funds, hedge funds and Collateralised Loan Obligations (CLOs), served to weaken the more traditional boundaries of public/private information.

## Investment features of senior secured bank loans

Senior secured bank loans differ from high yield and other long term debt in three important ways, namely seniority, security and covenants:

- First, as these loans are typically the most senior in an issuer's capital structure, they receive priority of payment, also in case of a borrower's default.
- Second, in the event of a default, the senior bank lenders hold a secured claim on those assets which they can exercise to ensure loan repayment.
- Third, the loans' financial covenants are set more tightly than any other debt structure so as to trigger in advance of any other debt tier.

As a result, in times of poor economic conditions when corporate default rates rise, the loans tend to perform better than bond counterparts. Senior secured bank loans (or in the present context leveraged loans) enjoyed a recovery rate of 80% which compares favourably to all other classes of long term debt (V.1).

V.1

Asset flows

Recovery rates of corporate debt

	1987-2013
Leveraged loans	80.3%
Senior secured bonds	63.5%
Senior unsecured bonds	48.1%
Subordinated bonds	28.2%

Note: Average recovery rates of non-investment grade corporate debt. Subordinate bonds includes senior subordinated, subordinated, and junior subordinated bonds. Data are based on ultimate recoveries of the value creditors realise at the resolution of a default event. Sources: Moody's Investment Service, "Annual Default Study: Corporate Default and Recovery Rates 1920-2013". February 28, 2014.

Compared to other long term debt, an interesting feature of senior secured bank loans, as the loans are anchored to a floating rate benchmark that typically resets at three month intervals, is the slight interest rate or duration risks they are subject to. For example, high yield bonds have fixed-rate interest and maturity of eight to ten years, leaving the investor with material duration risk. This means that the investor would be subject to pure credit risk exposure. In addition to this, senior secured debt loans can serve as a

hedge against inflation risk, as loan coupons adjust based on changes in LIBOR.

Senior secured bank loans are viewed by many investors as an alternative to high yield bonds, but with differences. Although senior secured bank loans typically yield 100 to 200 basis points less than high yield bonds, investors are compensated in other ways. Senior secured bank loan investors enjoy the benefits of financial covenants, collateral, higher order in the capital structure and minimal interest rate exposure. However, one of the reasons firms issue senior secured bank loans is to have greater flexibility over their capital structure. Most corporate debt, such as high yield, comes with an extensive non-call period. This means that if interest rates fall or the issuer's credit profile improves, the debt cannot be renegotiated. From an investment standpoint, this represents a downside to senior secured bank loan investors as firms are typically able to call the debt immediately throughout the life of the loan, leaving the investor with re-investment risk.

The outstanding volume of floating rate loans totalled approximately USD 1tn in 3Q14, with the US market making up around USD 800bn and the European loan market around USD 200bn.<sup>4</sup> These numbers are comparable to pre-crisis levels. They compare to the high yield market, which totals USD 1.7tn, of which USD 1.35tn is US issued and USD 350bn is European issued.<sup>5</sup> Market intelligence shows that approximately, half of the leveraged floating rate loans are held by banks and the rest by non-bank investors.<sup>6</sup> Of the non-bank investors, market analysts show that CLOs consume about 50% of the institutional leveraged market while institutional investors such as insurance firms, pension funds and hedge funds own approximately 30% of the market and senior secured bank loan mutual funds the remaining 20%. Since 2009 floating rate loans in the US have grown both in volume (39%) and in number of issuers (11%). In contrast, over the same period European outstanding volume has fallen by 29%.<sup>7</sup>

<sup>4</sup> Eaton Vance, November 2014, "US vs. European floating-rate loans: Why the edge goes to the US".

<sup>5</sup> Barclays Global Family of Indices, September 2014.

<sup>6</sup> "A Guide to the U.S. Loan Market", Standard & Poors Rating Services, p. 8, September 2013.

<sup>7</sup> Eaton Vance, November 2014, "US vs. European floating-rate loans: Why the edge goes to the US".

## Senior secured bank loan supply and demand

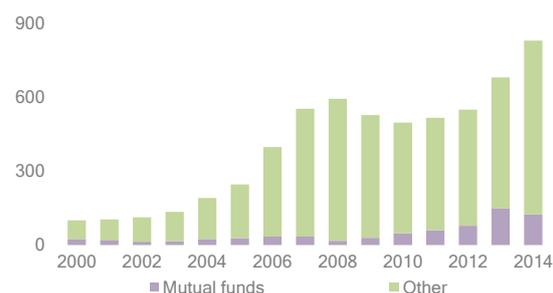
Loan supply has in recent years become increasingly globalised owing to an increase in cross border transactions. Nonetheless, the US market dominates issuance and growth. Between 3Q11 and 3Q14 US issuance grew some 40%, while European issuance remained constant or decreased. The difference in the two markets is in part due to economic reasons and in part structural. The US recovery from the crisis has been stronger than that of Europe, which continues to struggle with high unemployment, weak industrial production and, until recently, a strong Euro. The weaker economic situation is reflected in higher European bank loan default rates of 5.4% compared to 3.3% in the US over 3Q14.<sup>8</sup> From a structural standpoint, there are approximately 20 trading desks in the US making a market in bank loans, twice as many as in Europe. The trading desks are a key factor in providing market liquidity. This is reflected in bid/ask spreads of dealers in the two markets, with the US averaging 71 basis points compared to Europe's 124 basis points.<sup>9</sup>

While senior secured bank loan supply may be global, demand is localised largely to the US market. The main reasons for this are the regulatory differences between the treatment of CLOs and mutual funds in the US and Europe. According to risk retention rules, put in place in Europe in 2011, CLO issuers should retain a 5% interest in the deal so that the firm shares some of the risks with investors, which has discouraged European CLO issuance.<sup>10</sup> Those rules are not expected to be put in place in the US until 2017.<sup>11</sup>

Moreover, US-issued CLOs typically place limits on non-domestic collateral. As for funds, as senior secured bank loans are an admissible asset class in 1940-Act mutual funds, they have become a significant asset class in the US fund market. In Europe, senior secured bank loans

are not considered an eligible 'transferable security', meaning it is not possible to hold them in the most common investment vehicle, namely UCITS. This has resulted in more senior secured bank loan demand in the US compared to Europe and is reflected in the tighter loan spreads on cross border deals in USD compared to Euro denominated issuance. Total US senior secured bank loans and demand on the part of senior secured bank loan mutual funds (V.2 in violet) have grown steadily post the financial crisis.

V.2  
Bank-loans outstanding  
Mutual funds' holdings increased post-crisis



Note: Total outstanding bank loans held by mutual funds and others, USD millions.  
Sources: Investment Company Institute, ESMA.

## US loan participation funds

Variously known as senior secured bank loan funds, prime rate funds<sup>12</sup>, floating rate funds and loan participation funds, they are SEC 1940-Act registered funds that invest in bank loans. Investors, both retail and institutional, can access them through one of four vehicles: open-end funds, continuously offered closed-end funds, exchange traded closed-end funds and exchange traded funds.<sup>13</sup> As senior secured bank loans became increasingly liquid, more funds chose open-end vehicles which allow investors to buy or redeem shares of the fund at the NAV. There are now some 90 funds, 50 open-ended and 40 closed-ended. The pace of flows into open-end vehicles increased sharply from 2009 onwards (V.3). Compared to closed-end funds that typically employ up to 30% of total net assets in borrowed funds, most open-end mutual funds do not employ leverage in their investment process. Year 2011 saw the

<sup>8</sup> Eaton Vance, November 2014, "US vs. European floating-rate loans: Why the edge goes to the US".

<sup>9</sup> Eaton Vance, November 2014, "US vs. European floating-rate loans: Why the edge goes to the US".

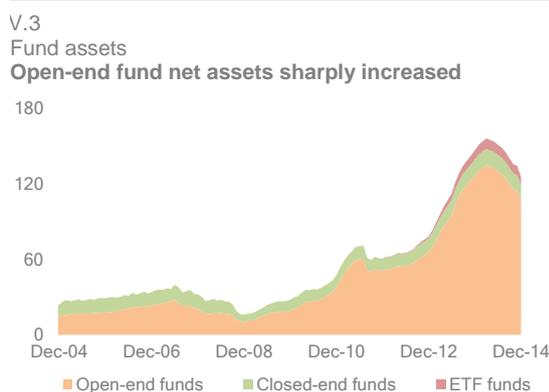
<sup>10</sup> The retention of the risk rule was introduced in Basel 2.5 and requires the originator, sponsor or original lender to hold a 5% economic interest in the securities issued, so that the firm shares some of the risks with investors. The rule is being carried forward in CRD IV.

<sup>11</sup> International Financial Law Review, November 2013.

<sup>12</sup> Called "Prime Rate" as they were originally marketed to investors as a money-market like fund that would generate a return similar to the prime rate.

<sup>13</sup> In the US, the first 1940-Act Bank Loan fund, closed-end, was launched in 1989 and most of the early generation of funds were closed-end.

launch of another type of fund: the first senior secured bank loan exchange traded fund.<sup>14</sup>



In terms of investor base, the senior secured bank loan market is primarily a retail one, with estimates of retail participation in the 80-95% range.<sup>15</sup>

In terms of risk evaluation, as funds often do not have the experience and infrastructure that banks possess, the portfolio managers may rely more heavily on the work of the credit rating agencies. The credit rating profile of a fund can be used to provide a measure of the relative risk of a portfolio. In fact, the credit rating agencies have become much more active in the bank loan market. Today more than 80% of issued senior secured bank loans are rated compared with 45% 15 years ago.<sup>16</sup>

## Regulation

As to the legality of 1940-Act funds to originate loans, the 1940 Act has an indirect limitation on this activity. A fund may originate loans if it adopts a fundamental policy (approved by shareholders) to do so that is disclosed in its prospectus.<sup>17</sup> However, unless the loans that the fund originated were syndicated, they would generally need to be treated as illiquid assets and so would be subject to a 15% limit (as a proportion of the fund's assets). This is owed to the provision that at least 85% of a mutual fund's portfolio must be invested in liquid securities.<sup>18</sup>

Partly in order to ensure that redemptions can be made, a security is generally deemed to be liquid if it can be sold or disposed of in the ordinary course of business within seven days at approximately the price at which the mutual fund has valued it. This provision has effectively made the US senior secured bank loan fund market entirely composed of participations in syndications that have been originated by a regulated bank.

Within the EU, senior secured bank loans are not an eligible security for UCITS as they are generally not considered a 'transferable security'. Moreover, even if bank loans were an eligible security, it would not be a given that a UCITS, primarily composed of senior secured bank loans, would meet the expected liquidity levels necessary for UCITS redemption requirements. Within UCITS, according to Article 76 of the UCITS Directive, a UCITS shall make public the issue, sale, repurchase or redemption price of its units each time it issues, sells, repurchases or redeems them, and at least twice a month.<sup>19</sup> This is interpreted as a minimum redemption cycle of twice a month; nonetheless most UCITS offer investors daily redemptions.<sup>20</sup> The comparatively long settlement cycle of European bank loans may argue for an investment offering that is certainly less frequent than daily redemption. AIFM funds offer an alternative longer redemption cycle as it is determined at the discretion of the investment manager and may even be structured as closed-ended. However, the AIFM vehicle limits the scope of investor type and/or distribution. AIFMs which seek to passport the fund are limited to professional investors.<sup>21</sup> That said most member states do allow the marketing of AIFM to retail investors.<sup>22</sup> There is no evidence, however, that a bank loan AIFM has been made available to retail.

<sup>14</sup> In March 2011, Invesco introduced PowerShares Senior Loan Index ETF (BKLN) based on the S&P/LSTA 100 Index.

<sup>15</sup> Based on correspondence with the Investment Company Institute and Eaton Vance.

<sup>16</sup> Eaton Vance, November 2014, "US vs. European floating-rate loans: Why the edge goes to the US".

<sup>17</sup> US SEC, Investment Company Act of 1940 (see sections 13(a) and 21).

<sup>18</sup> Investment Company Institute, Comprehensive Regulatory Regime for U.S. Mutual Funds, page 2.

<sup>19</sup> Directive 2009/65/EC of the European Parliament and of the Council on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS), 13 July 2009.

<sup>20</sup> NCAs may permit UCITS to reduce the frequency to once a month on the condition that such derogation does not prejudice the interest of the unit-holders.

<sup>21</sup> See MiFID Directive, Annex II.1.

<sup>22</sup> Article 43 of the Directive 2011/61/EU of the European Parliament and the Council on Alternative Investment Fund Managers and Amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010, 8 June 2011.

## Performance

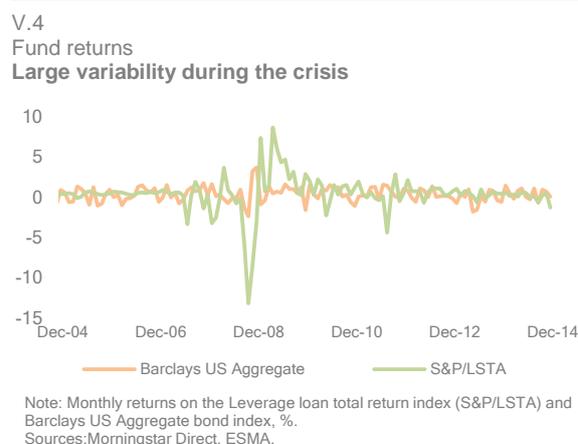
For much of its history, the loan market traded close to par and in turn was known as the par loan market. Senior secured bank loans' performance, both middle market and large corporate, in 2007 steadily generated returns in the 5% to 6% range.<sup>23</sup> The combination of priority of claims, secured collateral coverage and financial covenants that served as early warning signs provided investors with predictable performance.

The financial crisis, as happened in many parts of the financial industry, changed all that. There were a number of factors which contributed to unprecedented losses in 2008:

- First was the presence of hedge funds in the senior secured bank loan market. In 2007, hedge funds held about 27% of the senior secured bank loan market (as opposed to about 9% today).<sup>24</sup> Most of these funds were highly leveraged, and when the crisis hit and prices fell they started taking material losses, which spurred outflows.<sup>25</sup> Many were forced to sell their senior secured bank loan positions to deleverage and to meet redemptions, which served to further weaken prices. Price moves were widespread without any clear distinction between performing and non-performing loans. In essence, while there were some concerns as to the fundamentals of senior secured bank loan performance during the crisis, it was mostly technical forced selling.
- Second, the over-supply of senior secured bank loan products was exacerbated by CLO participants and the banks themselves. As the crisis unfolded, banks were still holding on their balance sheets loans they had underwritten and not yet syndicated. To create liquidity, they began unloading loans into a market with little demand. Similarly, at that time many CLOs were in ramp-up stage and were warehousing loans. When the crisis hit, however, the largest part of CLO deals were cancelled, again forcing more senior secured bank loan products onto the market. As supply on the market increased, downward price pressure depressed average prices from around 95 (par is 100) in September 2008 to 60 by year-end 2008. For

September, October and November 2008, the senior secured bank loan index fell over 6%, 13% and 8% respectively (V.4). This compares more closely to equity drawdowns than bonds.

The bid price of the average loan in the S&P/LSTA Index fell to as low as 60.3 by year-end 2008, which compares to trading at par 100 in June 2007. Little in the way of new issuance occurred in 2009, as the market slowly digested the existing volume. As measured by bid price, it recovered slowly throughout, finishing the year in the high 80s. Today, the average bid price for senior secured bank loans trades in the high 90s.



## Risks associated to senior secured bank loan funds

There are unique risks to senior secured bank loan funds that must be understood prior to investing, including:

- **Default risk:** Risk that a firm defaults on the promised timing of interest or principal payments. As most firms issuing senior secured bank loans are sub-investment grade and leveraged, there is a higher risk of default within this sector compared to investment grade issuers.
- **Recovery risk:** In the event of a default there is the risk that the lender does not receive full repayment of the loan. Despite having a claim on the borrower's assets, in a default scenario the firm's collateral value may deteriorate as well.
- **Liquidity risk:** As with most fixed income instruments, senior secured bank loans trade over the counter and may experience periods of illiquidity. The period following the financial crisis was just such a time when supply of senior secured bank loans exceeded demand. Daily redemption funds meet this

<sup>23</sup> S&P Capital IO/LSTA.

<sup>24</sup> Morningstar, "Bank Loans Possible High-Yield Substitutes, but Watch Risks", August 2013.

<sup>25</sup> Based on conversation held with Eaton Vance portfolio manager Craig Russ on 5 February 2015.

need by maintaining a silo of more liquid securities, cash or a line of credit. Investors in continuously offered closed-end funds are limited to redemptions on a monthly or quarterly basis.

- **Pre-payment risk:** The borrower has the option to pre-pay most bank secured loans prior to maturity. This is typically the case when a borrower finds more favourable borrowing terms. The pre-payment of loans may be inconsistent with the lenders'/investors' expected cash flow return.
- **Price risk:** As the underlying borrower is sub-investment grade and leveraged, loan prices can drop quickly. This was the case in 2007-2008 when demand for leveraged loans fell off.
- **Settlement risk:** Unlike most securities which trade on T+3 cycles, senior secured bank loans settle in 7 to 14 days. For open-ended funds promising daily redemptions, there is a structural mismatch between the cash settlement of their assets and liabilities to fund investors. This misalignment poses potential liquidity risk for funds. Portfolio managers typically employ one of three tools (or some combination thereof) to mitigate the risk. First, they may keep a portion of the assets in cash. This, however, may cause a drag on return as the fund is not fully invested. Second, they may invest a portion of the fund assets in more liquid instruments with more standard settlement cycles such as high yield bonds. The risk here is that the higher the proportion of non-senior secured bank loan assets in the fund, the less likely the fund is to track the underlying index. Third, the fund may establish a line of credit with a bank to have it as a back-stop to meet excessive redemptions. In turn, the fund must pledge fund assets to the bank as collateral and pay to the bank a regular commitment fee. This line of credit, if called upon, has the downside of increasing the fund's leverage.<sup>26</sup>

As a final remark, it should be noted that market participants are actively working to make senior secured bank loans more like conventional financial securities. Participants have tried to reduce the settlement cycle to three days, as is the case for most securities.<sup>27</sup> To improve the

<sup>26</sup> S&P Capital IO/LSTA. The 1940 Investment Company Act limits leverage to 50% of total net assets.

<sup>27</sup> S&P Capital IO/LSTA. See Blackrock "Who Owns the Assets? A Closer Look at Bank Loans", September 2014.

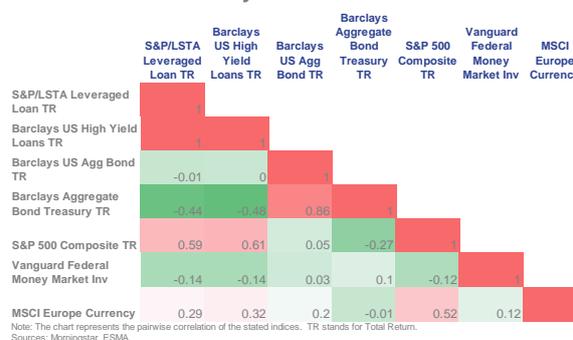
structural liquidity of the instruments, calls have been made for greater standardisation of documentation, deal structures and operational aspects of the loans.

### Case study: a portfolio analysis

#### V.5

##### Index correlation

##### Bank-loan funds weakly correlated with indices



From an investment standpoint, senior secured bank loans have a compelling appeal relative to most other asset classes, namely their comparatively low correlation. The S&P/LSTA Leveraged Loan Index is negatively correlated to the Barclays Aggregate Bond Index and money market funds while positively correlated to equities (V.5). Results hold even during the 2007 financial crisis. Save for a minor increase in equity correlations, the results remained stable.

#### V.6

##### Sharpe Ratio

##### Superior performance

	TR1	TR2	TR3	TR4	TR5	TR6	TR7
Monthly average excess return	0.41	0.43	0.37	0.34	0.71	0.11	0.14
Standard deviation	2.22	2.58	0.95	1.21	4.08	0.16	2.60
Annualised Sharpe Ratio	0.64	0.57	1.35	0.98	0.60	2.40	0.19

Note: TR1= S&P/LSTA Leveraged Loan Total Return; TR2=Barclays US HY Loan Total Return; TR3=Barclays US aggregate Bond Total Return; TR4=Barclays Aggregate Bond Treasury Total Return; TR5=S&P Composite Total Return; TR6=Vanguard Federal Money Market Inv; TR7=MSCI Europe Currency. Sources: Morningstar, ESMA.

The present article then analysed the risk-return relationship as measured by the Sharpe Ratio of S&P/LSTA Leveraged Loan Index compared to other asset classes. In table V.6, the Sharpe Ratio, the ratio of unit of return per unit of risk of the S&P/LSTA Leverage Loan Index (TR1), is inferior to the Barclay's US Aggregate Bond Index (TR3) and the Barclay's US Aggregate Treasury Index (TR4). However, the Sharpe Ratio for the S&P/LSTA Leverage Loan Index is

superior to both the Barclays US High Yield Index (TR2) and S&P500 Equity index (TR5).

Looking at excess returns, the excess return of the S&P/LSTA Leverage Loan Index is superior to both the Barclay's US Aggregate Bond Index and the Barclay's US Aggregate Treasury Index.

If, indeed, senior secured bank loans had low correlations to other asset classes and held competitive Sharpe Ratios, this article further analysed the results of adding an allocation of senior secured bank loans to a traditional portfolio. The baseline portfolio begins with a classic 60%-40% weighted equity-bond allocation (V.7). It is then modified by adding 5% increments of senior secured bank loan allocation. In each of the four scenarios, an increase in the return of the portfolio and an attendant decrease in volatility can be seen, bringing a steady increase to the portfolio's Sharpe Ratio. Initial results from our study suggest that adding an allocation of senior secured bank loans to the average portfolio serves to increase the portfolio return-risk and decrease overall volatility.

#### V.7

Bank-loan fund portfolios

##### Portfolio allocation to senior secured bank loans

###### Portfolio allocation

	BP	S1	S2	S3	S4
Barclays US Agg Bond TR	40%	40%	40%	40%	40%
MSCI Europe Currency	20%	15%	10%	5%	0%
S&P 500 Composite TR	40%	40%	40%	40%	40%
S&P/LSTA Leveraged Loan TR	0%	5%	10%	15%	20%

###### Portfolio performance

Annual Returns	5.89	6.06	6.23	6.39	6.56
Annual Volatility	7.53	7.44	7.39	7.38	7.40
Sharpe Ratio	0.78	0.81	0.84	0.87	0.89

Note: BP = baseline portfolio; S1-S4 = the four scenarios considered. TR = total return.

Sources: Morningstar, ESMA.

be found even in ETF form. The article described those factors that have allowed this sector to perform in a more resilient manner than that of traditional high yield and have served to reduce both interest rate and credit risk.

We have also identified some of the unique risk factors to this sector that must be taken into consideration on the part of the portfolio manager and investor, notably the lengthy settlement cycle. As well, we recognised that during the financial crisis, the market became highly illiquid and the drawdowns resembled equity performance rather than that of bonds. We recognise that the European senior secured bank loan market is not identical to the more mature market that exists in the US. In fact, certain risks that we have identified in the US may exist to a greater degree in Europe, such as settlement risk and transparency of deal information. Yet if the European senior secured bank loan market were to mature to a greater degree, the market may probably have comparable developments in terms of its risk profile to that of the US senior secured bank loan market. If this were the case, it would provide an additional outlet for financial intermediaries to reduce risk exposure while providing investors with a diversifiable investment alternative.

We noted that, despite volatility, the sector still shows a highly competitive Sharpe ratio compared to other sectors. From a portfolio standpoint, the low correlation of senior secured bank loans to other asset classes makes them an intriguing addition to a traditional equity bond portfolio.

## Conclusion

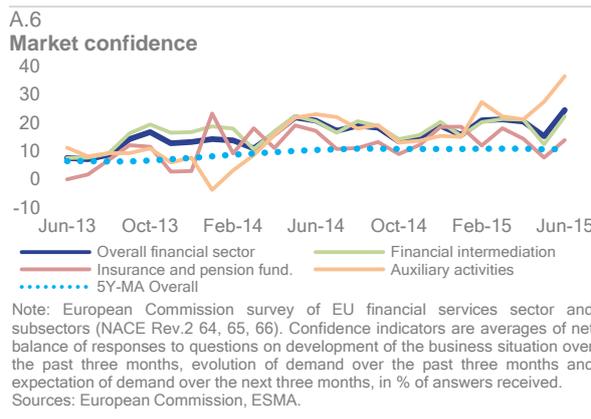
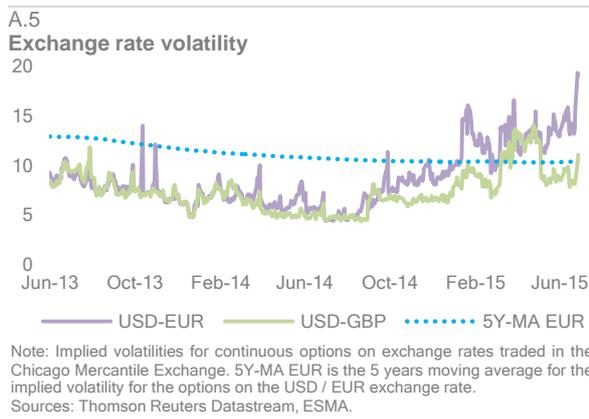
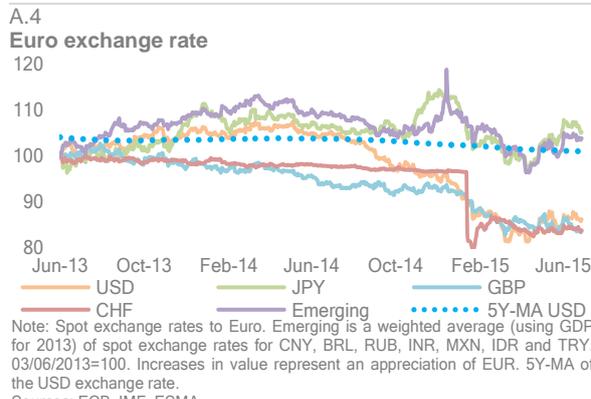
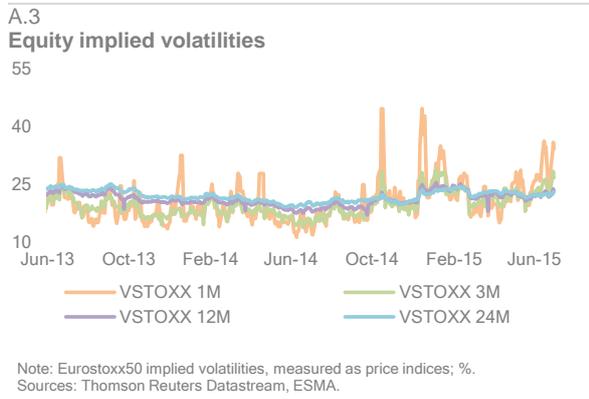
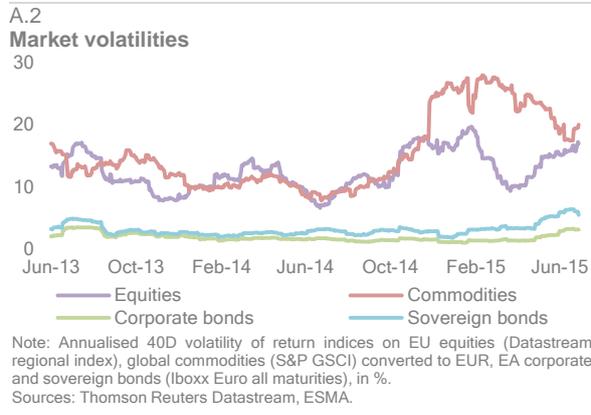
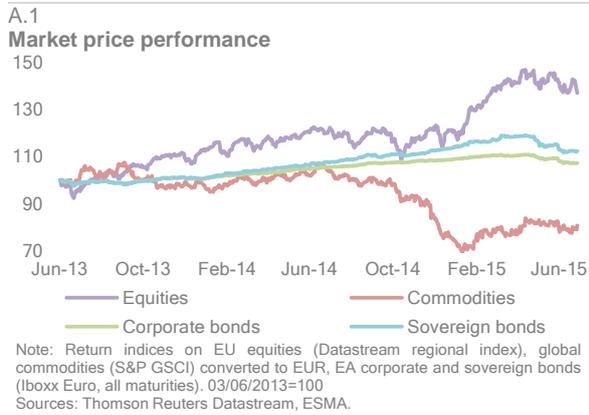
Over the past 25 years, the US senior secured bank loan market has evolved from a fairly illiquid market, where the underlying vehicle was closed-end, to a market that is today considerably more liquid, where the product can

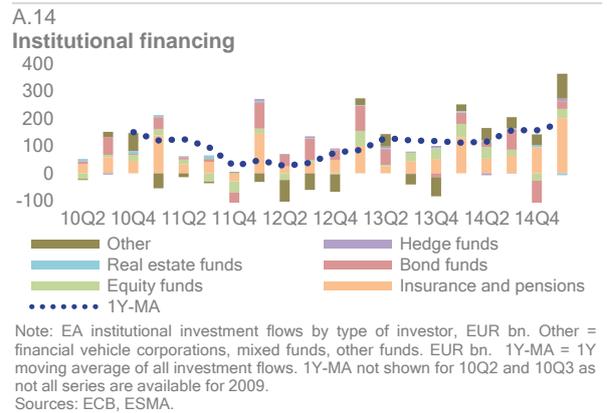
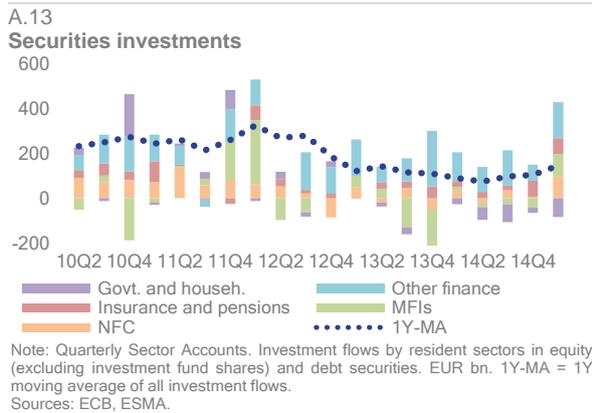
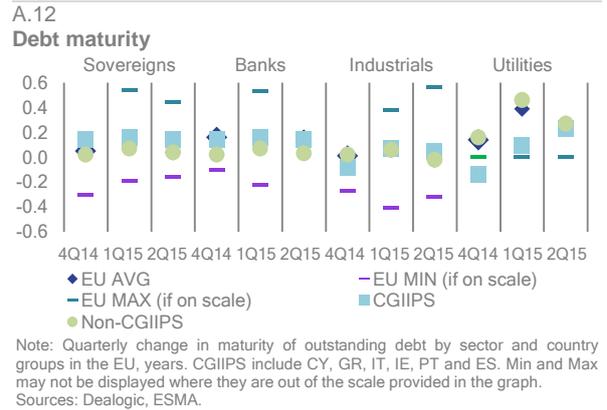
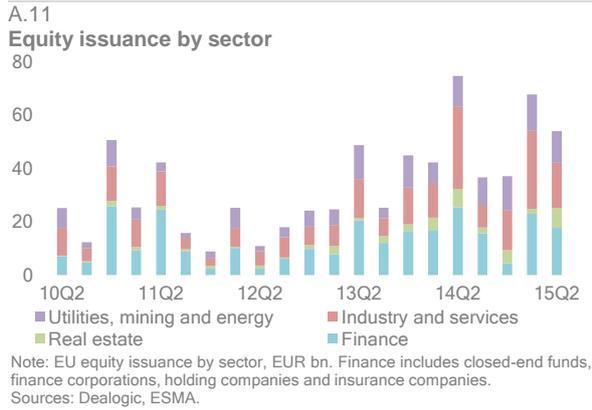
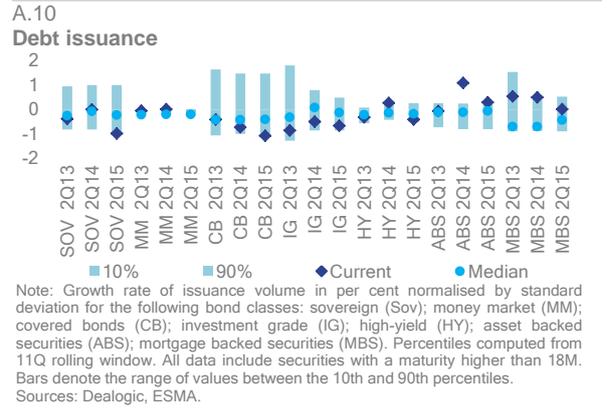
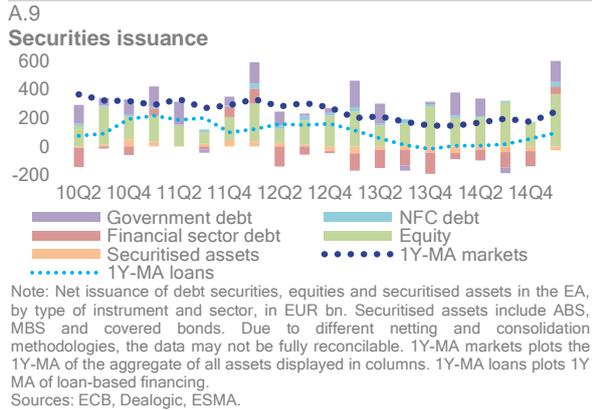
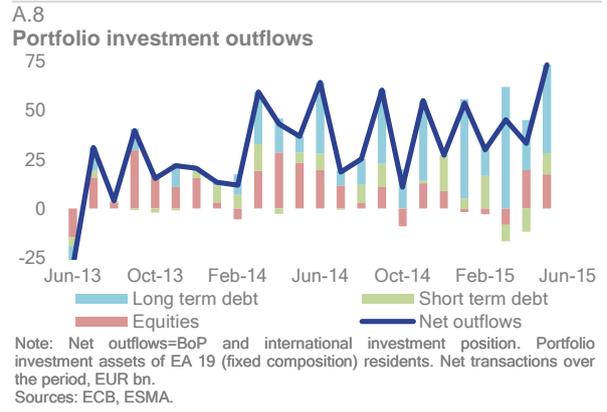
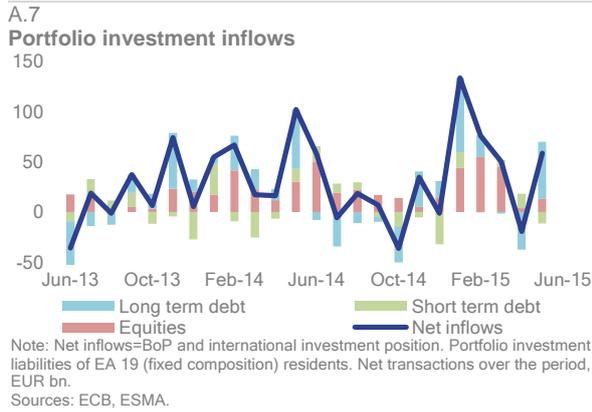
# Annexes

# Statistics

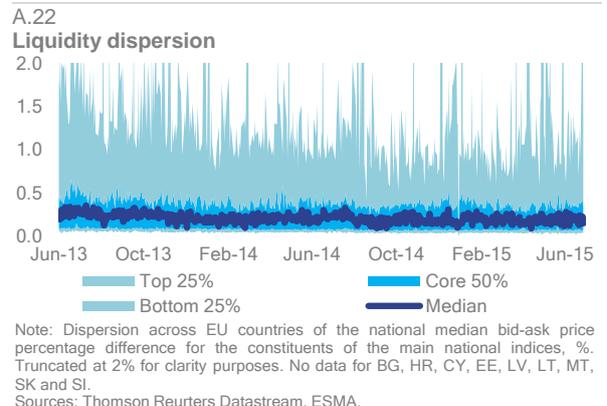
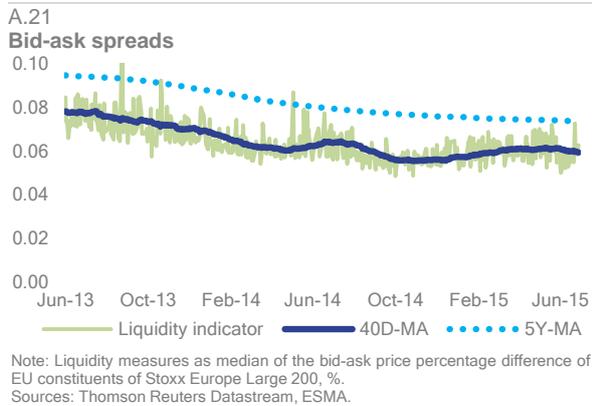
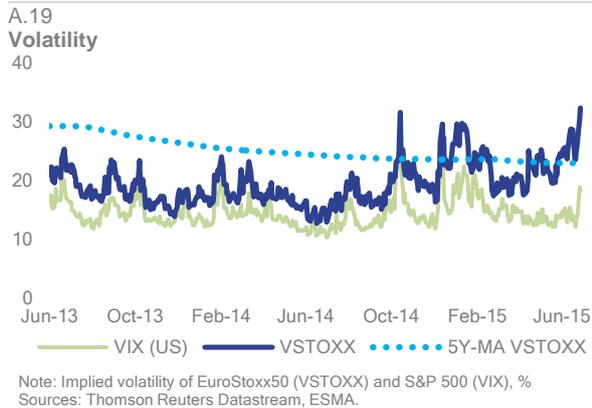
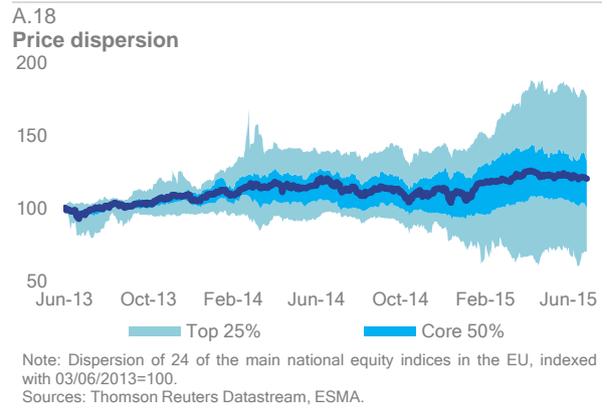
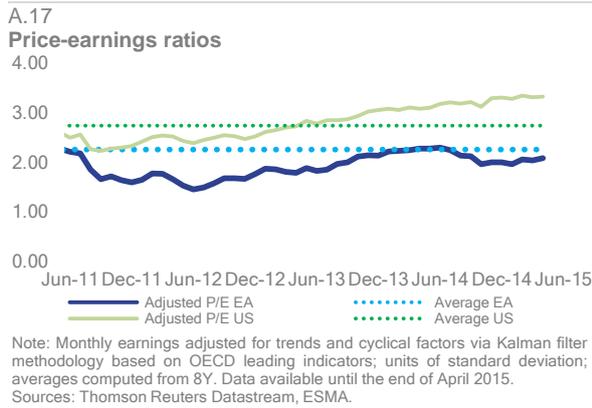
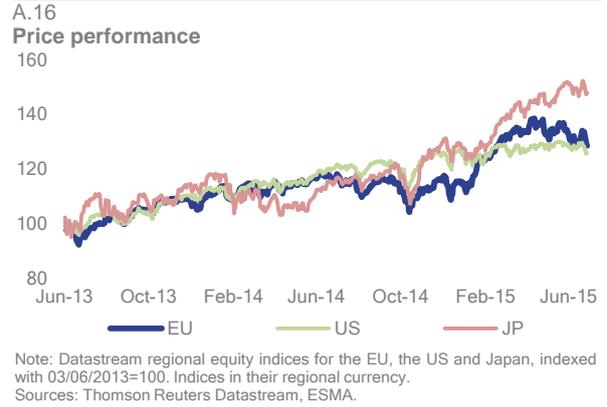
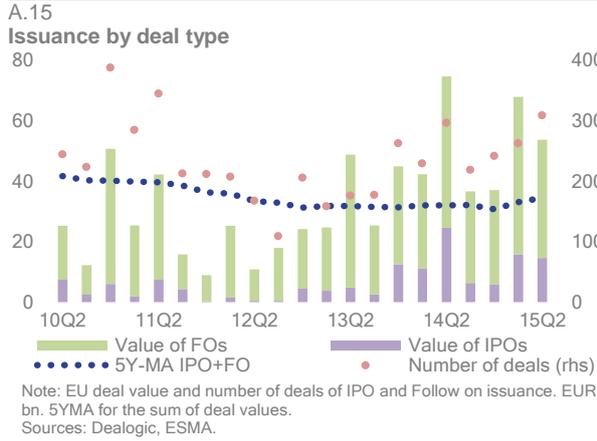
## Securities markets

### Market environment





## Equity markets



## Sovereign-bond markets

A.23

### Issuance and outstanding



Note: Quarterly issuance, EUR bn (rhs), and outstanding debt, EUR tn (lhs). Amounts outstanding after 4Q14 forecasted. Sources: Dealogic, Eurostat, AMECO, ESMA.

A.24

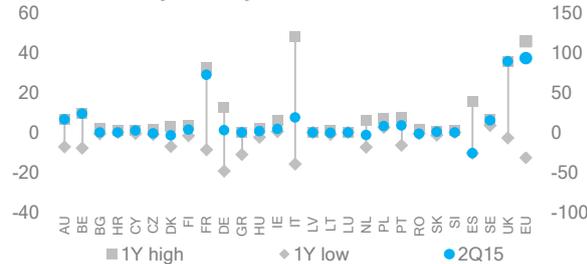
### Issuance by credit rating



Note: Quarterly issuance in the EU ranked by S&P ratings at launch, EUR bn. Weighted average rating computed by converting ratings into a numeric scale (AAA=21, AA+=20, etc.). Sources: Dealogic, ESMA.

A.25

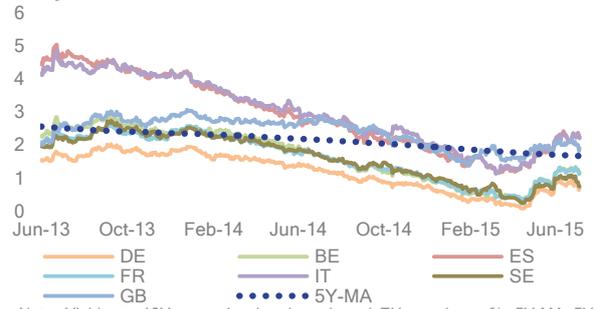
### Net issuance by country



Note: Quarterly net issuance of EU sovereign debt by country, EUR bn. Net issuance calculated as the difference between new issuance over the quarter and outstanding debt maturing over the quarter. Highest and lowest quarterly net issuance in the past year are reported. EU total on right-hand scale. Sources: Dealogic, ESMA.

A.26

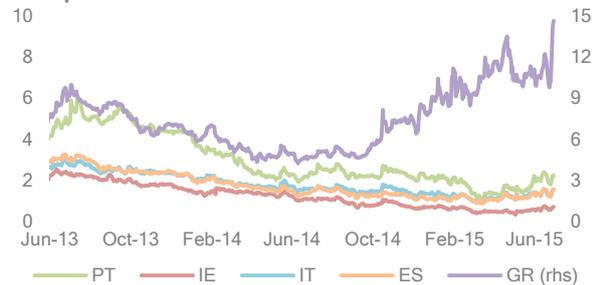
### 10Y yields



Note: Yields on 10Y sovereign bonds, selected EU members, %. 5Y-MA=5Y moving average of EA 10Y bond indices computed by Datastream. Sources: Thomson Reuters Datastream, ESMA.

A.27

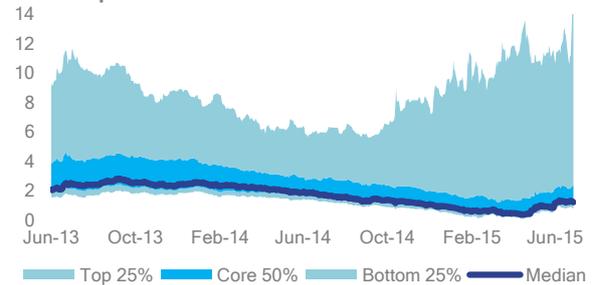
### 10Y spreads



Note: Selected 10Y EA sovereign bond risk premia (vs. DE Bunds); percentage points. Sources: Thomson Reuters Datastream, ESMA.

A.28

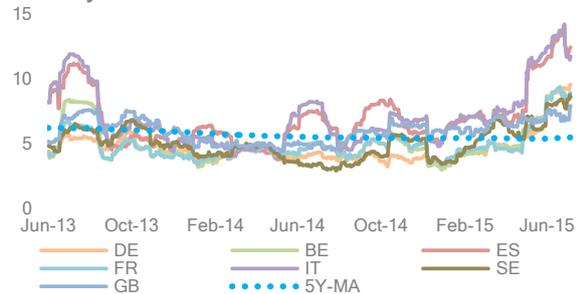
### Yield dispersion



Note: Dispersion of yields on 10Y sovereign bonds of EU 16 countries, in%. Sources: Thomson Reuters Datastream, ESMA.

A.29

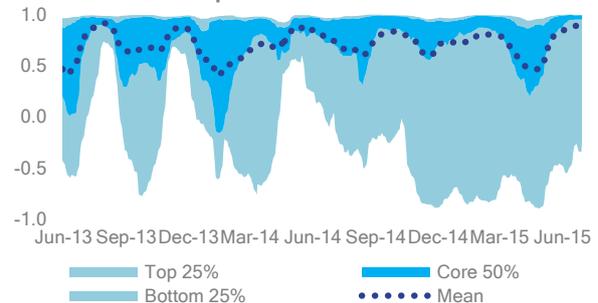
### Volatility



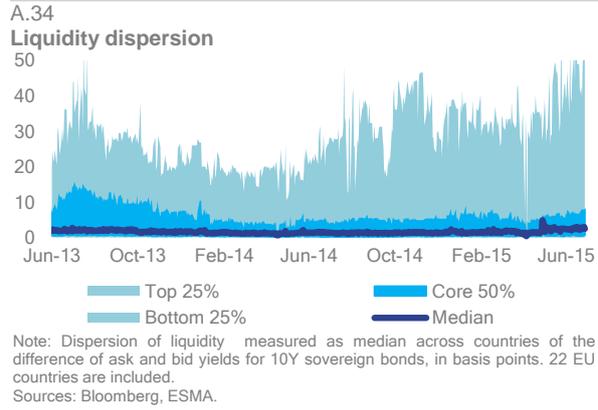
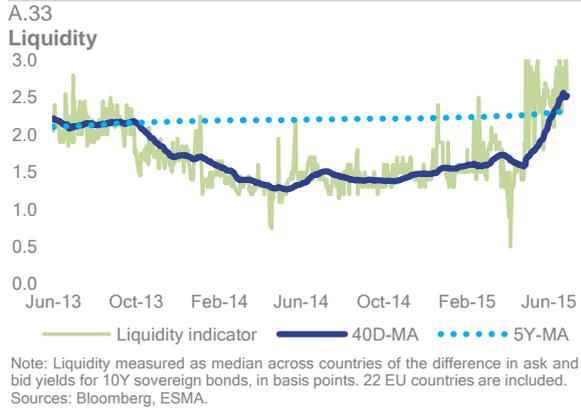
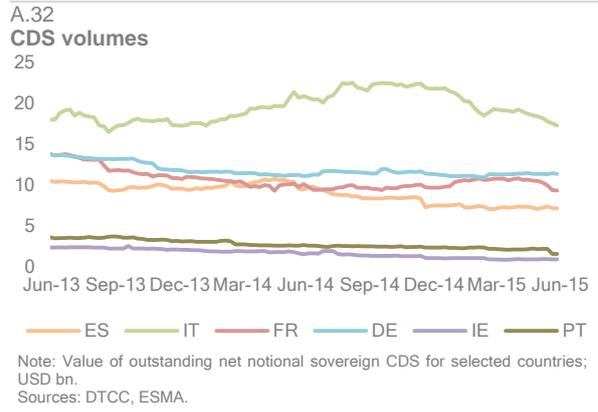
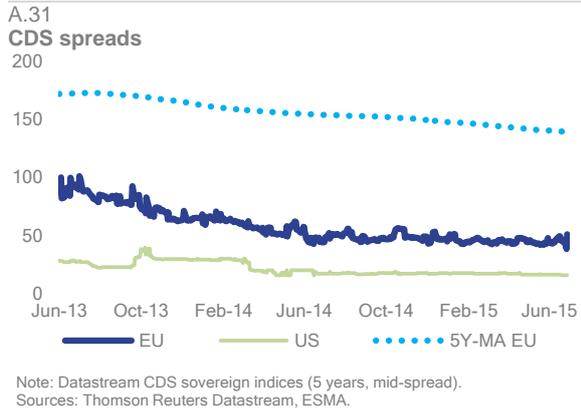
Note: Annualised 40D volatility of 10Y sovereign bonds, selected EU members, %. 5Y-MA=5Y moving average of EA 10Y bond indices computed by Datastream. Sources: Thomson Reuters Datastream, ESMA.

A.30

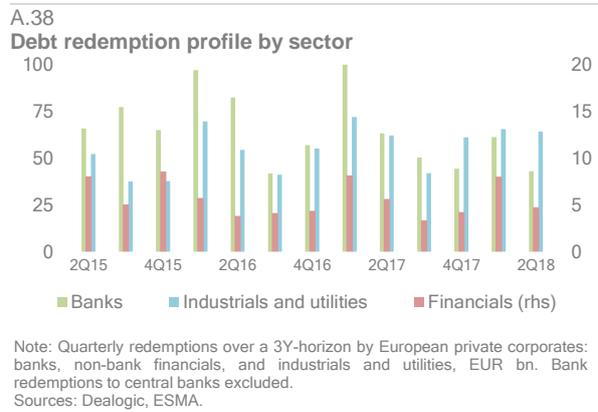
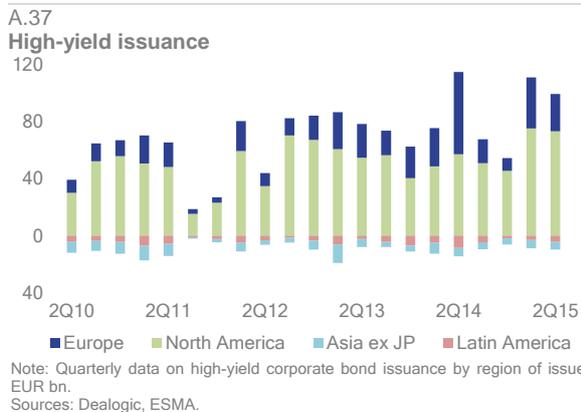
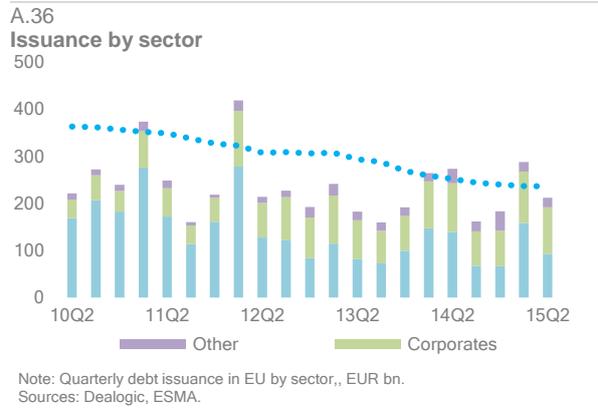
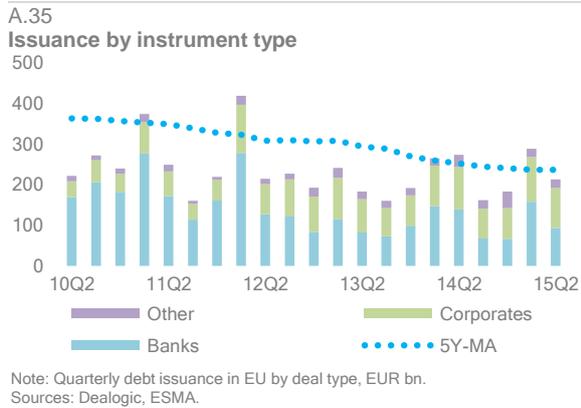
### Yield correlation dispersion

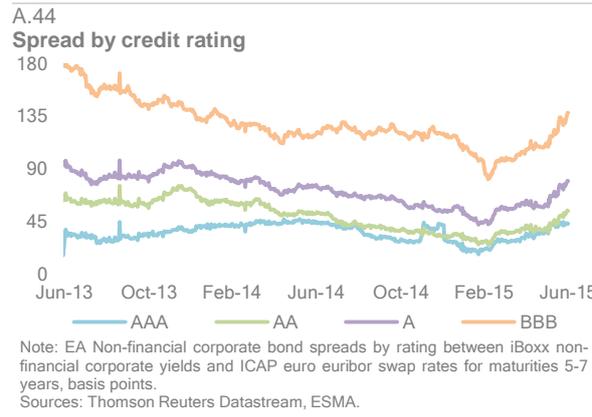
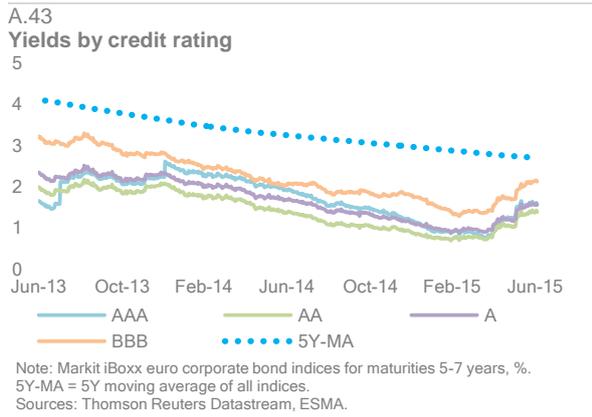
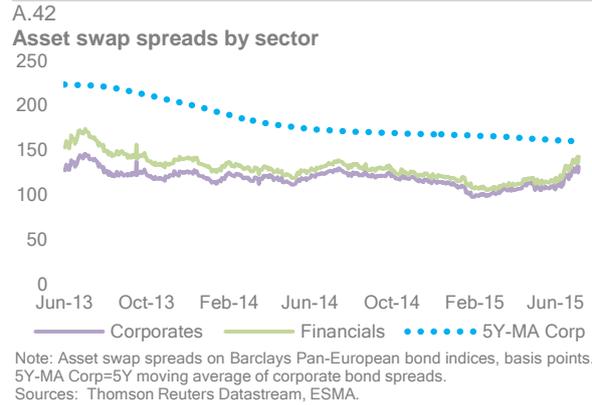
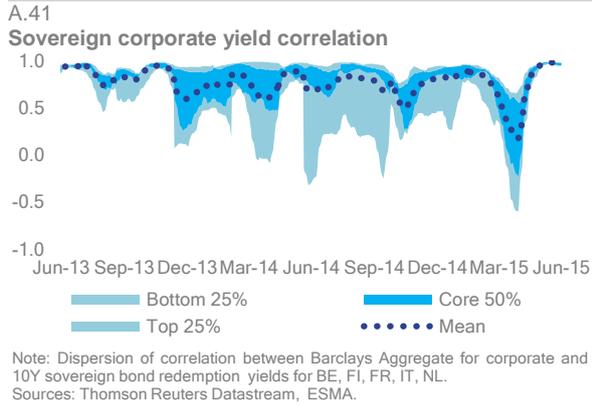
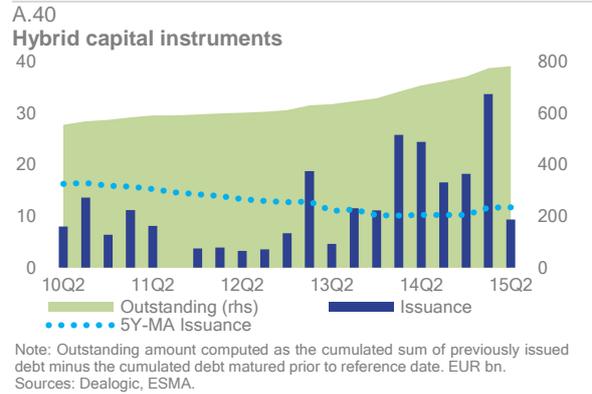
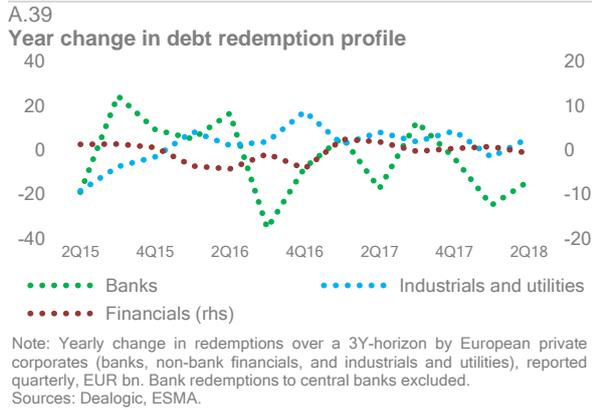


Note: Dispersion of correlations between 10Y DE Bunds and other EU countries' sovereign bond redemption yields over 60D rolling windows. Sources: Thomson Reuters Datastream, ESMA.

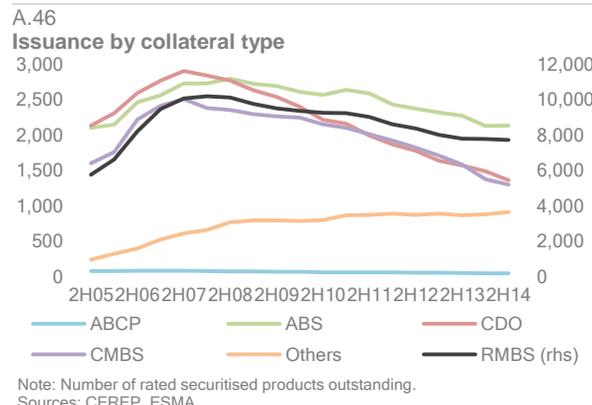
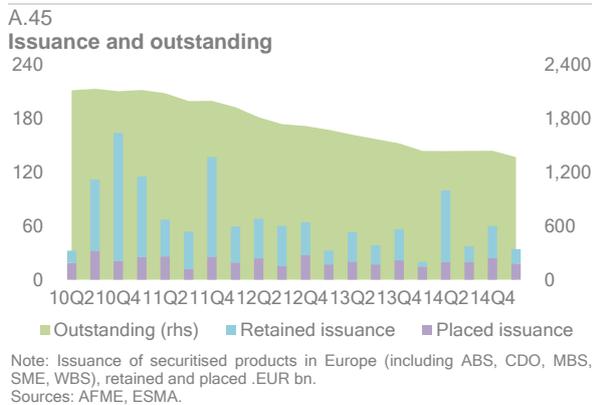


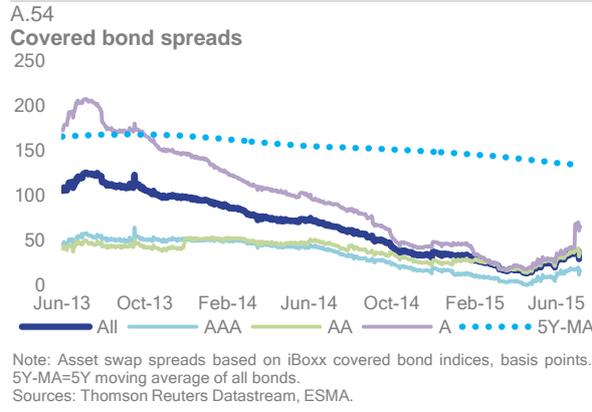
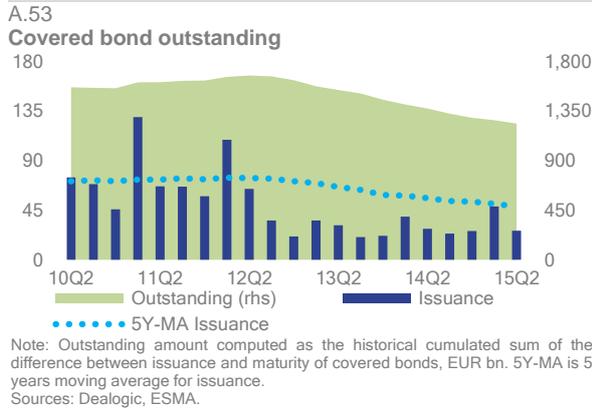
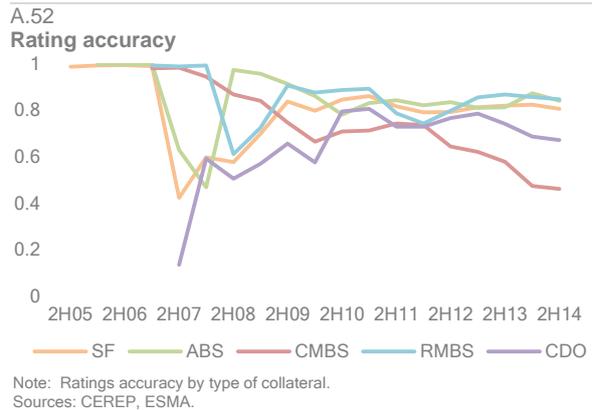
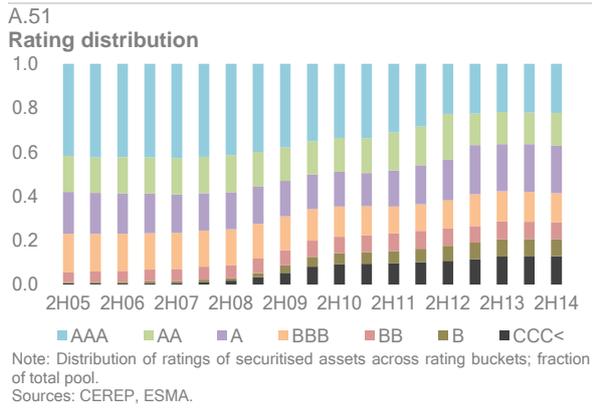
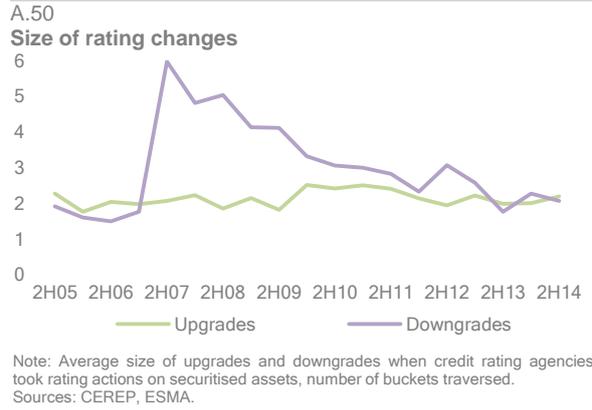
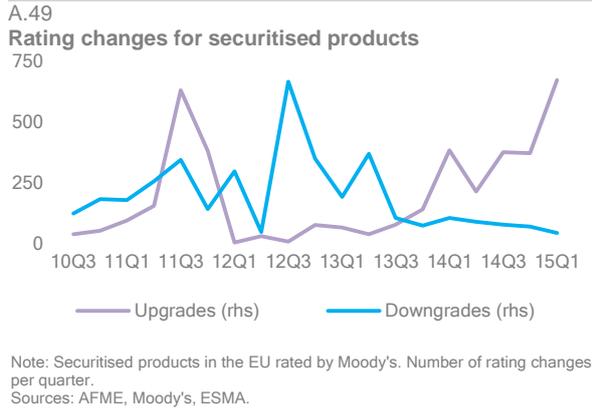
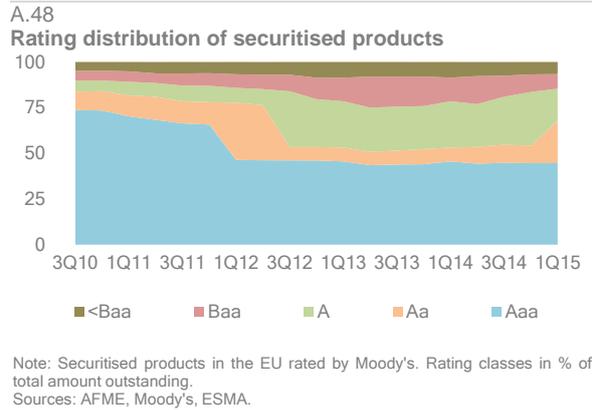
## Corporate-bond markets





**Securitised assets and covered bonds**





## Credit quality

A.55

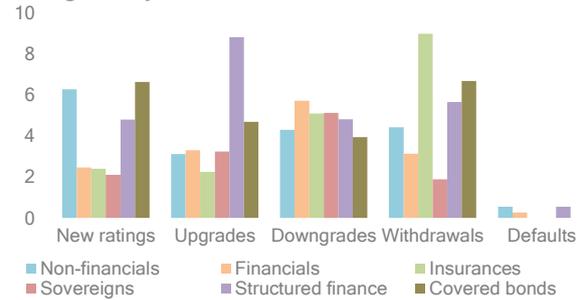
### Rating actions



Note: Average size of upgrades and downgrades from all credit rating agencies by asset class for 2H14, average number of notches. SF=structured finance, CB=covered bonds. Sovereign includes public finance. Sources: CEREP, ESMA.

A.56

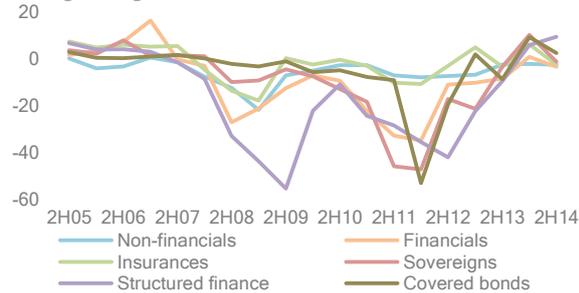
### Rating activity



Note: Rating activity of all credit rating agencies (CRAs) by asset class for 2H14, % of outstanding ratings. Sovereign including public finance. Sources: CEREP, ESMA.

A.57

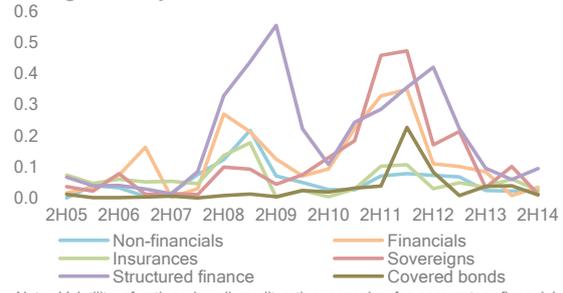
### Rating changes



Note: Drift of ratings from all credit rating agencies by asset class computed as percentage number of upgrades minus percentage number of downgrades, %. Sources: CEREP, ESMA.

A.58

### Rating volatility

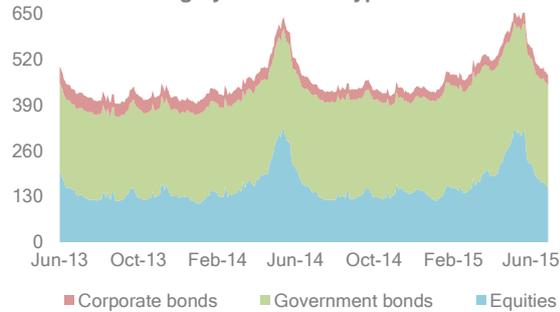


Note: Volatility of ratings by all credit rating agencies for corporates, financials, insurances, sovereigns and structured finance, computed as number of upgrades and downgrades over number of ratings outstanding. Sources: CEREP, ESMA.

## Securities finance and collateral

A.59

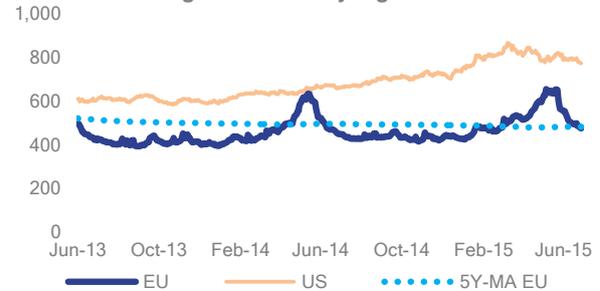
### Securities lending by instrument type



Note: Total value of EU securities on loan, in EUR bn. Sources: Markit Securities Finance, ESMA.

A.60

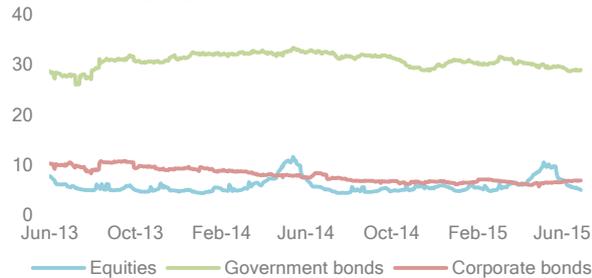
### Securities lending total values by region



Note: Total value of EU and US securities on loan, in EUR bn. 5Y-MA EU = 5 years moving average for EU securities. Sources: Markit Securities Finance, ESMA.

A.61

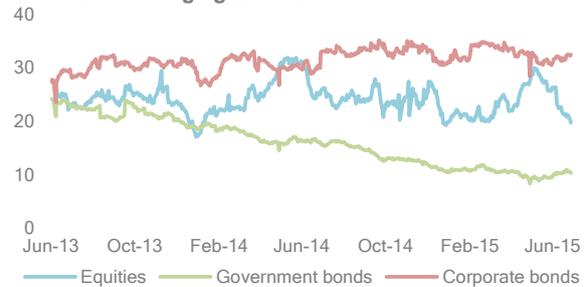
### Securities utilisation rate



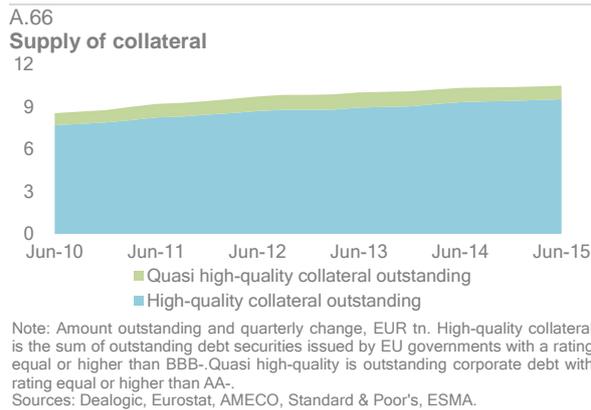
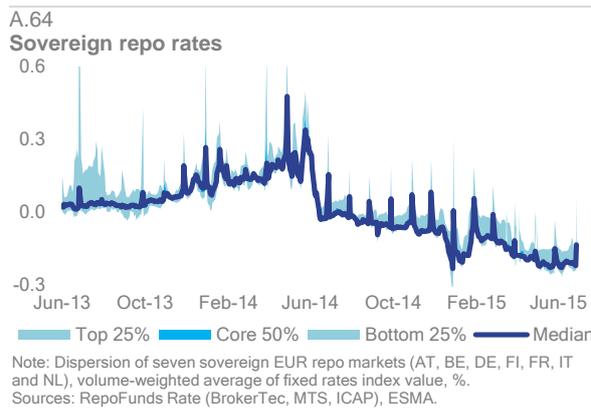
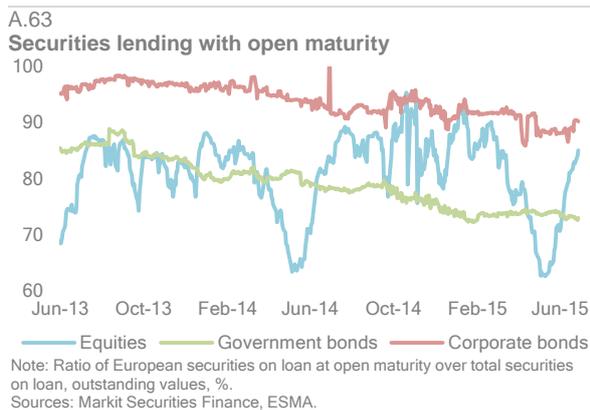
Note: European securities lending utilisation rate, computed as outstanding value of securities on loan over outstanding total lendable value, %. Corporate bonds comprise euro denominated bonds only. Sources: Markit Securities Finance, ESMA.

A.62

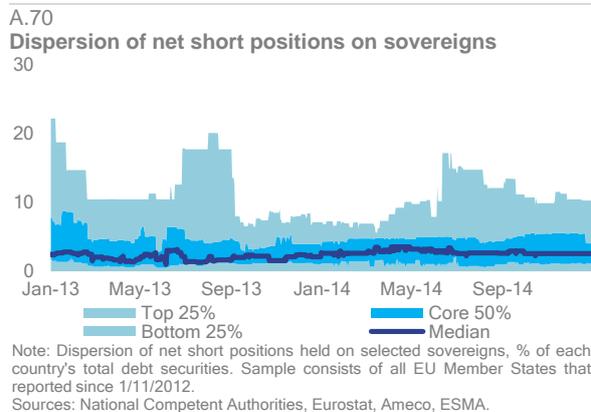
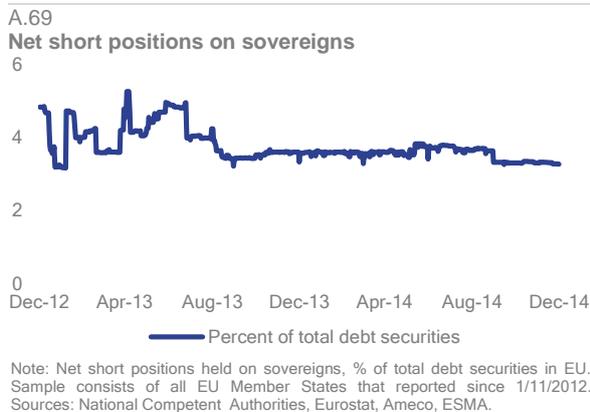
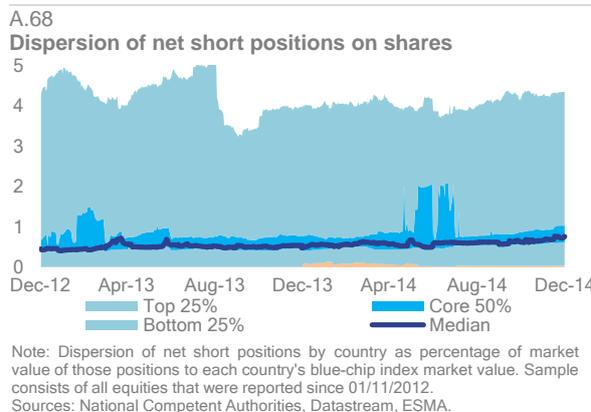
### Securities lending against cash collateral



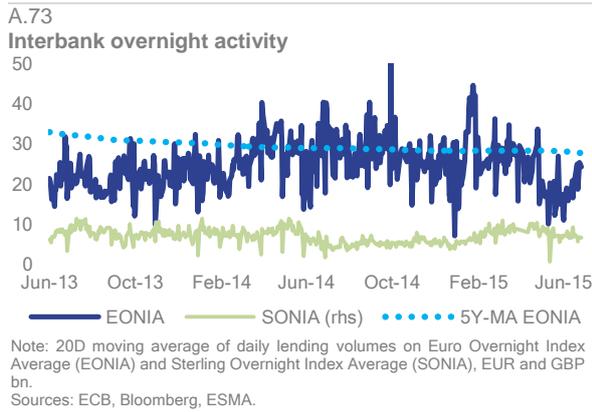
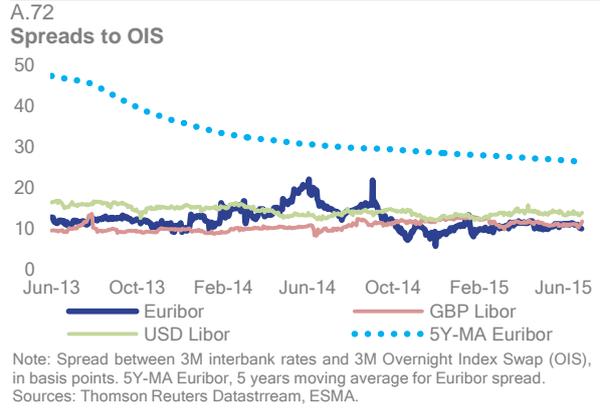
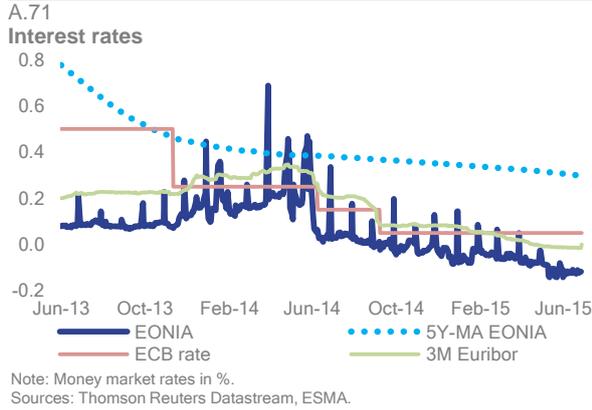
Note: Ratio of European securities on loan collateralised with cash over total securities on loan, outstanding values, %. Sources: Markit Securities Finance, ESMA.



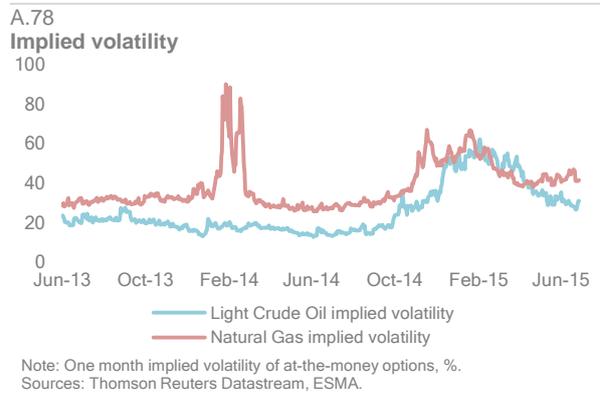
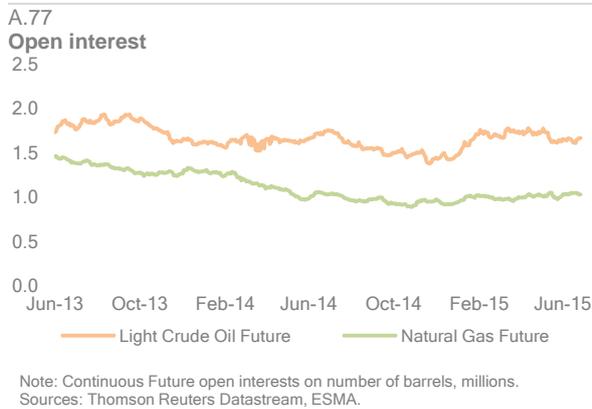
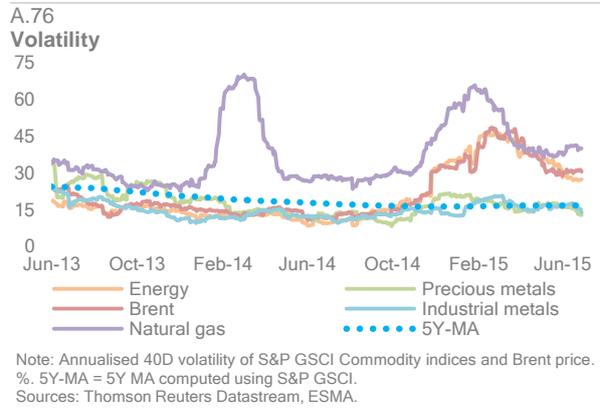
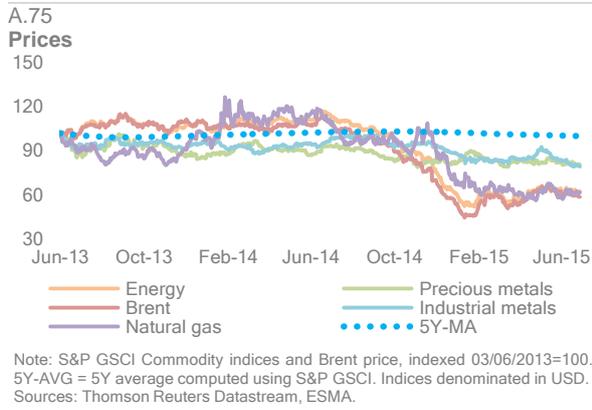
## Short selling



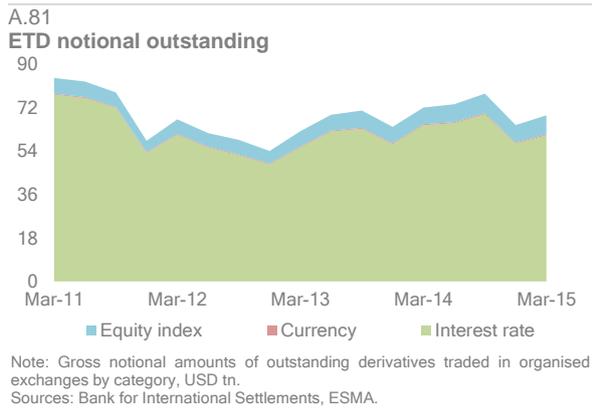
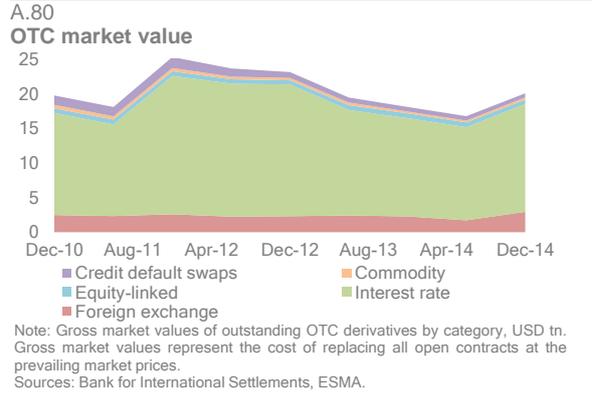
## Money markets



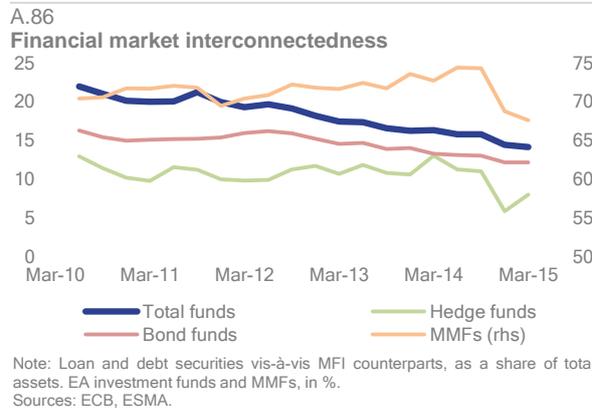
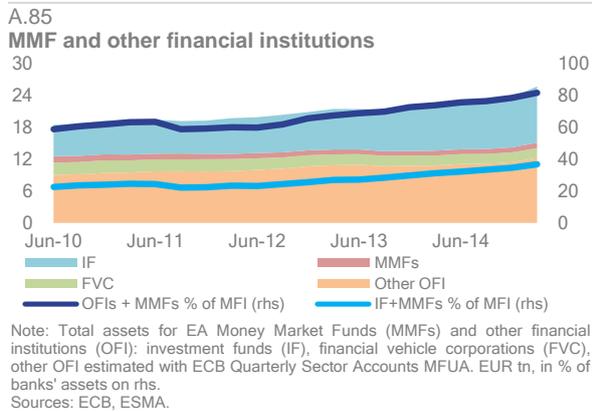
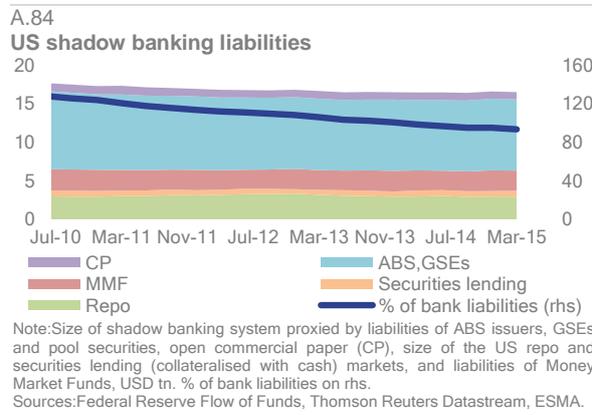
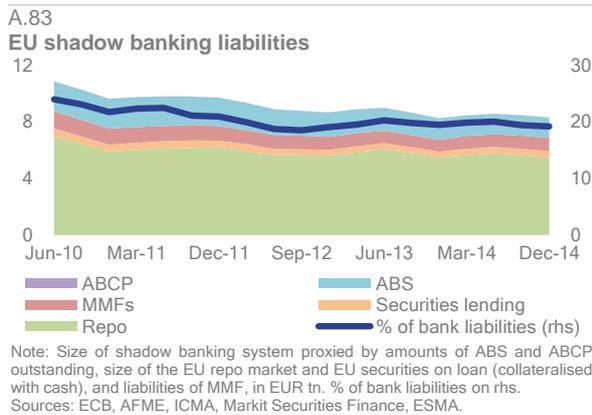
## Commodity markets

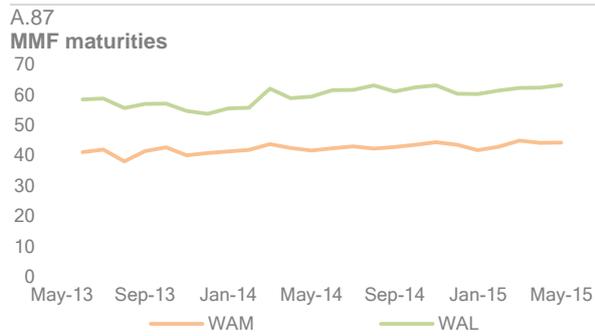


## Derivatives markets

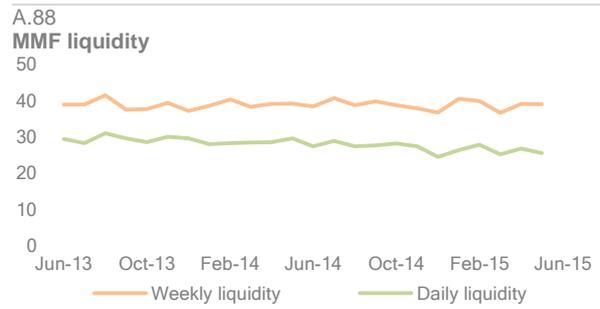


## Shadow banking and market based credit intermediation





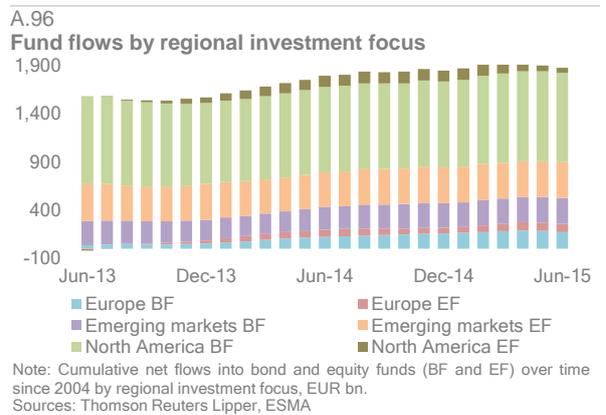
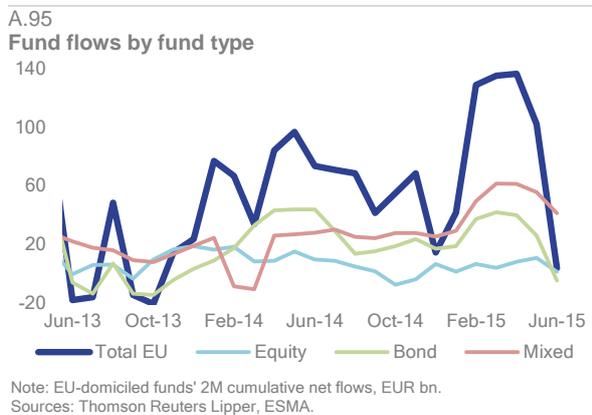
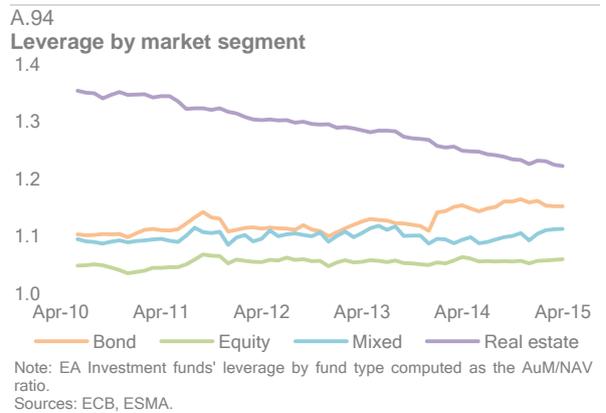
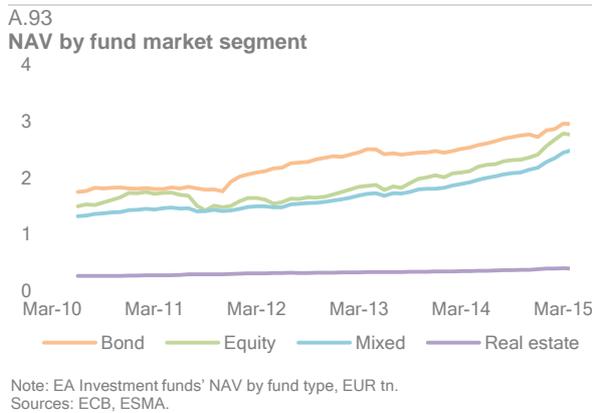
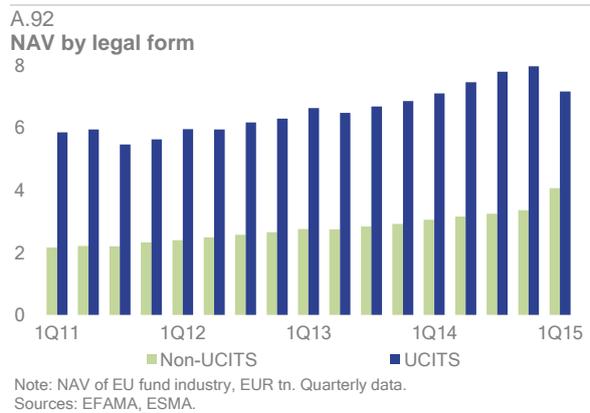
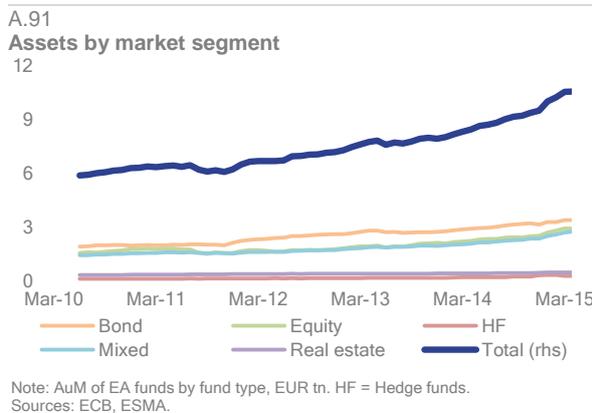
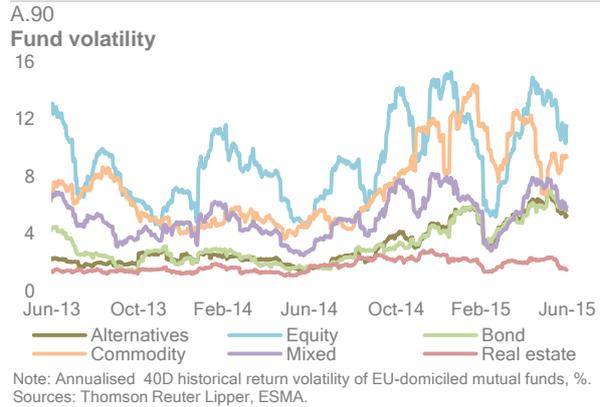
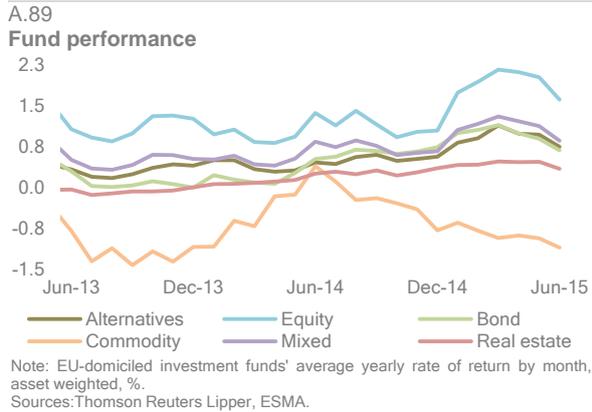
Note: Weighted average maturity (WAM) and weighted average life (WAL) of EU Prime MMFs, in days. Aggregation carried out by weighting individual MMFs WAM and WAL by AuM.  
Sources: Fitch Ratings, ESMA.

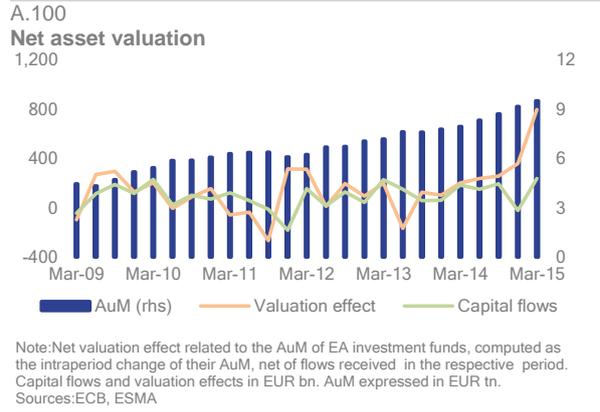
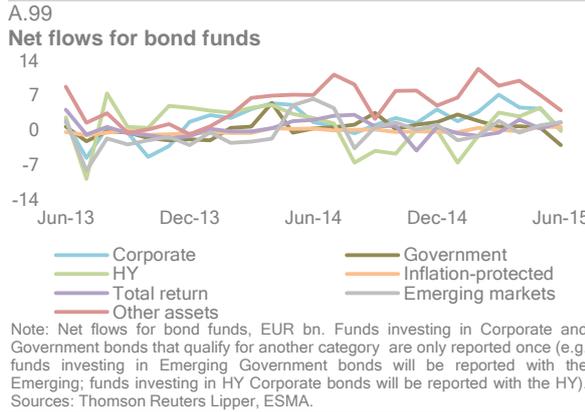
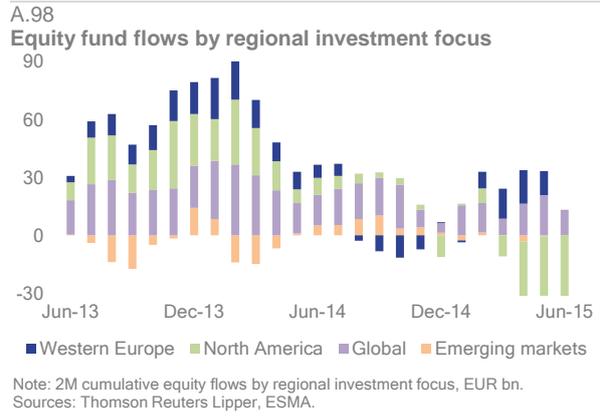
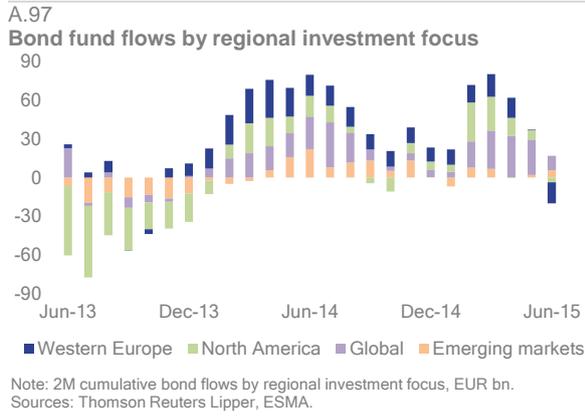


Note: Daily and weekly liquidity includes all assets maturing overnight and shares by AAA MMFs, securities issued by highly rated sovereigns with a maturity of less than one year, % of total assets. Aggregation carried out using individual MMF data weighted by AuM.  
Sources: Fitch Ratings, ESMA.

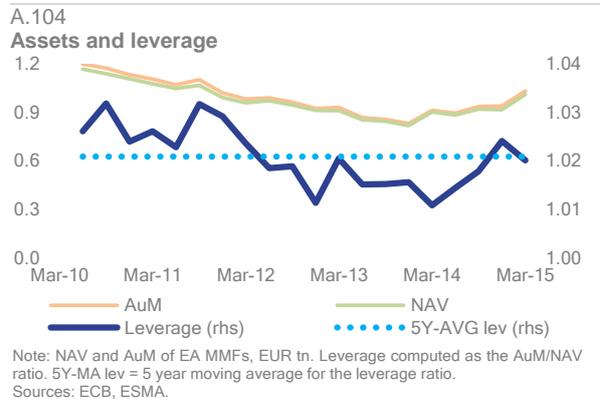
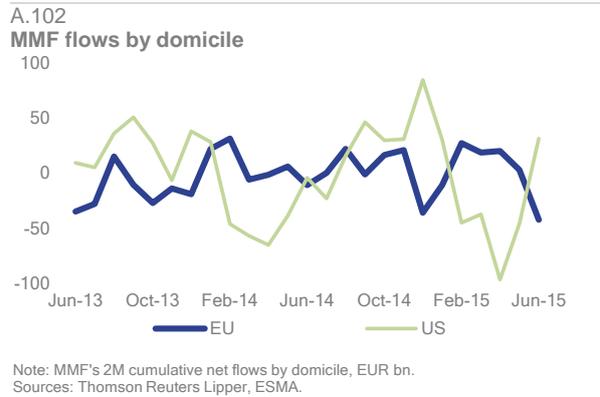
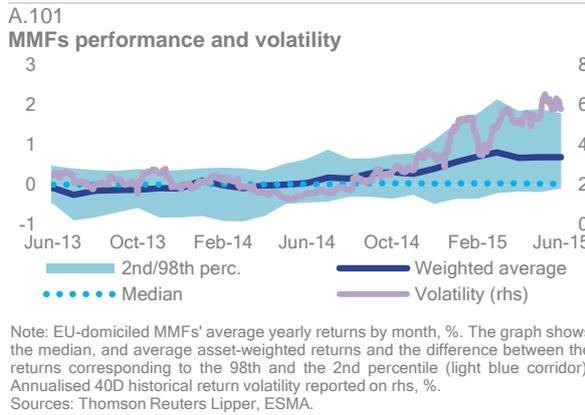
# Investors

## Fund industry

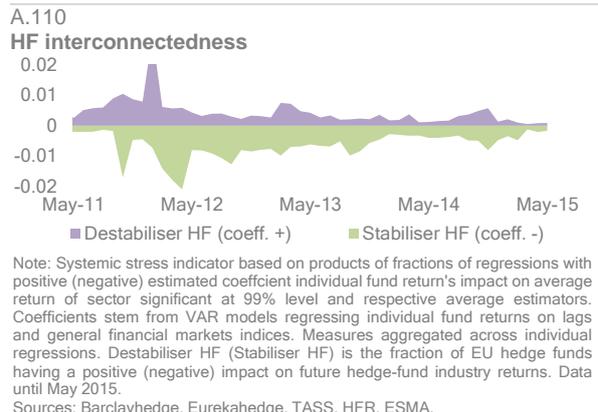
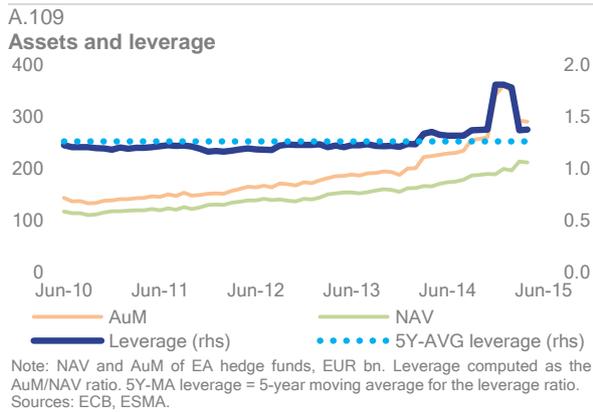
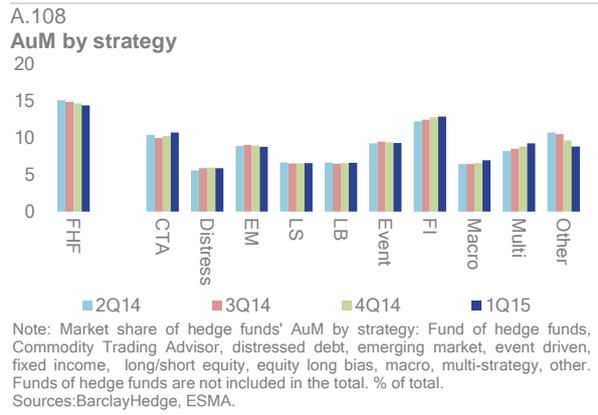
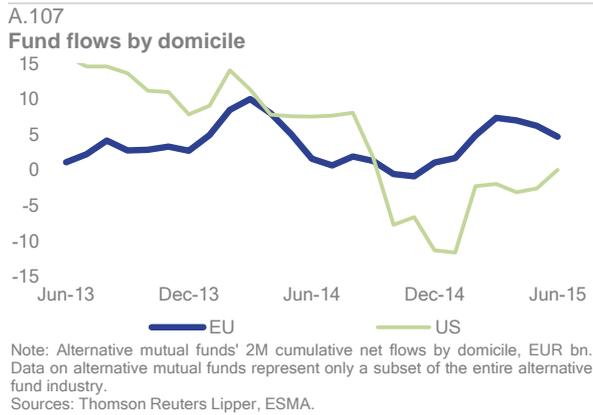
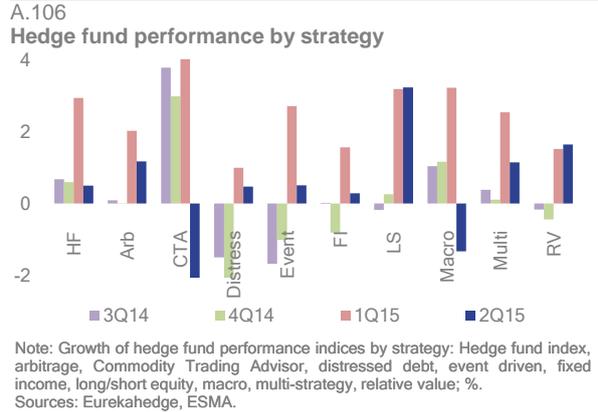
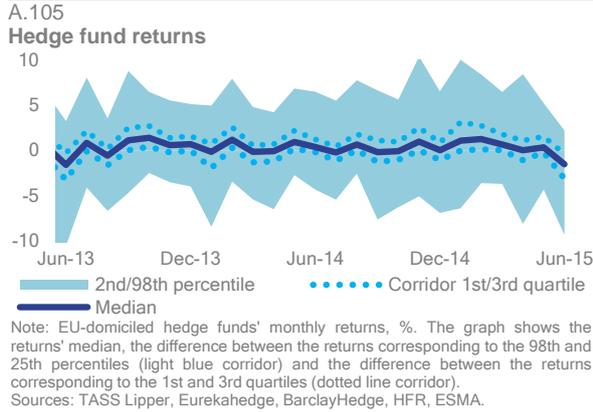




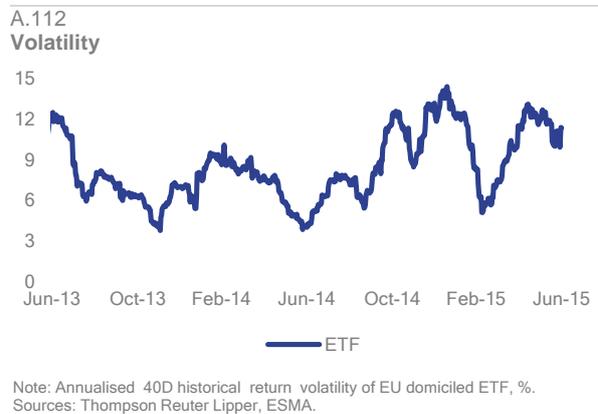
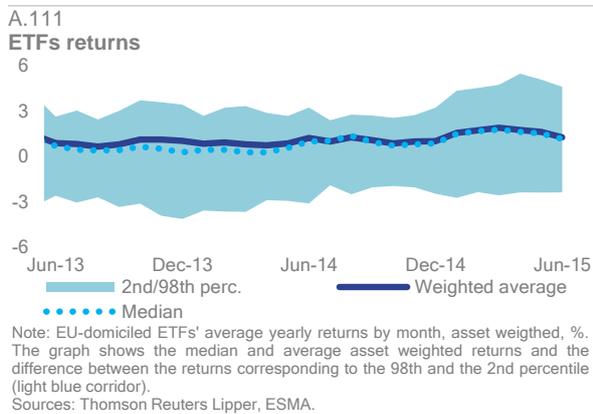
**Money market funds**

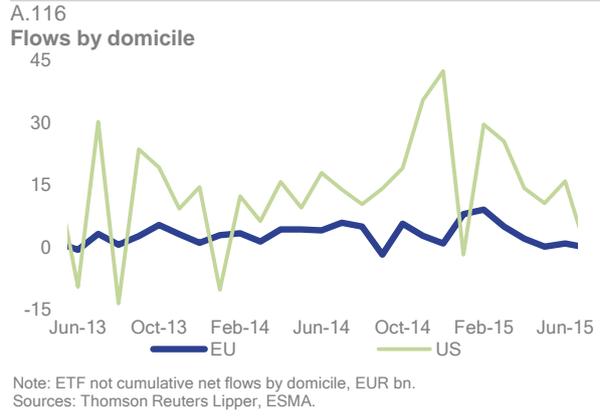
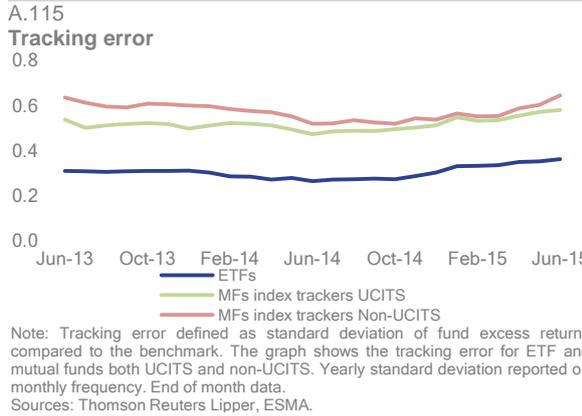
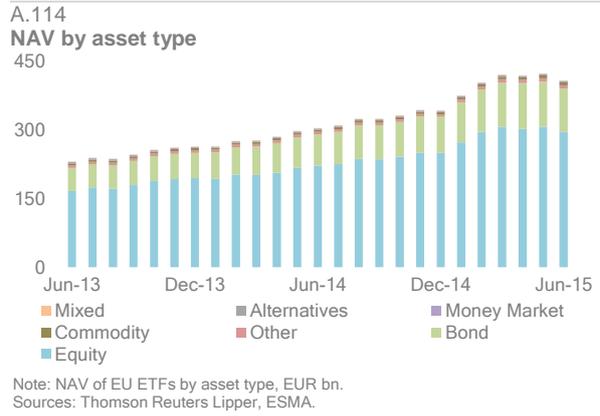
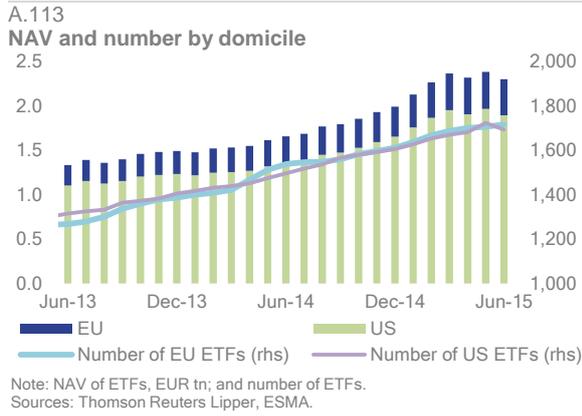


## Alternative funds

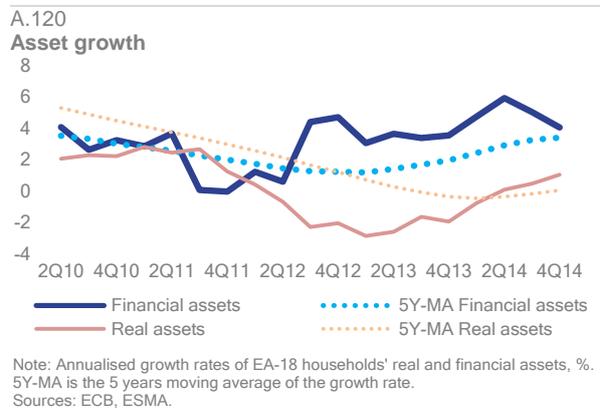
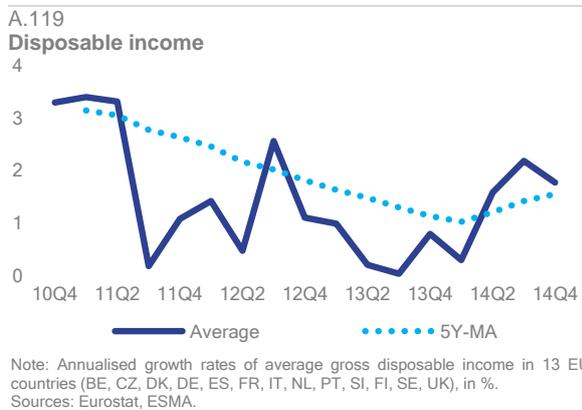
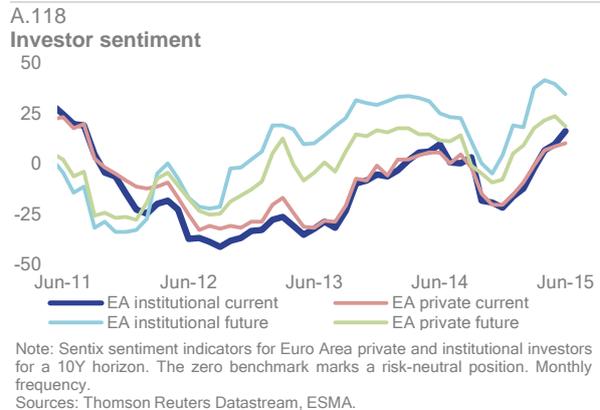
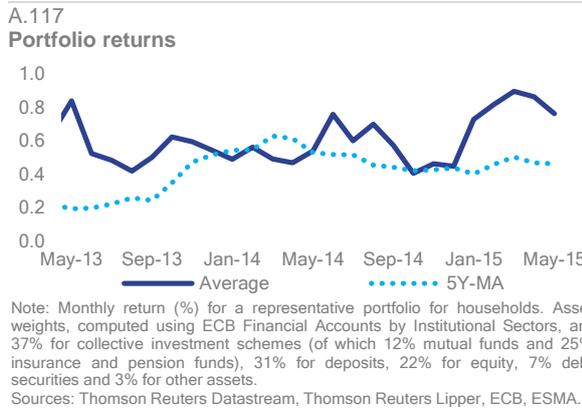


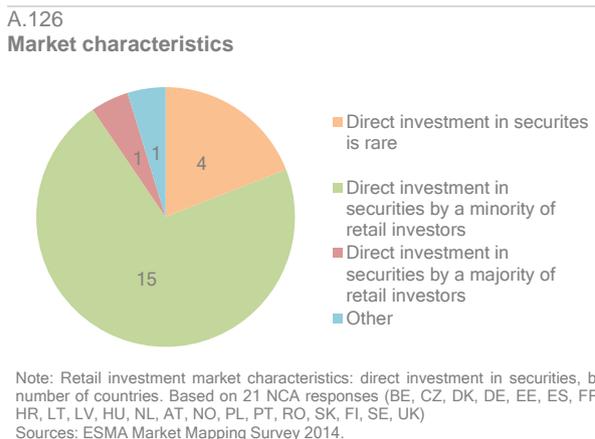
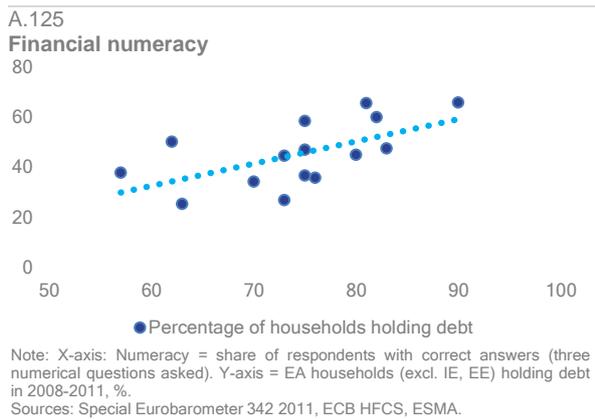
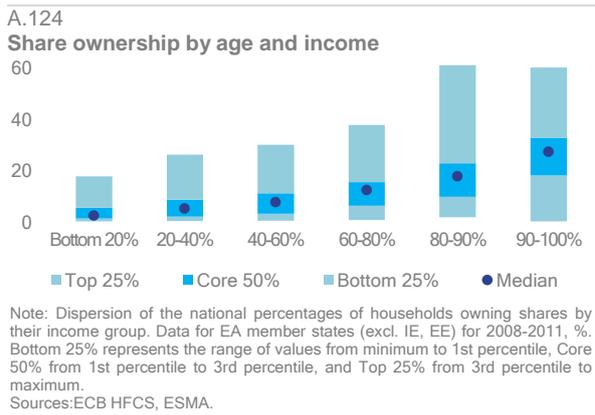
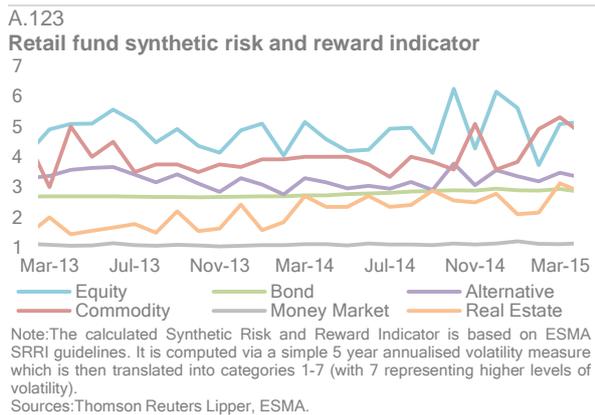
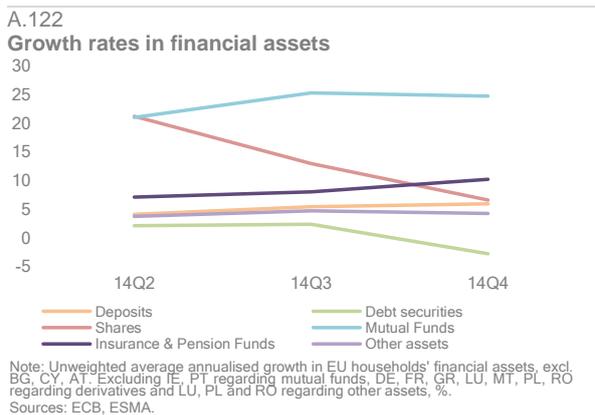
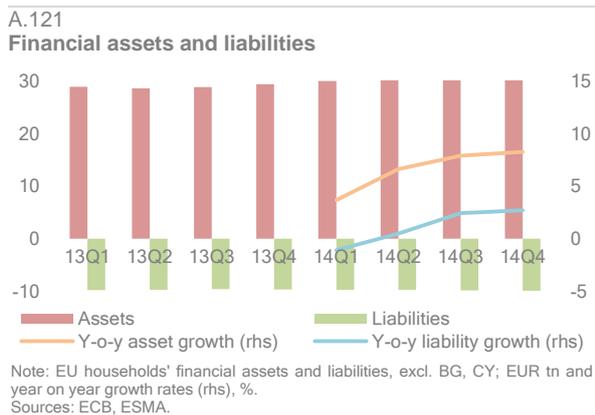
## Exchange-traded funds





## Retail investors





# Infrastructures and services

## Trading venues

A.127

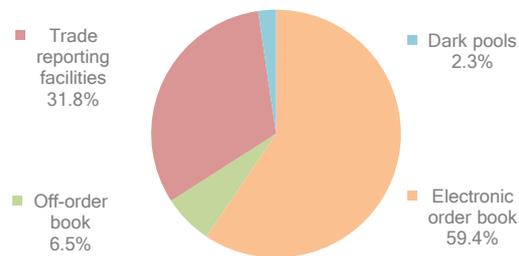
### Equity trading turnover



Note: Turnover on trading venues by category, EUR bn. 2Y-AVG= 2Y average of all trading. EEOB = Electronic Order Book, TRF = Trade Reporting Facilities. Sources: FESE, ESMA.

A.128

### Equity trading by transaction type

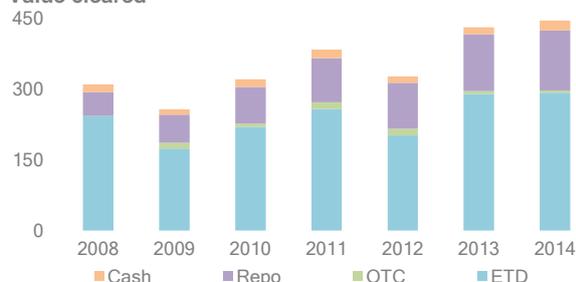


Note: Turnover in EUR as % of total. Data as of June 2015. Sources: FESE, ESMA.

## Central counterparties

A.129

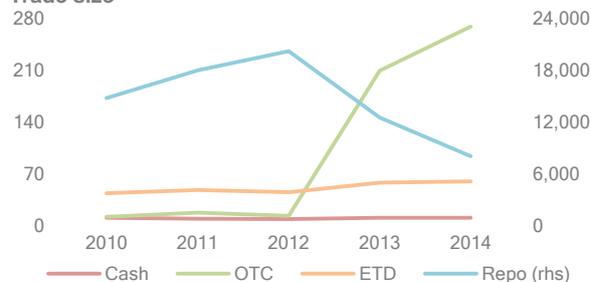
### Value cleared



Note: Volume of transactions cleared by reporting CCPs. Annual data, EUR tn, for Cash, Repos, non-OTC and OTC derivatives. LCH.Clearnet Ltd not included as there is uneven reporting during the period. Sources: ECB, ESMA.

A.130

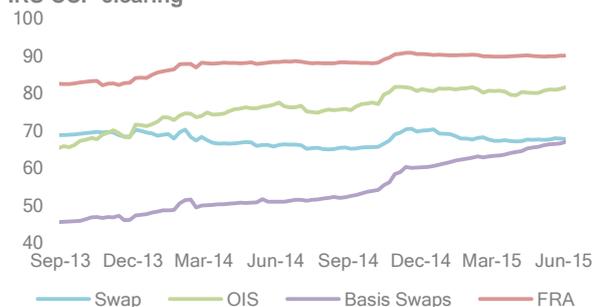
### Trade size



Note: Average size of transactions cleared by reporting CCPs, for Cash, Repos, non-OTC and OTC derivatives. Annual data, EUR thousand. LCH.Clearnet Ltd not included as there is uneven reporting during the period. Sources: ECB, ESMA.

A.131

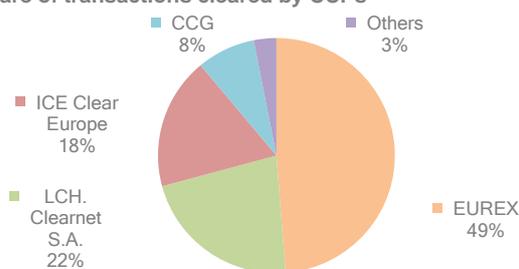
### IRS CCP clearing



Note: OTC interest rate derivatives cleared by CCPs, % of total notional amount. Sources: DTCC, ESMA.

A.132

### Share of transactions cleared by CCPs

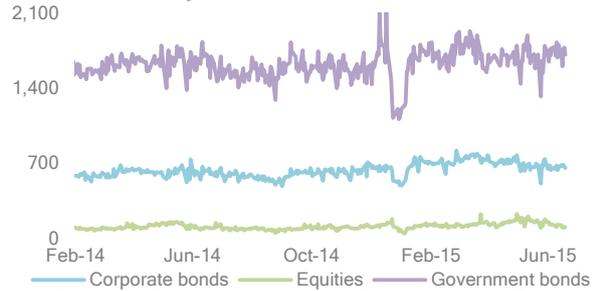


Note: Share of volume of transactions cleared by reporting CCPs for Cash, Repos, non-OTC and OTC derivatives, 2014. LCH.Clearnet Ltd not included as there is uneven reporting during the period. Sources: ECB, ESMA.

## Central securities depositories

A.133

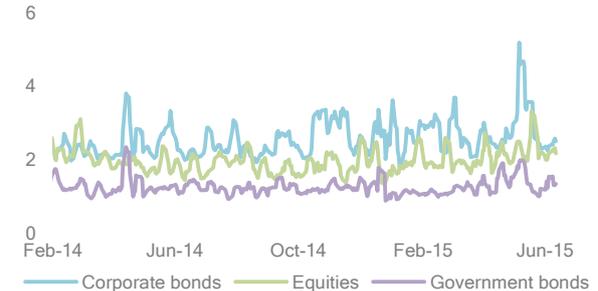
### Settlement activity



Note: Total value of settled transactions in the EU as reported by NCAs: daily values in EUR mn for government and corporate bonds as well as equities. Free-of-payment transactions not considered. Data until 19/06/2015. Sources: National Competent Authorities, ESMA .

A.134

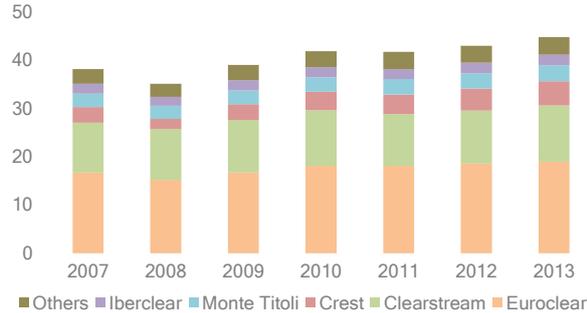
### Settlement fails



Note: Share of failed settlement instructions in EU, % of value, 5D MA. Free-of-payment transactions not considered. Cut-off date 19/06/2015. Sources: National Competent Authorities, ESMA .

A.135

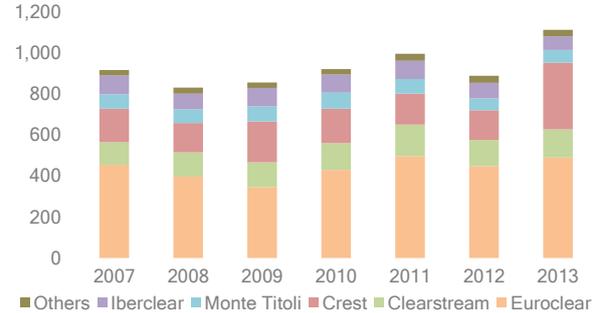
### Securities held in CSDs' accounts



Note: Value of securities held by EU CSDs in accounts; annual data in EUR tn. Sources: ECB, ESMA.

A.136

### Value of settled transactions



Note: Value of settlement instructions processed by EU CSDs. Data in EUR tn. Sources: ECB, ESMA.

## Credit rating agencies

A.137

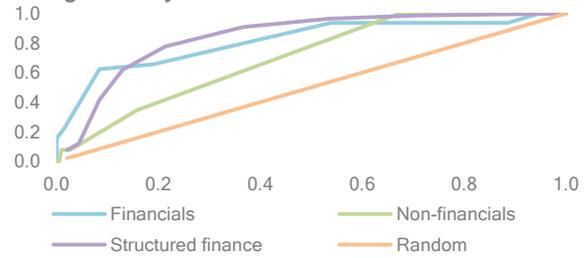
### Rating performance



Note: Cumulative accuracy profile (CAP) coefficients measure the accuracy of ratings. The coefficient is derived from average defaulter position (AP), then computed as follows: CAP = 2\*AP-1. The closer the coefficient is to 1, the higher the accuracy of the ratings (i.e. defaults occur among low credit ratings). Sources: CEREP, ESMA.

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### Rating accuracy



Note: Cumulative accuracy profile (CAP) curves for the 3 largest credit rating agencies. 2008-2014H2. The CAP curve plots the cumulative proportion of issuers by rating grade (starting with the lowest grade on the left) against the cumulative proportion of defaulters by rating grade. Sources: CEREP, ESMA.

## Financial benchmarks

A.139

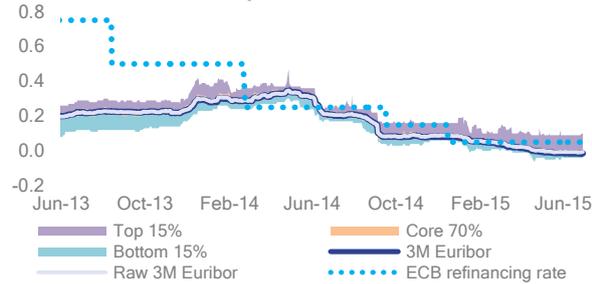
### Number of Euribor panel banks



Note: Number of banks contributing to the Euribor panel; non-viability is assumed at 12 contributing banks.  
Sources: Euribor-EBF, ESMA.

A.141

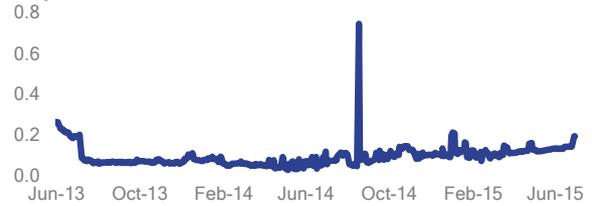
### Euribor submission dispersion



Note: Dispersion of 3M Euribor submissions, in %. The "Raw 3M Euribor" rate is calculated without trimming the top and bottom submissions of the panel for the 3M Euribor.  
Sources: Euribor-EBF, ESMA.

A.140

### Dispersion in Euribor contributions



Note: Normalised difference in percentage points between the highest contribution submitted by panel banks and the corresponding Euribor rate. The chart shows the maximum difference across the 8 Euribor tenors. The increase since 2013 is linked to technical factors such as low Euribor rates. The spike in August 2014 reflects the fact that two panel banks submitted respectively a quote for the two-week tenor which was 7 times higher than Euribor and a quote for the 1M tenor which was 10 times higher than Euribor.  
Sources: Euribor-EBF, ESMA.

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### Euribor submission variation



Note: Number of banks changing their three-month Euribor submission from day to day, %.  
Sources: Euribor-EBF, ESMA.

# List of abbreviations

ABS	Asset-Backed Securities
ABCP	Asset-Backed Commercial Paper
AIF	Alternative Investment Funds
AuM	Assets under Management
AVG	Average
BF	Bond Funds
BOP	Balance of Payments
BPS	Basis Points
CAP	Cumulative Accuracy Profile
CCP	Central Counterparty
CDO	Collateralised Debt Obligation
CDS	Credit Default Swap
CRA	Credit Rating Agency
DTCC	Depository Trust & Clearing Corporation
EA	Euro Area
EBA	European Banking Authority
ECB	European Central Bank
EF	Equity Funds
EFAMA	European Fund and Asset Management Association
EIOPA	European Insurance and Occupational Pensions Authority
EM	Emerging Market
EMIR	European Market Infrastructure Regulation
EOB	Electronic Order Book
EONIA	Euro Overnight Index Average
ESMA	European Securities and Markets Authority
ETD	Exchange-traded derivative
ETF	Exchange Traded Fund
EU	European Union
FRA	Forward Rate Agreement
IF	Investment Funds
IMF	International Monetary Fund
IPO	Initial Public Offering
IRS	Interest Rate Swap
LTRO	Long-Term Refinancing Operation
MA	Moving Average
MBS	Mortgage-Backed Securities
MFI	Monetary Financial Institutions
MMF	Money Market Funds
MTN	Medium Term Note
NAV	Net Asset Value
NCA	National Competent Authority
OFI	Other Financial Institutions
OIS	Overnight Index Swap
OMT	Outright Monetary Transactions
OTC	Over the Counter
RMBS	Residential Mortgage-Backed Securities
SCDS	Sovereign Credit Default Swap
SF	Structured Finance
UCITS	Undertaking for Collective Investment in Transferable Securities
YTD	Year to Date

*Country abbreviations according to ISO standards*

*Currency abbreviations according to ISO standards*



European Securities and  
Markets Authority

