Trends
Risks
Vulnerabilities

No. 2, 2014

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ESMA Report on Trends, Risks and Vulnerabilities, No. 2, 2014

Contributors: Sophie Ahlswede, Jakub Brettl, Anne Chone, Claudia Guagliano, Jean-Baptiste Haquin, Frank Hespeler, Steffen Kern (editor), Giuseppe Loiacono, Julien Mazzacurati, Peter McGoldrick, Yanis El Omari, Tania De Renzis, Christian Weistroffer, Christian Winkler

Support: Mirza Durakovic, Massimo Ferrari, Claire Meyer, Roko Pedisic

 The reporting period of this Report is 01 January 2014 to 30 June 2014, unless indicated otherwise. The reporting quarter of the Risk Dashboard in the Risk Section is 4Q13. Legal reference of this Report: Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC, Article 32 "Assessment of market developments", 1. "The Authority shall monitor and assess market developments in the area of its competence and, where necessary, inform the European Supervisory Authority (European Banking Authority), and the European Supervisory Authority (European Insurance and Occupational Pensions Authority), the ESRB and the European Parliament, the Council and the Commission about the relevant micro-prudential trends, potential risks and vulnerabilities. The Authority shall include in its assessments an economic analysis of the markets in which financial market participants operate, and an assessment of the impact of potential market developments on such financial market participants." The charts and analyses in this report are, fully or in parts, based on data not proprietary to ESMA, including from commercial data providers and public authorities. ESMA uses these data in good faith and does not take responsibility for their accuracy or completeness. ESMA is committed to constantly improving its data sources and reserves the right to alter data sources at any time. The shaded area in all charts indicates the reporting period of this report.

European Securities and Markets Authority (ESMA)
Economics and Financial Stability Unit
103, Rue de Grenelle
FR–75007 Paris
financialstability@esma.europa.eu

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List of abbreviations

ABS	Asset-Backed Securities
AF	Alternative Funds
AuM	Assets under Management
AVG	Average
BF	Bond fund
BPS	Basis points
CAP	Cumulative Accuracy Profile
CCP	Central Counterparty
CDO	Collateralised Debt Obligation
CDS	Credit Default Swap
CEREP	ESMA Central Rating Repository
CRA	Credit Rating Agency
CSD	Central Securities Depository
DTCC	Depository Trust & Clearing Corporation
EA	Euro Area
EBA	European Banking Authority
ECB	European Central Bank
EF	Equity fund
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
ETF	Exchange Traded Fund
EU	European Union
FMI	Financial market intermediary
FRA	Forward Rate Agreement
HFT	High Frequency Trading
HY	High Yield
ICSD	International Central Securities Depository
IMF	International Monetary Fund
IPO	Initial Public Offering
IRS	Interest Rate Swap
LTRO	Long-Term Refinancing Operation
MA	Moving Average
MBS	Mortgage-Backed Securities
MMF	Money Market Funds
MS	EU Member State
MTN	Medium-Term Note
NAV	Net Asset Value
NCA	National Competent Authority
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
VaR	Value at Risk
YTD	Year-to-Date

Countries abbreviated according to ISO standards
Currencies abbreviated according to ISO standards

Executive summary

Trends

Securities markets: In 1H14, EU markets reported significant gains amid low volatility and notwithstanding a challenging economic and political environment. This underscored the prevailing sanguine market sentiment in a low interest rate environment, within which a hunt for yield spread across asset and risk classes, continuing to raise valuation concerns and raising the risks of future raised volatility and its effects. Having fallen in 2013, issuance in key market segments picked up again in 1H14. This was driven by corporate bond markets, while a 2Q14 rebound in securitisation halted its hitherto persistent decline. Risk appetite remained strong as yields continued to compress and solid high-yield bond issuance was readily absorbed by markets. Against a background of deleveraging, the importance of capital market financing continued to grow relative to loan-based financing through 2013, with net new issuance of EUR 820bn in 2013 and EUR 317bn in 2014. Higher investment from institutional investors, amounting to EUR 600bn in 2013, met new capital market issuance. Foreign portfolio inflows remained positive, both for that period and into 1H14.

Investors: The fund industry continued to expand, with AuM growing by about 6.7% or EUR 0.5tn in 1H14 and capital inflows that concentrated into bond funds. Investment fund returns were relatively low in the same period, though trending upward, with positive valuation effects an important driver. With allocations focused on bonds, high-yield and corporate bonds were in demand in 1Q14. Overall, the industry exhibits behaviour consistent with hunt-for-yield. In a context of booming primary bond markets, a shrinking pool of market makers could potentially limit the functionality of secondary bond markets.

Market infrastructures: Activity in trading venues increased strongly before easing off as from May. Volumes of securities settled by CSDs were broadly flat before tailing off somewhat end-1H14, with the incidence of elevated settlement fails tailing off towards the end of the reporting period. The proportion of interest rate derivatives cleared via CCPs fell slightly, although this decline was less than that reported in the gross notional value of contracts in general. Equities bucked that trend, however, while at the end of May settlement fails spiked briefly for corporate bonds. Benchmark panels reported limited withdrawals, but these lessened as administrators introduced reinforced governance rules.

Risks

Main risks: Sources

Risk	Change since 1Q14
Risks in EU sovereign debt markets	↘
Market clustering	→
Funding risk	→
Valuation risk	↗
Market functioning	↗

Note: Assessment of main risk sources for markets under ESMA remit, change since the last assessment. Upward arrows indicate an increase in the contribution to risks, downward arrows a decrease.

Main risks: Categories

Risk category	Change since 1Q14	Outlook for 3Q14	Systemic risk
Liquidity risk	↗	↗	yellow
Market risk	↗	↗	yellow
Contagion risk	→	→	yellow
Credit risk	↘	↘	red

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=low, yellow=moderate, orange=high, red=very high. Upward arrows indicate a risk increase, downward arrows a risk decrease.

Systemic stress: In 2Q14, EU systemic stress indicators reverted to relatively low levels. Market and liquidity risks increased, however, and look set to rise further. Credit risk improved but still remained very high. The prevailing optimistic market sentiment was at odds with sluggish economic fundamentals and partially related to the ultra-low interest rate environment. The hunt for yield intensified and, in turn, sustained yield compression across risk classes, loaded new risks onto balance sheets, and drove up valuations and market risk. The risk of critical market corrections rose further. The systemic impact of any correction could be exacerbated by liquidity bottlenecks, such as might arise from thin dealer markets or rising collateral requirements. We maintain our overall systemic risk assessment for 2Q14 but expect a further deterioration in market and liquidity risks in the third quarter, which may trigger revisions.

Liquidity risk: Liquidity risk in 2Q14 increased and looks set to continue doing so. Aggregate liquidity appeared sufficient, although its distribution was uneven across markets. Both this unevenness and dependence on monetary policy support are important factors determining liquidity risk. The risks related to a snapback and subsequent demands ensuing from asset reallocation increased. The liquidity measured in sovereign bond markets was stable. In equity markets, a brief deterioration early in the quarter highlighted the potential for disruption. Bond market volatility remained inversely related to maturities. Market data did

not indicate hedge fund liquidity concerns.

Market risk: Market risk was high and rising in 2Q14, due chiefly to upbeat financial market sentiment moving ahead of fundamentals and potential over-reliance on continued policy support. Revaluation risk is thus a growing concern. Price and quantity adjustments that would accommodate a change in the low interest rate environment and resulting dislocations could come up against bottlenecks, which would heighten liquidity risk. Although aggregate equity PE ratios remained below their average, markets and MS exhibited considerable heterogeneity, with valuations in some markets exceeding historical highs while current yields on bonds remained very low. Moreover, the hunt for yield continued to compress risk premia across asset classes. Corporates relied on market finance and spreads of lower-rated corporate bonds continued to decline while high-yield issuance was solid. Where prices are fuelled by short-term and cheap credit rather than expectations about economic recovery, valuation risk will likely remain on an upward trajectory.

Contagion risk: EU contagion risk remained broadly stable at an elevated level, although shifting somewhat in nature. The situation of smaller, more vulnerable EA sovereigns broadly improved, with another programme exit. Their yields converged and continued to approach those of core countries. On the other hand, default insurance bought against a few larger, more vulnerable sovereigns increased. Developments in Ukraine started to cause unrest in relevant market segments. EM risks remained an important consideration, due partly to prevailing geopolitical risks, macroeconomic uncertainty, and the associated potential for destabilising capital flow reversals.

Credit risk: Though credit risk remained very high, structural reforms continued to yield improvements. Notwithstanding difficult macroeconomic conditions and their interaction with the quantity and quality of private and public indebtedness, important measures continued to be rolled out in the EU to address related risks and their potential fallout. Noteworthy are the establishment of the banking union, accelerated repayments of LTRO balances and the return of several sovereigns to capital markets. Further relief is expected from ongoing stress tests and asset quality reviews in the EU banking sector. Tempering this is the accumulation of new risks on balance sheets, with high-yield debt issuance particularly strong.

Vulnerabilities

Trading venue developments, operational risk and new challenges: Over recent years, trading venues have faced significant developments. Along with changing trading practices, increasing competition has been accompanied by both infrastructural and technological innovation. Increased complexity as well as the heterogeneous causes, nature and frequency of technical events, have led to operational risk concerns. These relate to potential and unexpected effects on trading infrastructures' capacity to ensure orderly trading and market efficiency. The development of low latency trading increases the potential for misconduct and market abuse. Some new trading practices give scope to predatory behaviour, while it can be challenging to identify market abuse committed using such methods. The collection of detailed and high-quality information is therefore essential, in combination with enhanced corporate governance and improved risk management.

The systemic relevance of securities financing markets in the EU: This article considers the significance, objectives, main users and risks of securities financing transactions in the EU. Securities financing markets are huge, and market participants rely on the underlying transactions as essential tools for multiple purposes, including liquidity and risk management. Yet, their contribution to interconnectedness and procyclicality, as well as their facilitation of collateral re-use, has implications for financial stability. What is more, they are perceived to have contributed in several ways to financial instability during the financial crisis. This prompted global regulators to take a closer look into this area in order to shed light on existing market practices liable to foster future systemic risk. Lack of transparency and data limit the assessment of risks.

Performance and risks of ETFs: ETFs are one of the fastest-growing types of financial investment vehicle, their total NAV having tripled since 2007. This article considers their market structure, performance relative to index-tracking funds, and risks. ETFs combine elements of index-tracking funds with properties associated with exchange-traded shares. Ongoing innovation in replication techniques, underlying asset classes and benchmark indices is increasing their complexity. They remain intrinsically exposed to the same risks as other funds, however. Together, these could raise financial stability issues.

Crowdfunding: Crowdfunding has received a lot of attention recently as a potential complementary source of funding for SMEs and the economy in general. Volumes are growing fast, albeit from a tiny base, and investor protection is an important consideration. While a number of MS have taken or envisage taking regulatory initiatives in this regard, the need for regulatory and supervisory convergence is recognised, given its geographic reach.

Trends
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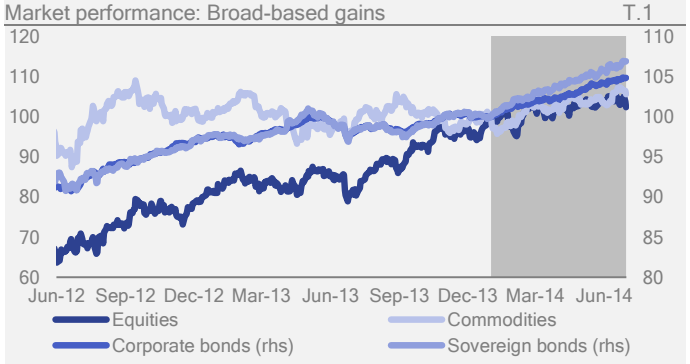
Securities markets

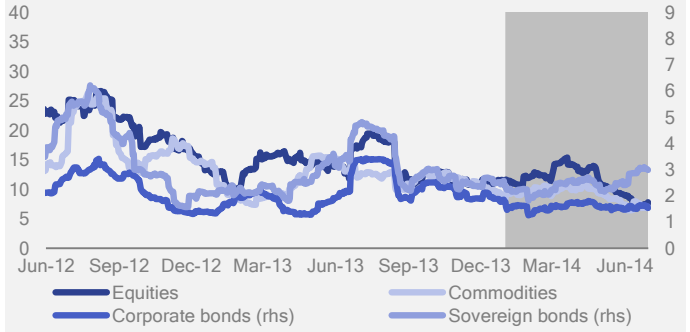
Market overview

Market performance: Broad-based gains T.1



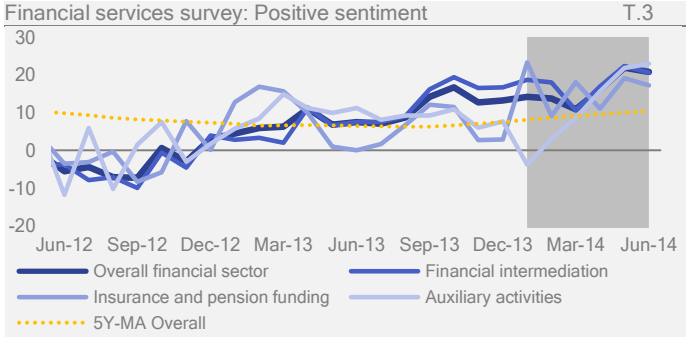
Note: Return indices on EU equities (Datastream regional index), global commodities (S&P GSCI), EA corporate and sovereign bonds (Iboxx Euro, all maturities). 1/1/2014=100.
Sources: Thomson Reuters Eikon, Datastream, ESMA.

Market volatility: Low with some impact of geopolitical risk T.2



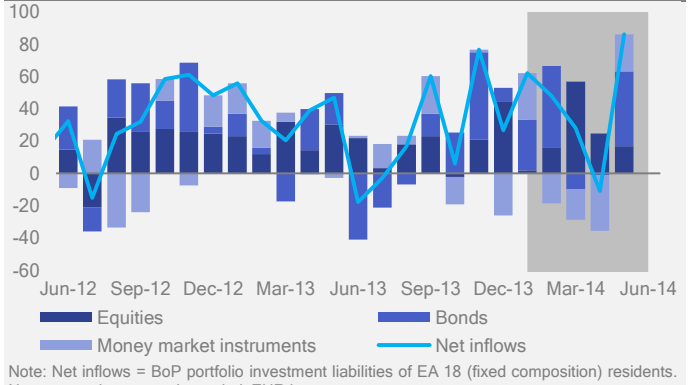
Note: 40D volatility of return indices on EU equities (Datastream regional index), global commodities (S&P GSCI), EA corporate and sovereign bonds (Iboxx Euro all maturities), in %.
Sources: Thomson Reuters Datastream, ESMA.

Financial services survey: Positive sentiment T.3



Note: EC 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.

EA portfolio inflows: Positive in 1Q14 T.4



Note: Net inflows = BoP portfolio investment liabilities of EA 18 (fixed composition) residents. Net transactions over the period, EUR bn.
Sources: ECB, ESMA.

Notwithstanding a very challenging economic and political environment, significant gains were recorded in 1H14 across a broad range of EU markets amid moderate volatility. The impact of a temporary flare-up in geopolitical risks in Eastern Europe underlined the prevailing buoyancy of market sentiment. Furthermore, capital flows measured by portfolio investments by non-residents into EA securities were consistently positive over the period and reached historical highs, notably for MFI equities. Domestic purchases of foreign securities were also positive, albeit to a lesser extent. Issuance activity fell significantly in 2013, with total issuance during the year reaching EUR 820bn, while investment by EA institutional investors grew to nearly EUR 600bn.

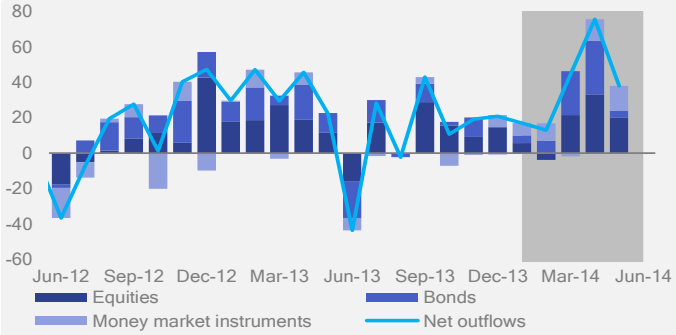
Market performance: EU markets turned in a relatively strong performance in 1H14. Bonds followed a quasi-linear ascending trend, with corporate bond prices gaining 4.9% and sovereigns performing relatively well, up 7%. After an initial drop, both equity and commodity prices more than recovered, registering solid gains of 2.4% and 5.7% respectively. Disturbances to this otherwise smooth upward trend occurred around February and March and at the very end of the reporting period, all periods coinciding with the flare-up in geopolitical risks, notably in UA and the Middle East, and concentrated mainly in commodity and equity markets.

Market volatility: The volatility of returns on EU indices generally fell below the relatively low levels reached end-2013, notwithstanding a brief swelling around the time of the Crimean crisis. Equity markets were most affected, with volatility peaking at around 15% in March before easing to 7.8% in June. Corporate and sovereign bonds also saw their volatility increase, but to a lesser extent, and in June stood at 1.5% and 3.0% respectively. Commodities volatility remained subdued throughout the reporting period and noticeably below the average of the past five years.

Market sentiment: Confidence in the financial services sector strengthened in 1H14; in May it reached its highest level in three years before a slight decline in June. For activities auxiliary to financial intermediation, sentiment indicators of business situation and demand turned negative in January before staging a strong recovery. Greater confidence was also underscored by the large share of survey respondents indicating that they expected demand to increase: in May it hit its highest level since the middle of 2011.

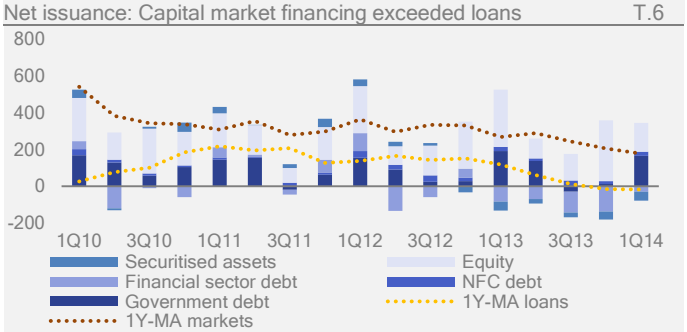
Portfolio inflows: Net portfolio investment by foreign investors into EA securities totalled EUR 110bn in 4Q13 and EUR 138bn in 1Q14. These inflows have remained consistently positive since concerns about the EA sovereign debt crisis receded and reached historical highs at the end of 2013. After a short pause in October, net inflows into EA securities resumed in November and were sustained through March 2014, with US investors accounting for a significant part of the total, mostly in MFI equities. Flows into EA debt securities accelerated after 4Q13, with purchases of bonds amounting to EUR 52bn in February, one of the highest capital inflows since the end of 2011. However, in April 2014 net flows turned negative as foreign investors withdrew EUR 35bn from EA money market instruments in

EA portfolio outflows: Positive and strengthening T.5



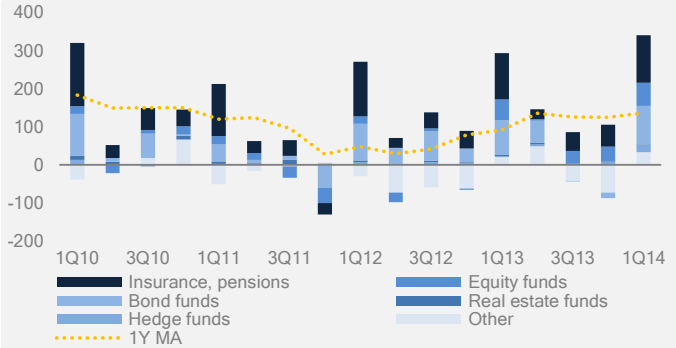
Note: Net outflows = BoP portfolio investment assets of EA 18 (fixed composition) residents. Net transactions over the period, EUR bn.
Sources: ECB, ESMA.

Net issuance: Capital market financing exceeded loans T.6



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 the assets displayed in columns. 1Y-MA loans plots 1Y MA of loan-based financing.
Sources: Dealogic, ECB, ESMA.

Institutional financing: Equity-driven T.7



Note: EA institutional investment flows by type of investor, EUR bn. Other = Financial vehicle corporations, mixed funds, other funds. 1Y MA = 1Y moving average of all investment flows.
Sources: ECB, ESMA.

just one month. Yet, inflows jumped again in May, reaching EUR 86bn.

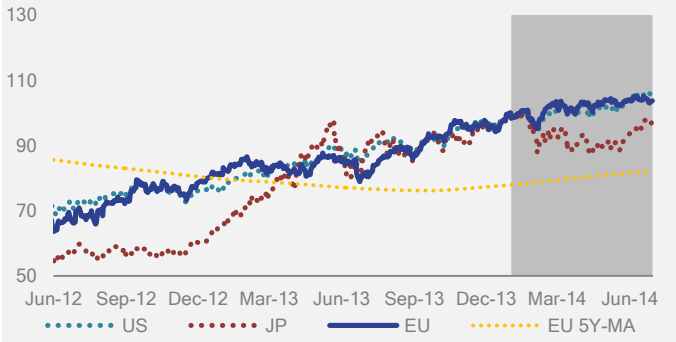
Portfolio outflows: EA investor purchases of foreign portfolio securities have been consistently positive since September 2013, with outflows of EUR 50bn in 4Q13 and EUR 46bn in 1Q14. EA outflows were directed mainly towards foreign equities. They amounted to EUR 39bn in 4Q13, with a shift from EM to developed markets. Portfolio investment outflows jumped in April 2014 as purchases of non-EA bonds and money market instruments by EA investors reached EUR 42bn, only to fall back to lower levels in May, at EUR 38bn.

Capital market financing — issuance: Against a backdrop of continued deleveraging, net issuance activity shrank significantly in 2013 and through 1Q14, following a declining trend established in 2011. As a result, at EUR 820bn EA net issuance was in 2013 EUR 500bn lower than in 2012. Nevertheless, its importance for funding increased as net new loans contracted by EUR 70bn. The cyclical focus remained on the first and last quarters of each year, although 1Q14 net capital market financing declined by 25% compared with 1Q13, and by half since 1Q12. Driving the reduction was a significant contraction in net financial sector issuance, which fell by over EUR 400bn in 2013, with issuance of securitised assets dropping by EUR 135bn. Net equity issuance reached nearly EUR 900bn, while that of government securities exceeded EUR 300bn.

Capital market financing — institutional funding: Resuming the rising trend that began in 1Q12, financing by institutional investors grew from EUR 430bn in 2012 to nearly EUR 600bn in 2013 and reached a new record-high in 1Q14. Insurance and pension funds contributed the largest share, slightly extending their 2012 investments of nearly EUR 250bn. However, the increase was broad-based, with almost all sectors contributing, including bond fund (BF) investments in excess of EUR 130bn in 2013 and EUR 101bn in 1Q14 alone, thereby easily offsetting the BF outflows observed in 2H13. The other fund category, which incorporates mixed funds, also drove the broad-based increase; this category includes financial vehicle corporations, which are associated with securitisation activity in EA markets.

Equity markets

Prices: Continued increase T.8

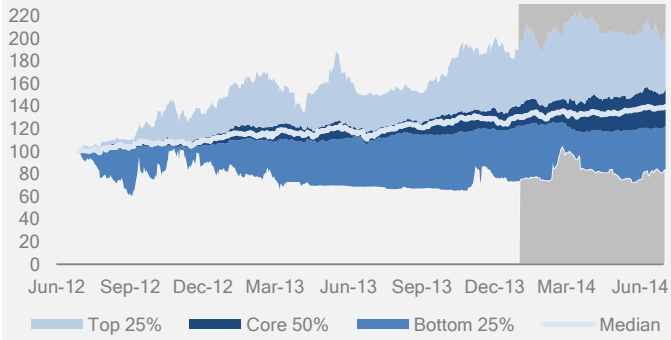


Note: Datastream regional equity indices for the EU, the US and JP. Indexed, with 1/1/2014=100.
Sources: Thomson Reuters Datastream, ESMA.

Closely following the US equity index trend, EU equity market performance was characterised by a modest expansion in 1H14 as volatility decreased somewhat. Price dispersion among EU national equity indices grew slightly. EU and US equity indices outperformed those of JP, which declined markedly during the first quarter. Liquidity dispersion in EU equity markets increased temporarily, while the median bid-ask spread remained at moderate levels. Regarding new listings, the aggregate value of IPOs in 1H14 amounted to EUR 33.7bn, the largest semi-annual total since 2007.

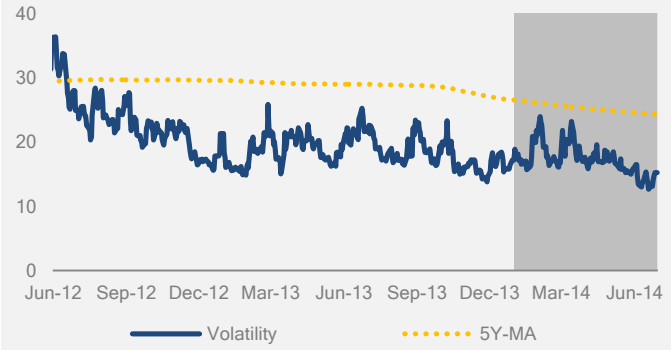
Performance: EU equity prices rose by 4% in 1H14 through May and were consistently above their five-year average. This notwithstanding a brief dip in February related to tensions in

Dispersion: Small increase T.9



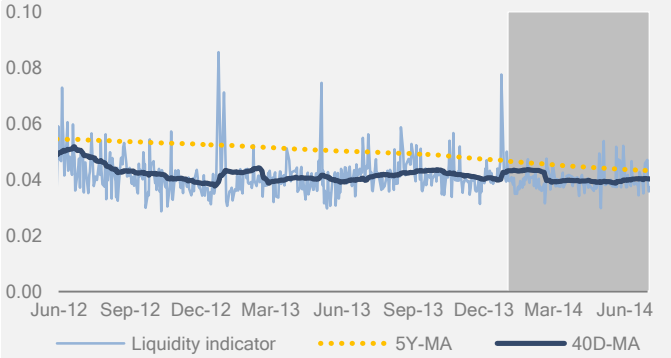
Note: Dispersion of the 27 main national equity indices, EU. Indexed, with 01.07.2012=100.
Sources: Thomson Reuters Datastream, ESMA.

Volatility: Decline recommenced T.10



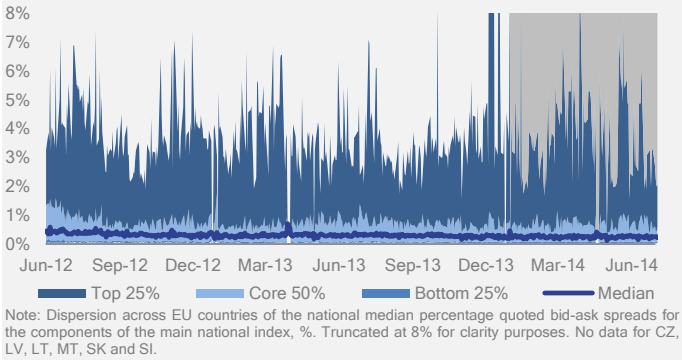
Note: Implied volatility of options on EURO STOXX 50, %.
Sources: Thomson Reuters Datastream, ESMA.

Liquidity: Slight narrowing of spreads T.11



Note: Liquidity measured as median bid-ask spread, EU components of EURO STOXX 50, %.
Sources: Thomson Reuters Datastream, ESMA.

Liquidity dispersion: Slight increase in 1Q T.12



Note: Dispersion across EU countries of the national median percentage quoted bid-ask spreads for the components of the main national index, %. Truncated at 8% for clarity purposes. No data for CZ, LV, LT, MT, SK and SI.
Sources: Thomson Reuters Datastream, ESMA.

UA as investors reduced their exposure to Eastern European equity markets. This performance compared with a 6% gain in the US and a 3% loss in JP, where the strengthening of the JPY against other major currencies and concerns over the economic impact of a three-percentage point increase in the sales tax impacted equity prices. In the US, continued scaling back of quantitative easing by the US Federal Reserve, coupled with shifting expectations regarding improvement in the economic outlook resulted in a slightly weaker performance than by EU equity markets. PE ratios in the EA also increased in the context of strong corporate earnings (see also R.10).

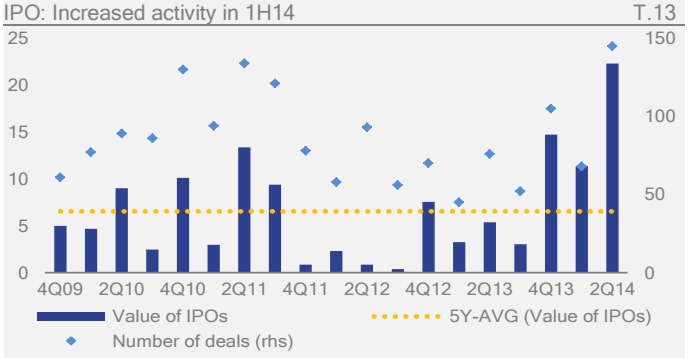
Price dispersion: Among EU national equity indices, dispersion continued to rise in 1H14 as differences in performance between indices within the core 50% increased sharply. This was due to some EU equity indices in the lower part of the core 50% suffering a modest drop while indices closer to the upper bound increased their gains. Five stock market indices within the top 25% performed particularly well compared to the others. Dispersion in the core 50% increased, while one country dropped to the worst-performing 25% in March, mainly in response to recent tensions in UA. Complementing this, dispersion in the bottom quartile fell through the beginning of March in consequence of better performance, possibly related to the easing of capital controls in one MS.

Volatility: Implied volatility for options decreased slightly from an average of 17.9% in 2H13 to an average of 17.3% in 1H14. It reached its five-year average of 23.9% at the beginning of February and spiked again mid-March, both spikes coinciding with concerns surrounding the UA crisis. As a result, these were the largest gaps between the EA and US volatility indices since September 2013, when concerns surrounding a possible military intervention in Syria affected the markets. However, with concerns becoming less acute over time, volatility swiftly returned to its previous level and remained below its five-year average for the rest of 1H14.

Liquidity: In 1H14, bid-ask spreads for stocks in the Euro Stoxx 50 index decreased slightly from the end of 2013. At this level, the median bid-ask spread remained marginally below its five-year average. The slightly increased bid-ask spreads early in 1Q14 are due to base effects persisting from illiquid market conditions before the year-end holidays. In contrast to 2H13, spreads evolved in a relatively stable manner in EU markets for blue chips.

Liquidity dispersion: EU equity market liquidity dispersion increased in 1H14 as market liquidity deteriorated in March in some MS with relatively less liquid markets. However, the median bid-ask spread remained stable overall during the reporting period. This increase in liquidity dispersion led to higher bid-ask spreads on average, while dispersion in the core 50% markets remained stable. The group of countries displaying the lowest market liquidity remained unchanged on 2H13, suggesting that cross-country variation in liquidity is linked to structural characteristics of these markets.

IPO: Increased activity in 1H14 T.13

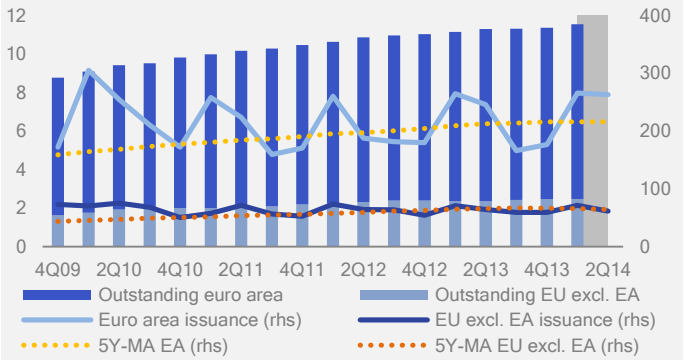


Note: Offering value of IPOs, EUR bn.
Sources: PwC IPO Watch Europe, ESMA.

New listings: The number and value of IPOs increased in 1H14 relative to the preceding periods, with the financial, real estate, consumer products and industrials sectors boosting IPO volumes and prices. The primary market for equities was especially buoyant in the second quarter. Overall in 1H14, there were 213 issuances, the highest since 1H11. IPOs during the reporting period totalled EUR 33.7bn, the highest amount since 1H07. This compared with 121 deals worth EUR 8.63bn in 1H13. The overall value of IPOs was significantly higher in both 1Q14 and 2Q14 than the five-year quarterly average of EUR 6.54bn.

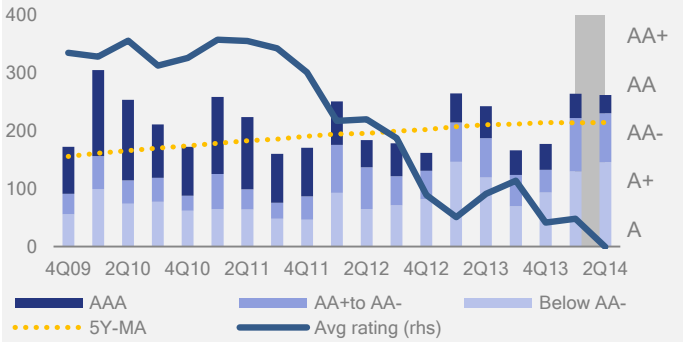
Sovereign bond markets

Issuance: Reduction in 1H14 T.14



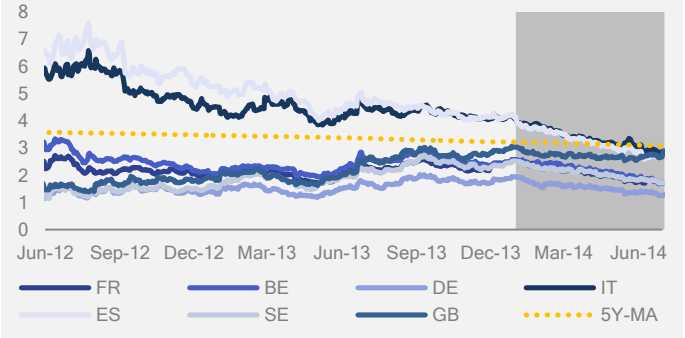
Note: Quarterly issuance, EUR bn (rhs), and outstanding debt, EUR tn (lhs).
Sources: Dealogic, Eurostat, ESMA.

Issuance: Further decline in average quality T.15



Note: Quarterly issuance in the EA ranked by S&P ratings at launch, EUR bn. Weighted-average rating computed by converting ratings into a numeric scale (AAA=1, AA+=2, etc).
Sources: Dealogic, Standard & Poor's, ESMA.

Yields: Marked decrease for vulnerable sovereigns T.16



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

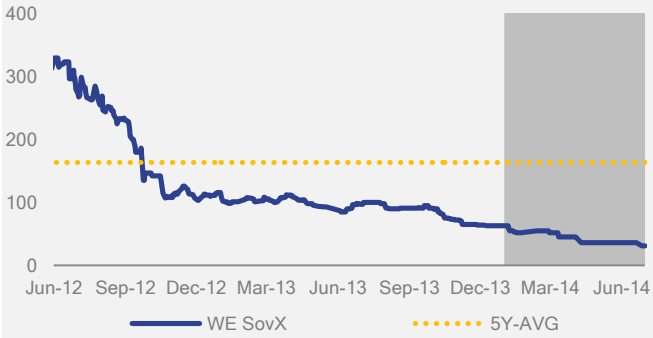
Sovereign bond issuance increased in 1H14 relative to 1H13 amid lower borrowing costs in most EU sovereign debt markets and yields still below their five-year averages. The average rating of EA sovereign debt issued deteriorated in 2Q14. Sovereign bid-ask spreads decreased markedly from March. Through the reporting period, volatility broadly continued to decline in sovereign debt markets, except for two larger and vulnerable MS, where it ticked up abruptly from May. These developments were accompanied by the return of three sovereigns to capital markets. As a consequence, yield dispersion was lower and volatility levels generally more homogeneous.

Issuance: EU sovereign bond issuance totalled EUR 337bn in 1Q14 - broadly stable on 1Q13 - and EUR 310bn in 2Q14, representing a 5% increase on the second quarter of last year. Quarterly issuance volumes in 1H14 were thus higher than the 2013 quarterly average of EUR 277bn, as government bond issuance tends to be concentrated in the first two quarters of each year. The 2Q14 increase was driven mainly by issuance from EA sovereigns, which grew to EUR 263bn, up 7% on 2Q13. EU sovereign issuance outside the EA, on the other hand, amounted to EUR 71bn in 1Q14, making it stable versus 1Q13, but was down slightly in 2Q14 from a year ago, to EUR 62bn. Outstanding EU sovereign debt reached a new high of EUR 11.5tn in 1Q14 (88% of EU GDP), including EUR 9.1tn for the EA (93.9% of EA GDP).

Ratings: Having stabilised during the first quarter, the average credit quality of EA sovereign issues dipped again in 2Q14 to below A. The deterioration reflected both a smaller pool of sovereigns rated AAA and a larger pool of lower-graded sovereigns, including some MS that had previously been in an IMF/EU programme and were now re-entering capital markets for the first time in several years. The decline in 2Q14 was largely the result of a drop in issuance compared to previous quarters by sovereigns rated AAA and continued strong growth in debt securities issued by sovereigns rated BBB and lower.

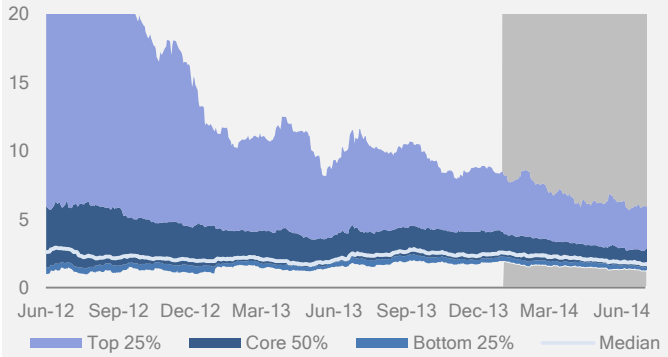
Yields: Against the background of a broad-based downward trend, yields on ten-year sovereign bonds in 1H14 remained far below their long-term averages. As in 2H13, the development in sovereign yields was two-fold. On the one hand, yields held broadly stable or shrank slightly for the least vulnerable sovereigns. On the other, they decreased

Sovereign CDS spreads: Further decrease in 1H14 T.17



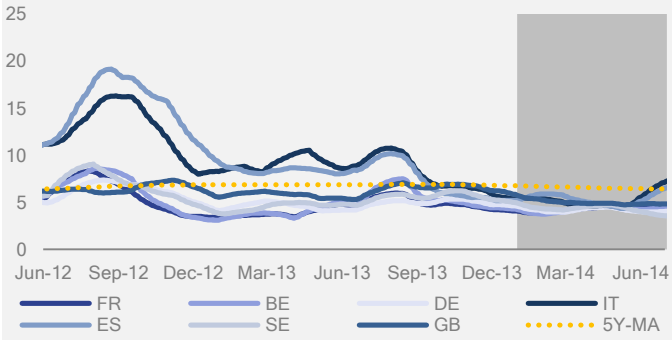
Note: Spread on 5Y Western Europe SovX index, basis points. Index computed as an average of CDS spreads on 15 European sovereigns.
Sources: Thomson Reuters Eikon, ESMA.

Yield dispersion: Continued narrowing T.18



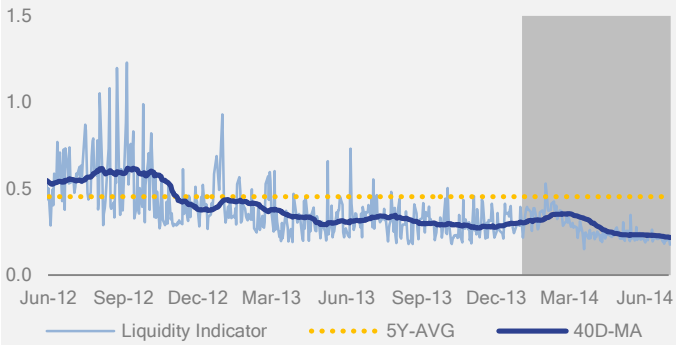
Note: Dispersion of yields on 10Y sovereign bonds, EU, in %. Scale truncated for readibility.
Sources: Thomson Reuters Datastream, ESMA.

Volatility: Marked decline for vulnerable sovereigns T.19



Note: 40D volatility of 10Y sovereign bonds, selected EU members, %. Series are smoothed exponentially. 5Y-MA = 5Y moving average of all bonds.
Sources: Thomson Reuters Datastream, ESMA.

Liquidity: Improvement since March T.20



Note: Liquidity measured as median bid-ask spread on 10Y sovereign bond benchmarks, EU sovereigns, in %. 7Y bonds used for CY.
Sources: Thomson Reuters Eikon, ESMA.

markedly for the most vulnerable sovereigns to fall below the EU five-year average. Funding conditions for EU sovereigns generally improved. The shift in US monetary policy stance may have benefited several EU bond markets, as reflected in the large outflows experienced by funds focused on EM and comparable flows into funds investing in European bonds.

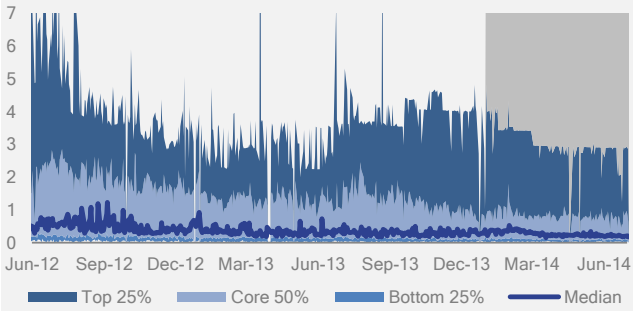
Sovereign CDS spreads: European sovereign CDS spreads continued to narrow in 1H14, as reflected by the SovX index based on 15 European sovereign CDS. This fell by 29bps from 63bps to 36bps, well below the five-year average of 166bps. Political uncertainty during the reporting period had a slight impact on CDS spreads, with a temporary increase through February linked to political and economic tensions in UA and RU. These soon eased again, however, as reflected in lower demand for insurance against vulnerable sovereigns.

Yield dispersion: Dispersion of EU sovereign bond yields decreased further through 1H14, largely reflecting the drop in yields of the most vulnerable sovereigns and highlighting the favourable conditions prevailing in EU sovereign debt markets. Notably, yield dispersion in the third quartile fell from 4.1% at the end of 2013 to 2.9% in June 2014, implying a continuous reduction in overall fragmentation in EU debt markets. The median yield also decreased, from 2.6% to 1.7%, during the reporting period, mirroring the positive price developments observed in other markets e.g. equities and non-sovereign debt securities. Reduced fragmentation and yield convergence in EU sovereign debt markets continued the trend observed since the middle of 2012.

Volatility: Volatility in EU government bond markets held steady at low levels through 1H14, remaining below its five-year average and noticeably lower than the peaks witnessed in recent years. However, the volatility of sovereign bond prices observed for two larger and vulnerable MS increased significantly in May, breaching the common five-year MA, following the release of weak macroeconomic data and the resurfacing of concerns over the political stability of some EU governments. Overall the level of volatility in sovereign bond prices across EU MS was more homogeneous than in 2013, with a markedly reduced upper bound. The volatility of vulnerable sovereigns was on a par with that of the less vulnerable, also suggesting reduced fragmentation.

Liquidity: EU sovereign bond market liquidity improved in 1H14, with the median bid-ask spread moving further below its five-year average to reach its lowest level since the beginning of 2010. Liquidity conditions appeared relatively less stable in 1H14 than in 2H13, however, as the median bid-ask spread became more volatile towards the end of January. This followed a temporary deterioration in the liquidity of one sovereign bond market, although conditions improved soon after. The increase in liquidity since February is related to better funding conditions for the more vulnerable sovereigns. Looking ahead, concerns over the possible decline in market-making activities could be reflected in the deterioration of liquidity conditions in areas including, for example, sovereign debt markets.

Liquidity dispersion: Continued reduction T.21

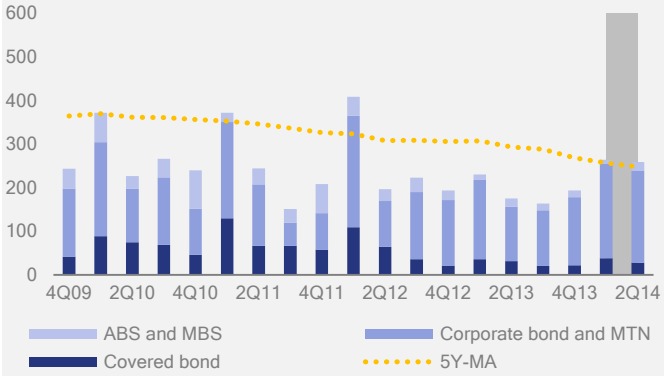


Note: Dispersion of percentage quote bid-ask spreads for 10Y sovereign bond benchmarks, EU sovereigns, in %. 7Y bonds used for CY. To remove outliers, the highest (lowest) quartile excludes the 99th (first) percentile. Scale truncated for readability.
Sources: Thomson Reuters Eikon, ESMA.

Liquidity dispersion: Liquidity dispersion across sovereign issuers decreased in 1Q14. This was driven by better funding conditions in the upper quartile countries and remained stable during the second quarter. Overall, and despite the improvement in both funding conditions and market liquidity, the upper quartile (i.e. the less liquid segment) remained composed mainly of sovereigns that continued to be more vulnerable or of MS with relatively smaller sovereign debt markets. Dispersion within the core 50% was broadly stable throughout the reporting period, except for a slight increase towards the end of January. This temporary increase was due mainly to an increase in bid-ask spreads for countries in the upper range of the core 50%.

Corporate bond markets

Issuance by instrument: Slight recovery in 1H14 T.22

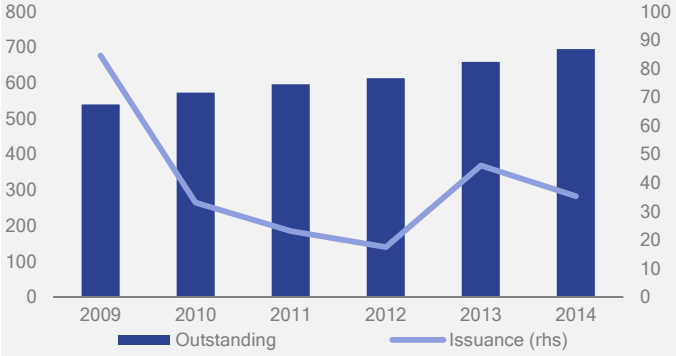


Note: Quarterly issuance of debt by deal type, EU, EUR bn.
Sources: Dealogic, ESMA.

Issuance by sector: Increase for corporates and banks T.23

Note: Quarterly issuance of debt, by sector, EU, EUR bn.
Sources: Dealogic, ESMA.

Hybrid capital issuance: Still going strong T.24



Note: The outstanding amount is the sum of all hybrid capital securities issued that are maturing after the reference date. 2014 data through June 30, EUR bn.
Sources: Dealogic, ESMA.

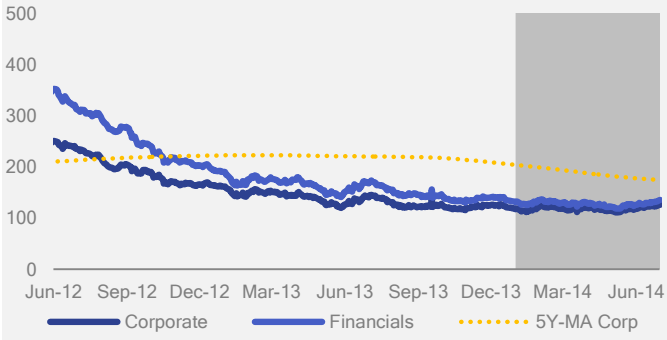
Conditions in EU corporate bond markets generally improved during the first half of 2014. Issuance recovered slightly, with the non-financial corporate sector gradually trending up. At the same time, the volume of ABS and MBS securities issued remained very low, and covered bond issuance was subdued. The momentum of hybrid capital issuance continued apace, including an amount of contingent capital securities issued in 2014 estimated to already exceed 2013 as a whole. Meanwhile, corporate bond spreads remained broadly stable, close to multi-year lows, as bond yields converged across rating categories, reflecting sustained yield compression.

Issuance by instrument: EU gross corporate bond issuance recovered slightly in 1H14 to EUR 522.8bn, the highest half-year amount since 1H11. In both quarters, issuance was slightly above the quarterly average of the last five years. Looking at the type of instrument, issuance of ABS and MBS fell to a new low of EUR 9.5bn in 1Q14 before clawing its way back to EUR 20.9bn in 2Q14, the highest level since 4Q12. The overall recovery in corporate issuance activity was thus driven mainly by the issuance of bonds and money market instruments, which amounted to a combined total of EUR 426.4bn, the highest since 1Q09. Covered bond issuance reached EUR 66bn, on a par with 1H13 but still significantly lower than pre-crisis averages.

Issuance by sector: By sector, both bank and corporate bond volumes recovered, with EUR 252.5bn and EUR 188.7bn respectively issued in 1H14. However, issuance by non-financial corporates has trended up gradually since 2004, while bank issuance was on the way down until the end of 2013.

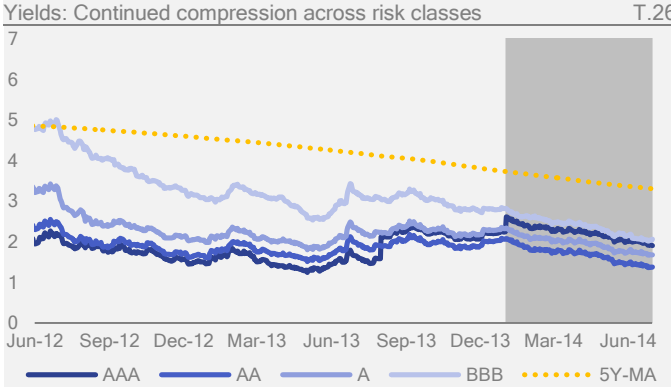
Hybrid capital: Issuance of hybrid capital instruments, which include contingent capital securities and bail-in securities, remained strong in 2014, with EUR 35.2bn issued during the first half of the year, against EUR 23.4bn in 1H13 and EUR 46bn for 2013 as a whole. The share of contingent convertible capital securities, also known as CoCos, is also estimated to have increased, with YTD issuance already exceeding the overall 2013 amount on the back of lower borrowing costs. The total hybrid capital outstanding in the EU as at the end of June rose to EUR 693.9bn. Hybrid securities are designed to mitigate the need for public funding should a systemically important financial institution fail.

Spreads: Uptick T.25



Note: Asset swap spreads on Barclays Pan-European bond indices, basis points. 5Y-MA Corp: 5Y moving average of corporate bond spreads.
Sources: Thomson Reuters Datastream, ESMA.

Yields: Continued compression across risk classes T.26



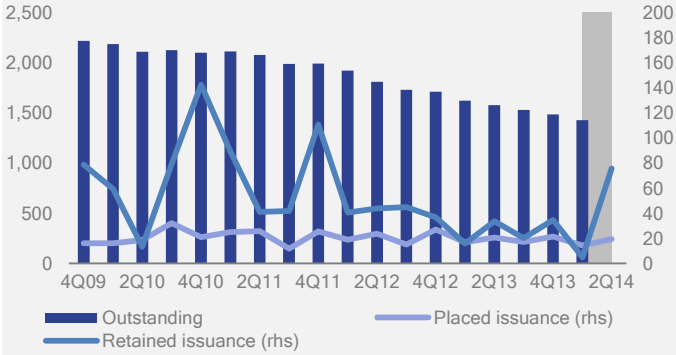
Note: Markit iBoxx euro corporate bond indices. %. 5Y-MA = 5Y moving average of all indices.
Sources: Thomson Reuters Datastream, ESMA.

Spreads: Bond spreads edged up between the end of 2013 and the beginning of June 2014, with the benchmark index on financial sector bonds gaining 4bps, and 8bps for corporates. Spreads initially fell during the first part of the reporting period and through the beginning of May, with the financial and corporate indices tightening by 14bps and 7bps, respectively, but subsequently recovering somewhat. The difference between the spreads of corporates and financials narrowed to less than 10bps in 1H14, with both spreads standing below 135bps throughout the reporting period, i.e. below their respective five-year averages. The narrowing difference in spreads illustrates a normalisation in borrowing costs for the financial sector relative to the corporate sector, in contrast with the most recent years.

Yields: Following mixed developments in corporate bond markets in 2H13, bond yields resumed their declining trend in the first half of 2014. For AAA-rated bonds, the duration composition of the underlying basket changed again, explaining the yield-to-maturity jump at the beginning of the year. Accounting for this, corporate bond yields fell 50 to 75bps across rating categories since the end of 2013. BBB-rated bonds experienced the largest decline, with yields falling from 2.82% to 2.04% as at the end of June. The convergence between higher- and lower-rated bonds continues to reflect yield compression related to structural and cyclical factors, as well as potential hunt-for-yield strategies.

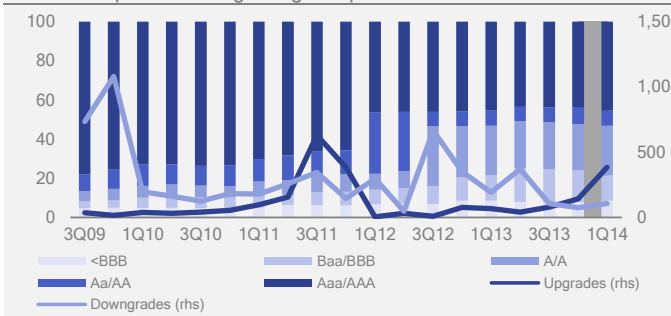
Securitisation and covered bonds

Securitised products issuance: Decline bottoming out T.27



Note: Issuance of securitised products in Europe (including ABS, CDO, MBS, SME, WBS), retained and placed. Outstanding volumes through 1Q14, EUR bn.
Sources: AFME, ESMA.

Securitised product ratings: Slight improvement T.28



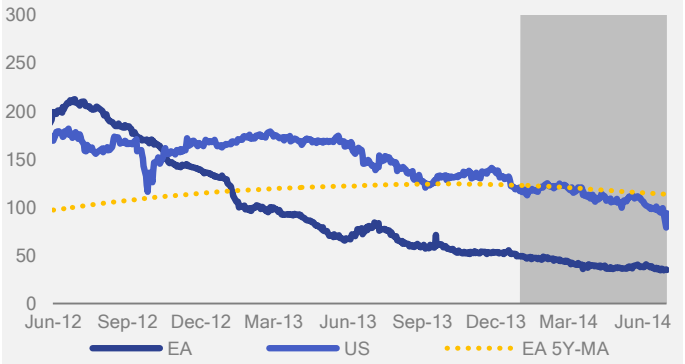
Note: Securitised products in the EU rated by Moody's. Rating classes in percent of total amount outstanding (lhs). Number of rating changes per quarter (rhs).
Sources: AFME, Moody's, ESMA.

EU issuance of securitised products bottomed out during 1Q14. As redemption payments continued to outpace new issuance, the outstanding volumes of securitised products and covered bonds continued to fall. At the same time, perceived or actual risk waned, reflected by some rating shifts and falling risk premia. Average credit rating of newly issued products improved slightly. Spreads of highly-rated ABS as well as high- and lower-rated covered bonds narrowed further. The risk spread of lower-rated covered bonds, in particular, contracted further to levels well below their long-term averages.

Securitisation volumes: Before a 2Q14 rebound in issuance activity, the amount of securitised products outstanding in the EU contracted further during the first quarter of 2014, falling from EUR 1,486bn in 4Q13 to EUR 1,428bn in 1Q14. The outstanding volume was thus more than one-third below its 2009 peak. Having dropped in 1Q14, new issuance rebounded sharply during the second quarter of 2014 from EUR 19bn to EUR 95bn. Whereas in 1Q14 the majority of the newly issued products (70%) were placed rather than retained, in 2Q14 nearly 80% of new issuance was retained, presumably to be pledged as collateral for funding purposes, including with central banks. Both ABS- and MBS-related issuance featured strongly (see also R.18).

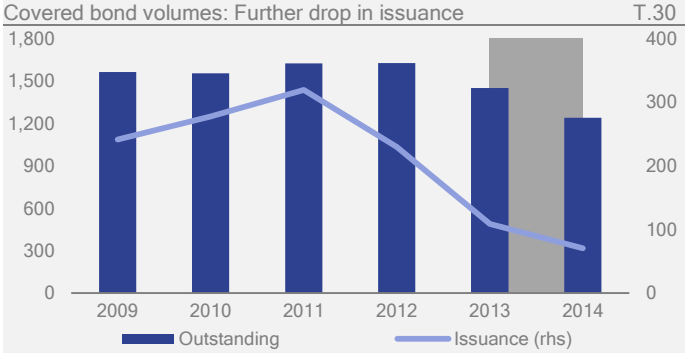
Securitisation ratings: The average credit quality of EU securitised products improved somewhat during the first quarter of 2014 (latest data available). A higher number of

ABS spreads: Continued decline in the EA T.29



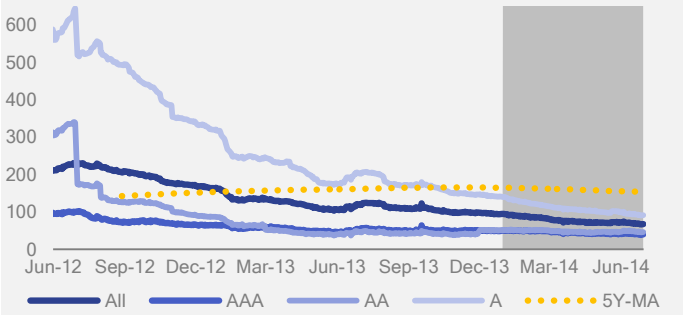
Note: Asset swap spreads on Barclays Euro Area and US Securitized indices, basis points.
Sources: Thomson Reuters Datastream, ESMA.

Covered bond volumes: Further drop in issuance T.30



Note: The outstanding amount is the sum of covered bonds maturing after the reference date.
2014 data through June. EUR bn.
Sources: Dealogic, ESMA.

Covered bond spreads: Flattening out T.31



Note: Asset swap spreads based on iBoxx covered bond indices, bps.
5Y-MA = 5Y moving average of all bonds.
Sources: Thomson Reuters Datastream, ESMA.

upgrades was observed in 1Q14, while the number of downgrades in Moody's securitised product ratings flattened. The upward shift was most pronounced between BBB- and A-rated products, while the overall shares of the rating categories at the higher or lower end of the scale remained broadly stable.

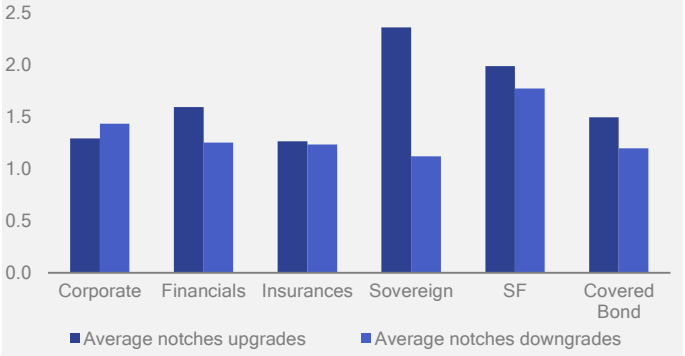
Securitisation spreads: Spreads of EA AAA-rated securitised products narrowed further from the end of last year. Average spreads fell from 50bps in December 2013 to 36bps by end-June 2014. As a result, EA ABS spreads are now significantly below their five-year MA, underscoring continued confidence in high-grade securitised markets. The narrowing of spreads could be observed as both the ABS yield index and the money market rate used for spread calculation declined in the reporting period. In the US, spreads likewise fell from 120bps to 80bps.

Covered bond volumes: The amount of covered bonds outstanding in the EU sank from EUR 1,450bn in December last year to EUR 1,230bn by end-June 2014. Following a substantial decline in new issuance last year, issuance activity appears to have stabilised in the first half of 2014. Up to end-June, new issuance totalled EUR 70bn, just EUR 40bn below the amount issued in the whole of 2013. Issuance activity continued to vary between the EU countries in line with differences in credit growth and economic and housing market prospects. National specificities mean that markets in covered bonds are more fragmented than other bond market segments.

Covered bond spreads: Average covered bond spreads (covering all rating categories) fell from 95 bps in December last year to just above 70bps in June 2014. The decline in average spreads continued in 1H14, due chiefly to falling spreads for lower-rated issues, with the average spread for A-rated issues dropping from 140bps to about 100bps since the end of December 2013. The difference between A-rated and AAA-rated issues further narrowed as a consequence, from 90bps in December to below 50bps by end-June. The downward trend in covered bond spreads squares with low issuance activity, indicating that the constraining factors continue to be on the issuance rather than the investor side.

Credit quality

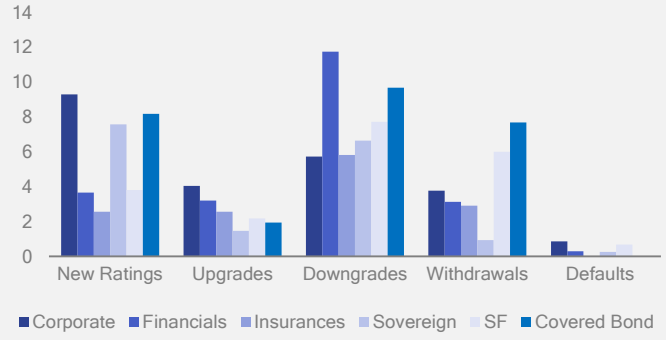
Rating actions: Upgrades outweighed downgrades T.32



Note: Average size of upgrades and downgrades from all credit rating agencies by asset class for 2H13, average number of notches. Sovereign including public finance.
Sources: CEREP, ESMA.

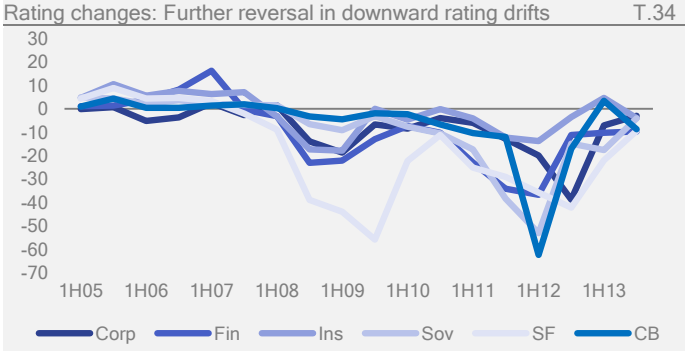
Credit quality began to stabilise during 2H13, notably as the average size of upgrades increased, especially for sovereigns and SF products, which exhibited average upgrade intensities 2.4 and 2 notches respectively. The general decline in credit rating activity slowed, for example with more frequent downgrades of financial, insurance products and covered bonds and more new ratings of sovereign issuers. The downward ratings drift came to a halt for all instruments except insurance products and covered bonds; the overall rating shift was only slightly negative. Finally, ratings volatility remained at the low levels of 1H13, the financial instruments rating reaching a maximum of 20%, far below the high levels of 2011.

Rating activity: Slowdown in the general decline of activity T.33



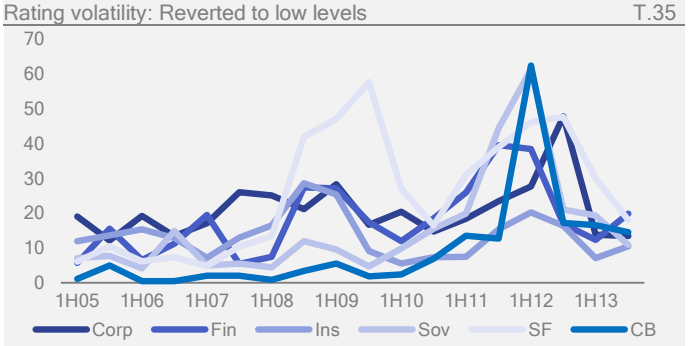
Note: Rating activity of all credit rating agencies (CRAs) by asset class for 2H13, % of outstanding ratings. Sovereign including public finance.
Sources: CEREP, ESMA.

Rating changes: Further reversal in downward rating drifts T.34



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.

Rating volatility: Reverted to low levels T.35



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.

Rating actions: In 2H13, downgrade severity was similar to that of the previous semester, except for financials, which saw their average downgrade decrease by 0.4 notches to 1.2. By contrast, the magnitude of upgrades rose, outweighing downgrades for all instruments except corporates. The average upgrade stood at around 2 notches for SF products and 2.4 for sovereigns, well above the one-notch average upgrade in 1H13.

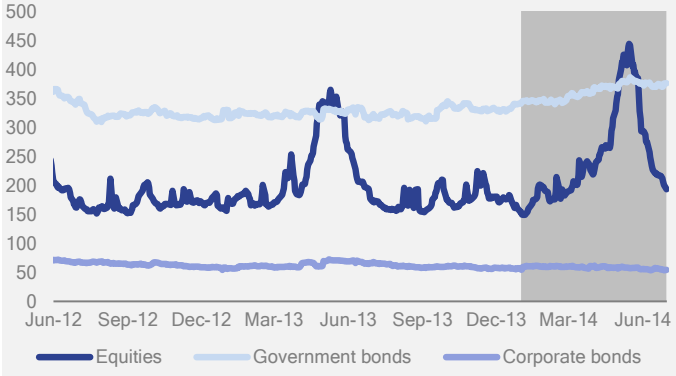
Rating activity: In 2H13 the general downward drift in rating activity slowed. The intensity of defaults and withdrawals remained similar, as did new rating activity, with the exception of new ratings of sovereign issuers, which totalled 7.6% of outstanding ratings, up from 1.2% in the previous six months. Downgrades for sovereigns, corporates and SF products were less frequent than in 1H13, working out at 5.7%, 6.6%, and 7.7% respectively of outstanding ratings. On the other hand, downgrade frequency increased for financials, insurances and covered bonds to 11.8%, 5.8% and 9.7% respectively.

Rating changes: The ratings drift stabilised somewhat in 2H13, albeit at higher levels than the very negative averages of 2011 and 2012. Downgrading activity slowed for all issuers except insurance products and covered bonds, the only two categories to have experienced a slightly positive rating drift in 1H13. Notch-weighted grading improved considerably for sovereigns at -4%, back from -18% in 1H13, marked by IE's successful exit from the bailout programme and back-to-normal sovereign debt market conditions for ES and PT. SF products also saw their ratings improve to -9% from -22% in the previous semester.

Volatility: Sovereigns and SF products experienced the biggest reduction in volatility at 11% and 18%, down from 19% and 30% in 1H13. Notch-weighted rating volatility was highest for financial product issuers, climbing in 2H13 to 20%. It was still way off the elevated levels of end 2011, however. Covered bonds recorded the only noticeable increase.

Securities finance and collateral

EU securities lending: Increase in 1H14 T.36

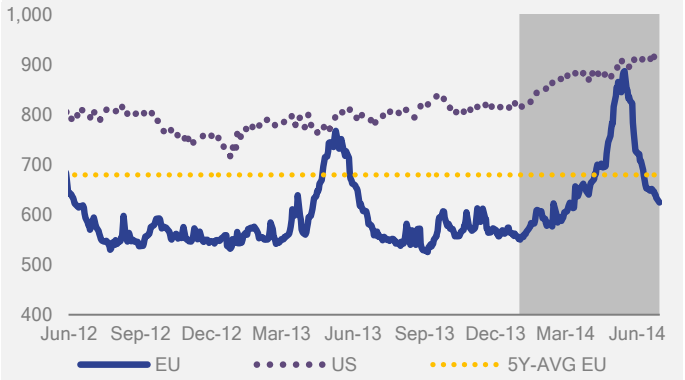


Note: Total value of EU securities on loan, in USD bn.
Sources: Markit Securities Finance, ESMA.

The value of EU securities on loan increased in both the EU and the US, reflecting a combination of increased securities lending activity and higher asset valuation. Sovereign repo rates edged up gradually, highlighting the higher cost of borrowing on EUR money markets and reflecting external money market developments, before a sharp, seasonal decline in June. Nevertheless, repo trading volumes rose slightly through the reporting period. The total supply of collateral in the EU expanded by around EUR 380bn in 2013 and is expected further to increase this year by around EUR 240bn.

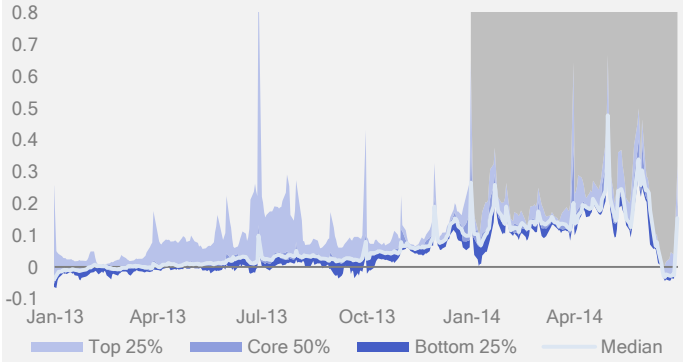
EU securities lending: EU securities lending markets grew in 1H14. The value of EU securities on loan averaged USD 669bn, against USD 614bn in 1H13. Mainly, this was due to a significant increase in both the quantity and value of EU

International securities lending: Strong increase T.37



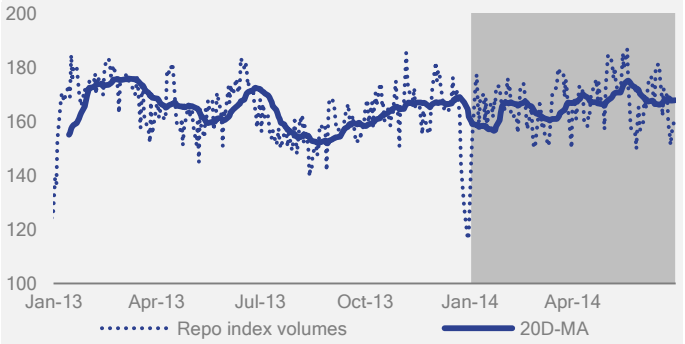
Note: Value of securities on loan, in USD bn. 5Y-AVG EU= 5Y average for EU securities.
Sources: Markit Securities Finance, ESMA.

Sovereign repo rates: Increase through May, drop in June T.38



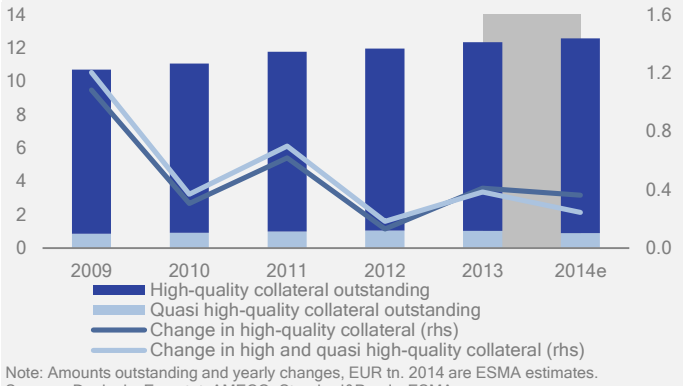
Note: Dispersion of seven sovereign EUR repo markets (AT, BE, DE, FI, FR, IT and NL), volume-weighted average of fixed rates index value, in %.
Sources: RepoFunds Rate (BrokerTec, MTS, ICAP), ESMA.

Sovereign repo volumes: Slight increase T.39



Note: 20D moving average of specific and general collateral transaction volumes executed through CCPs in seven sovereign EUR repo markets (AT, BE, DE, FI, FR, IT and NL), in EUR bn. Index volumes filter out atypical transactions.
Sources: RepoFunds Rate (BrokerTec, MTS, ICAP), ESMA.

Supply of collateral: Still growing T.40



Note: Amounts outstanding and yearly changes, EUR tn. 2014 are ESMA estimates.
Sources: Dealogic, Eurostat, AMECO, Standard&Poor's, ESMA.

equities loans, which reached a peak of USD 445bn in May, the highest in three years. EU equity loans typically exhibit strong seasonality as corporate action trading (in this case lending for cross-country tax arbitrage on dividends) boosts volumes during the second quarter of each year. The value of government bonds on loan also increased, hitting USD 388bn in May, its highest value since 1Q12, although this was primarily due to changes in the valuation of these assets. The greater value of securities on loan therefore reflects a mix of higher EU securities valuation and increased securities lending activity.

International securities lending: The total value of US securities on loan increased by more than 10% between December and June, reflecting increases in value across asset classes (equities and bonds). The value of US securities loans peaked at USD 917bn in June, the highest since November 2008. The total value of US equities on loan in June increased 13% from December 2013 to USD 400bn, reflecting higher asset valuation. Meanwhile, the value of US Treasuries on loan rose 8% to around USD 415bn, indicating a greater quantity on loan. Even so, the value of EU securities on loan remained at around 70% of the value of US securities on loan, excluding the seasonal peak in EU equities loans.

Sovereign repo rates: Interest rates on repos using EUR sovereign debt as collateral and executed through CCPs rose between December and May, reflecting broader EUR money market developments as well as tighter system liquidity, with the median repo rate climbing from an average 12bps to over 25bps. However, EUR repo rates dropped sharply in June, with the median repo rate even entering negative territory, reflecting exogenous changes in the money market yield curve. The regular peaks observed during the reporting period reflected end-of-month demand for liquidity, which also tends to be particularly strong at the end of each quarter. Aside from this, repo rate dispersion remained limited through 1H14.

Sovereign repo volumes: Daily volumes of EUR sovereign repo trades executed through CCPs, filtering out atypical transactions (i.e. 25% of overall volumes), increased slightly in 1H14. Average volumes rose from EUR 160bn per day in 2H13 to 167bn in 1H14. According to the latest ECB *Euro Money Market Survey*, bilateral repos with CCPs comprised 71% of all secured transactions in EUR money markets, up from 42% in 2009, while an industry survey found that the share of government bonds used as collateral in repo transactions topped 80% in December 2013.

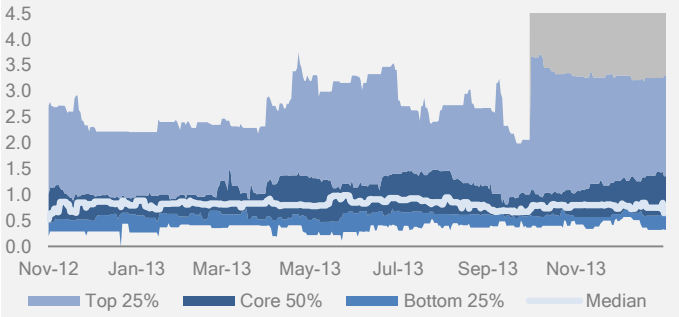
Supply of collateral: The supply of high-quality collateral in the EU, proxied by outstanding EU sovereign debt rated investment grade or higher, is expected to expand by around EUR 360bn in 2014, following a EUR 410bn increase in 2013 and EUR 132bn in 2012. The 2014 estimate is based on the European Commission's 2014 Spring forecast for outstanding EU general government debt. The supply of quasi high-quality collateral, defined as the net amounts of EU covered bonds and corporate bonds outstanding rated AA- or higher, is expected to contract by EUR 118bn, following a EUR 26bn reduction last year. The 2014 estimate of quasi high-quality may be conservative, as it is based on gross issuance YTD but excludes all bonds maturing before 2015. Overall, the supply of high and quasi-high quality collateral in the EU is estimated to increase further by EUR 243bn this year, having risen by EUR 384bn in 2013.

Short selling

Shares: Slight drop in number reported T.41

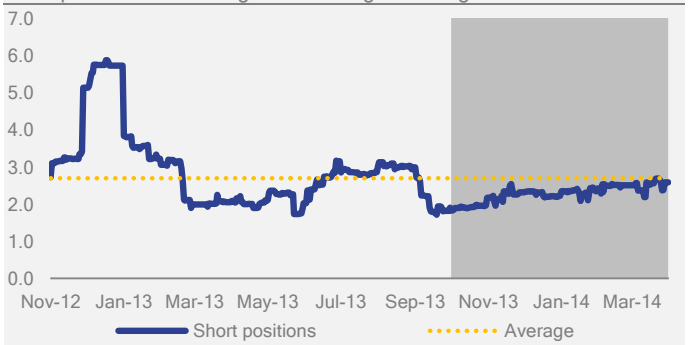
Note: Number of listed shares on which short positions were reported by NCAs under the EU Short-Selling Regulation, and average since 1/11/2012.
Sources: National Competent Authorities, ESMA.

Position dispersion: Increase in 4Q13 T.42



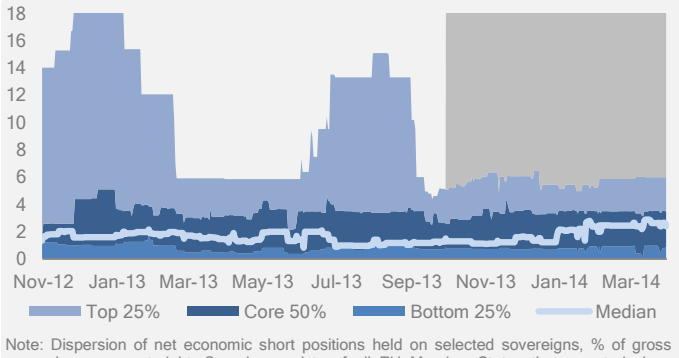
Note: Dispersion of the national median size of aggregated short positions held on stocks under NCAs' remit and belonging to EU national benchmark indices, in % of issuers' share capital. Sample consists of 17 EU Member States.
Sources: National Competent Authorities, ESMA.

Short position on sovereigns: Reverting to average size T.43



Note: Net short positions held on sovereigns, % of gross general governement debt. Sample consists of all EU Member States that reported since 1/11/2012. Debt data for 1Q14 extrapolated from Ameco 2014 forecast.
Sources: National Competent Authorities, Eurostat, Ameco, ESMA.

Position dispersion: Broadly stable T.44



Note: Dispersion of net economic short positions held on selected sovereigns, % of gross general government debt. Sample consists of all EU Member States that reported since 1/11/2012. Debt data for 1Q14 extrapolated from Ameco 2014 forecast.
Sources: National Competent Authorities, Eurostat, Ameco, ESMA.

The number of listed shares on which short positions were reported decreased in 4Q13. The median short position on EU shares increased in 4Q13, while dispersion within the top 25% picked up significantly, as median positions in one MS rose owing to fewer notifications received. Average net shorts on EU MS sovereign debts climbed steadily over the past two quarters from 1.9% to 2.5% of outstanding debt, with the median also increasing, possibly reflecting slower growth in the government debt stock relative to short positions.

Shares: The daily number of listed shares in EU benchmark equity indices on which short positions were reported to NCAs fell 2% in 4Q13 from the previous quarter to 286 shares. The smallest number reported to a NCA was one share throughout 2H13, while the maximum fluctuated around 60 to 70 shares. The median declined from seventeen shares to thirteen.

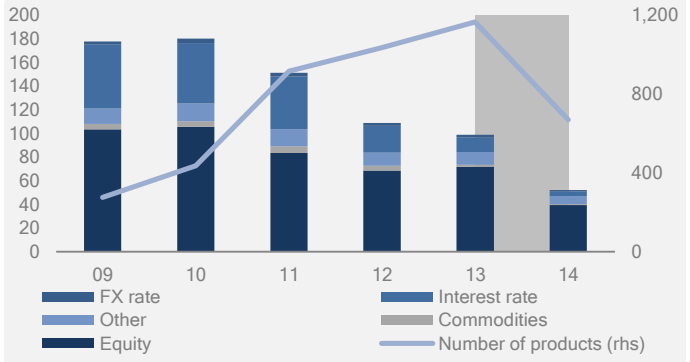
Position dispersion: Dispersion in the size of short positions on EU shares widened in 4Q13, driven by the top 25%, that part of the spectrum in which larger positions were taken out. The median short position increased from 0.71% end-September 2013, as a percentage of issuer share capital, to 0.84% at the end of the year. Dispersion within the bottom 25% remained broadly stable throughout the quarter, whereas it increased for the upper part of the core 50%. The increase in the top quartile of the distribution, i.e. the largest positions as a percentage of issued share capital, appears to have been due chiefly to base effects for one MS. In particular, a sizeable increase in the median short position of shares was reported there, after fewer short position notifications had been received in this MS after October 1, 2013.

Sovereigns: The average of net short positions on the sovereign debt of MS rose in 4Q13 and 1Q14. Average shorts increased from 1.9% of MS sovereign debt at the end of September 2013 to 2.2% at the end of December and 2.6% end-March 2014. Part of this may be explained by slower sovereign debt growth in the EU, as the European Commission expects general government debt outstanding to peak at 90% of GDP in 2014 before backtracking next year. However, uneven reporting across MS due to current thresholds irrespective of sovereign debt size may explain or exaggerate some of the movements observed since the beginning of reporting.

Position dispersion: The dispersion of net short positions on sovereign debt in MS remained broadly stable in 4Q13 and 1Q14. The dispersion of short positions within the top 25% (i.e. short positions that were the largest as a percentage of general government debt outstanding) increased slightly between September 2013 and March 2014, although this was well down from 2Q13, with one authority reporting large short positions on its debt during that period. Median shorts also increased, from around 1.3% at the end of September to 2.3% at the end of March. In contrast, dispersion within the bottom 25% decreased slightly, reflecting marginally smaller short positions on several MS.

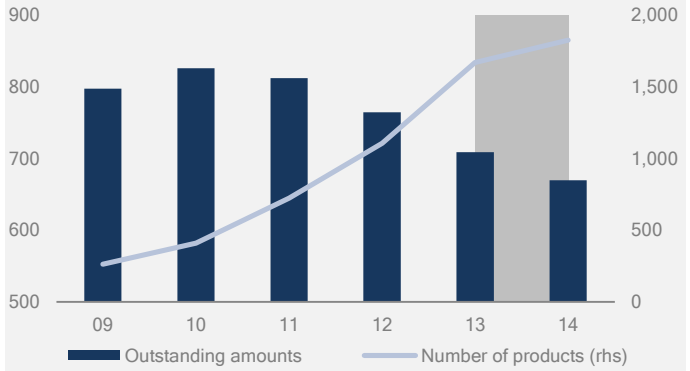
Structured retail products

Sales: Broadly stable T.45



Note: Volumes of structured products sold to retail investors by asset class, EUR bn. Number of products sold, thousand. 2014 as of June 30.
Sources: StructuredRetailProducts.com, ESMA.

Outstanding: Downtrend in volumes T.46



Note: Outstanding amounts, EUR bn. Number of products, thousand. 2014 as of June 30.
Sources: StructuredRetailProducts.com, ESMA.

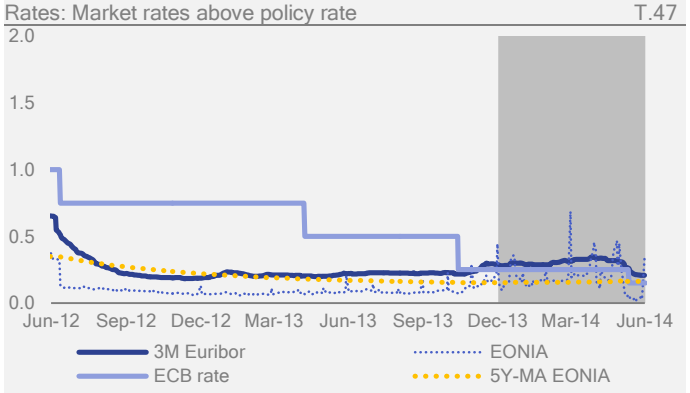
The volume and number of structured products sold to retail investors remained broadly stable in 1H14 compared to 1H13. Equity products continued to constitute the bulk of sales volumes and numbers, while most other product types experienced shrinkage. The volume of structured retail products outstanding contracted again, while the number of products ticked up further.

Sales: The volume of structured retail products sold to investors totalled EUR 52.2bn in 1H14. This compared to sales of EUR 54.6bn during the same period last year. Sales of equity products hit EUR 39.5bn, up from EUR 36.7bn in 1H13. Sales of interest rate and commodity products fell, from EUR 6.4bn and EUR 1.1bn, respectively, to EUR 4.5bn and EUR 0.7bn. The aggregate number of structured products sold to retail investors continued to increase and reached 643,000, up from 554,000 products sold over the same period in 2013.

Outstanding: The volume of structured retail products outstanding in Europe fell again in 1H14, prolonging the trend that began in 2011. Their aggregate value declined from EUR 708.7bn as at end 2013 to EUR 680.2bn in June 2014. In contrast, the number of products outstanding continued to increase, reaching 1.86mn in June, up more than 10% since December of last year. While the database used covers most of the EU market, it may not be fully representative of domestic markets in the entire EU.

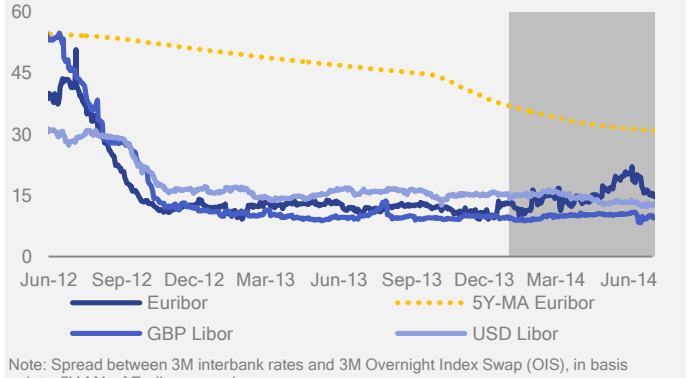
Money markets

Rates: Market rates above policy rate T.47



Note: Money market rates, in %.
Sources: Thomson Reuters Datastream, ESMA.

Spreads: Still subdued T.48



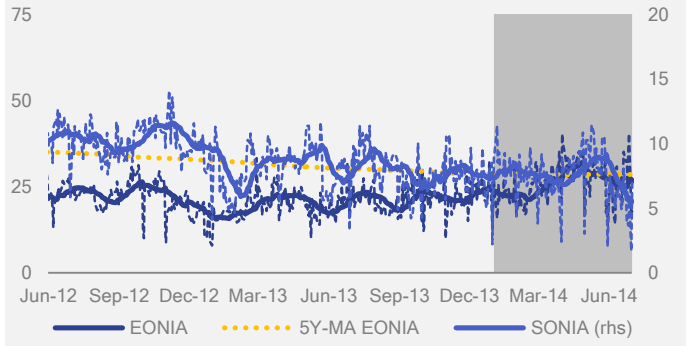
Note: Spread between 3M interbank rates and 3M Overnight Index Swap (OIS), in basis points. 5Y-MA of Euribor spreads.
Sources: Thomson Reuters Datastream, ESMA.

During 1H14, interbank borrowing rates tended to rise in the EA, at least until the ECB's rate cut to 0.15% in June. The three-month Euribor rose to levels above the policy rate, as the overnight rate EONIA hovered around it and displayed some elevated volatility, especially during 2Q14. Market activity revived somewhat during 1H14. Overall, recent developments in money markets seem to have signalled a return to pre-crisis conditions, with rates close to the policy rate. However, volatility in some rate and volume indicators suggests that interbank markets remained sensitive.

Rates: The first half of 2014 saw the three-month Euribor persistently exceed the ECB's main policy rate for the first time since the introduction of the LTRO in 2011. The gap between the overnight rate EONIA and the policy rate likewise closed. Following the ECB's rate cut in June, three-month Euribor followed suit, although it remained some bps above the policy rate. Most noticeably, EONIA displayed relatively high volatility, especially during 2Q14, with pronounced spikes. Overall, recent developments in money markets seem to signal a return to pre-crisis conditions. Still, high volatility in some rates indicates ongoing tension in interbank markets.

Spreads: Interbank spreads remained subdued for the GBP and USD Libor during the first half of 2014 but rose somewhat for Euribor. The three-month Euribor climbed to levels almost 20bps above the respective OIS rate, displaying higher volatility compared to the previous reporting period. Libor spreads were more stable and somewhat lower, with Libor around 10bps above the OIS rate. As in the previous

Interbank overnight activity: Increasing volatility T.49



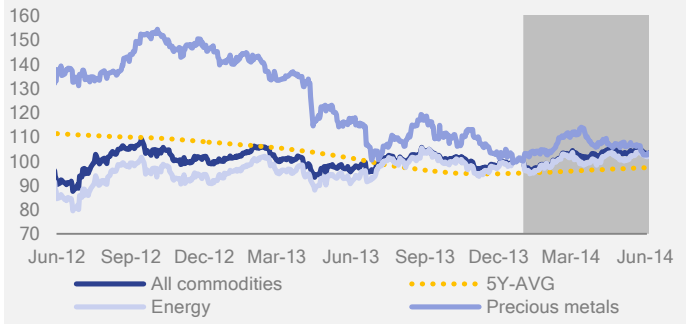
Note: 20D moving average of daily lending volumes on Euro Overnight Index Average (EONIA) and Sterling Overnight Index Average (SONIA), EUR and GBP bn.
Sources: Thomson Reuters Eikon, ESMA.

reporting periods, spread levels in the interbank market should be interpreted with caution, as bank-to-bank lending premia may not be representative of the general risk premia in bank funding. Some institutions still need to resort to alternative funding sources, including ECB refinancing or other wholesale sources.

Volumes: Activity in the markets captured by EONIA and SONIA revived somewhat during 1H14. The increase observed may signal a tentative return to pre-crisis behaviour, especially in the case of EONIA. Daily averages of turnover volumes for EONIA are close to their five-year average of EUR 30bn, although still below their 2007 peak, when activity averaged EUR 50bn per day. Average daily interbank market volumes in both EUR and GBP trended upward but fell again towards the end of the reporting period.

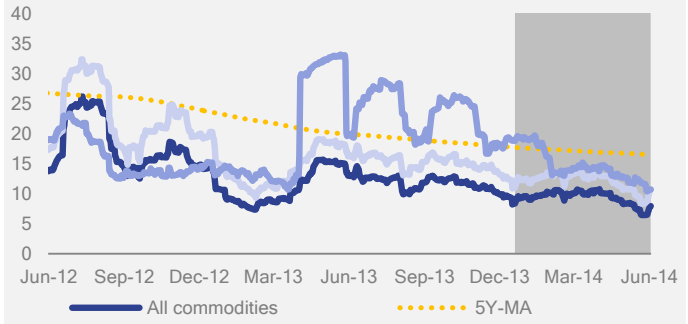
Commodity markets

Prices: Slight uptick T.50



Note: S&P GSCI Commodity indices. Indexed, 01/01/2014=100. 5Y-AVG= 5Y average for all commodities.
Sources: Thomson Reuters Datastream, ESMA.

Volatility: Convergence to low levels T.51



Note: 40D volatility of S&P GSCI Commodity indices, %. 5Y-AVG for all commodities.
Sources: Thomson Reuters Datastream, ESMA.

Commodity prices rose by 3% over the reporting period, with the highest performance for precious metal markets. Prices peaked after mid-March as a consequence of the UA crisis. Volatilities remained at historically low levels, with precious metals especially subdued relative to recent years and converging towards other markets, as uncertainty around the pace of quantitative easing tapering in the US receded.

Prices: Commodity prices rose gradually, by a total of 3% over the reporting period, with the largest increase observed in precious metals. Gold and other precious metal prices started to rise anew from January 2014, having trended downward since 3Q12, and peaked towards the end of March at over 10% above their price at the beginning of the reporting period. Energy prices rose by around 2% in 1H14, partly sustained by geopolitical concerns, as evidenced by the spike around tensions in UA. Industrial commodities, including non-precious metals, were affected by concerns surrounding a slowdown in EM, notably in CN economic activity.

Volatility: Overall commodities price volatility remained subdued during the reporting period, at around 9%, well below the five-year average. The volatility of precious metal prices, which was markedly higher than in other markets from April 2013, converged towards that of energy commodities and industrial metals.

Derivatives markets

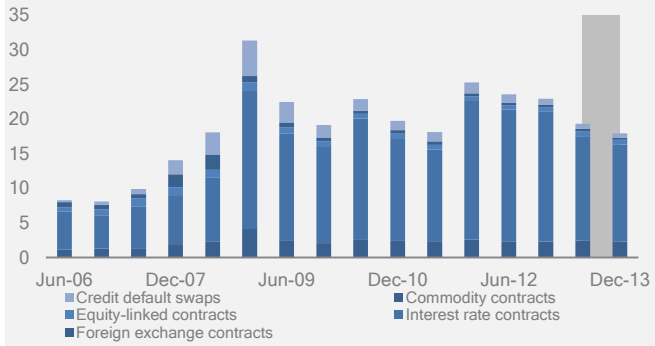
Notional outstanding: Slight increase T.52

Note: Gross notional amounts of outstanding OTC derivatives by category, USD tn.
Sources: Bank for International Settlements, ESMA.

In 2H13 there was a two per cent increase, to USD 684tn, in the global notional amount of OTC derivatives outstanding. This was driven largely by interest rate contracts. Yet the gross market value of these outstanding derivatives decreased by 7% to USD 17.9tn.

Notional values outstanding: Global OTC derivatives markets continued to expand in 2H13, with volumes of notional outstanding rising 2.5% following a sharp surge in the previous reporting period. By derivatives type, notional volumes increased only for interest rate contracts, up 4% from 1H13 to USD 584tn, with the increase concentrated chiefly in the medium- and long-term segments. Notional volumes of foreign exchange and equity-linked contracts fell

Market value: Slight drop T.53



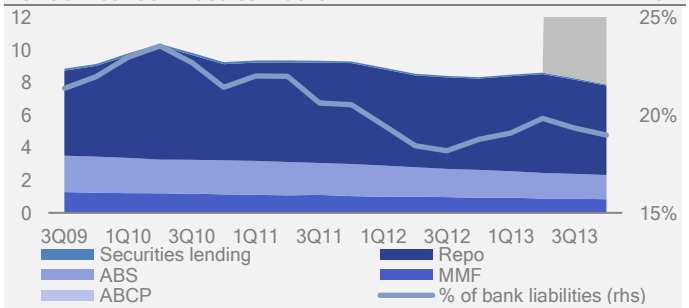
Note: Gross market values of outstanding OTC derivatives by category, USD tn. Gross market values represent the cost of replacing all open contracts at the prevailing market prices.
Sources: Bank for International Settlements, ESMA.

almost 4%, while commodity contracts and CDS volumes dropped by more than 10%. Most of the foreign CDS counterparties were located in Europe, followed by the US.

Gross market values outstanding: The downtrend in the gross market value of derivatives outstanding that began in 2H11 continued into 2H13, with values declining by 7%. Again, this was driven mainly by interest rate derivatives and reported in most major currencies, after bond yields and swap rates had risen as a consequence of the Fed's anticipated reduction in asset purchases. On CDS markets, central clearing and bilateral netting continued to progress, contributing to a decline in the net market values of CDS contracts outstanding, which can serve as a proxy for exposures to counterparty credit risk, to 21% of their gross market value.

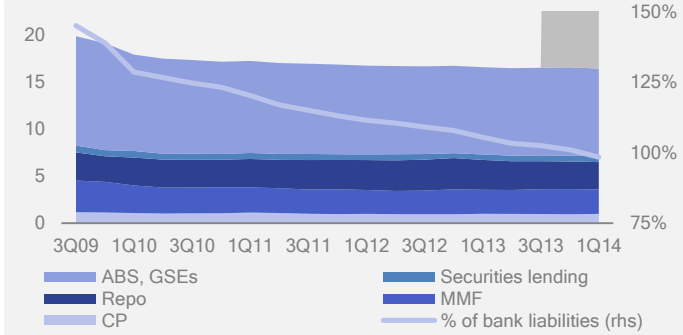
Shadow banking

EU liabilities: Continued contraction T.54



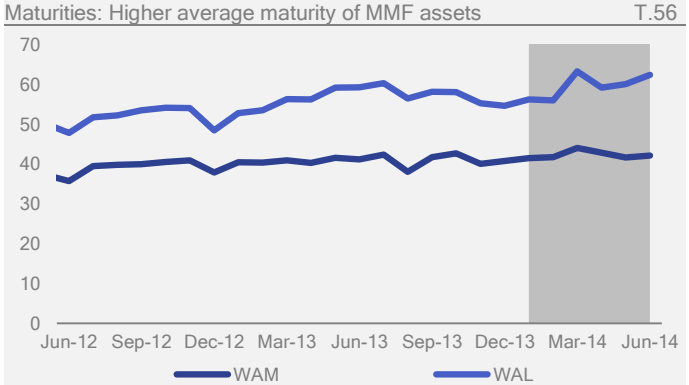
Note: Size of shadow banking system proxied by amounts of Asset-Backed Securities and Asset-Backed Commercial Paper oustanding, size of the EU repo market and EU securities on loan (collateralised with cash), and liabilities of Money Market Funds, in EUR tn. % of bank liabilities on rhs.
Sources: ECB, AFME, ICMA, Markit Securities Finance, ESMA.

US liabilities: Broadly stable T.55



Note: Size of shadow banking system proxied by liabilities of ABS issuers, GSEs and pool securities, open commercial paper, 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, Markit Securities Finance, ESMA.

Maturities: Higher average maturity of MMF assets T.56



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.

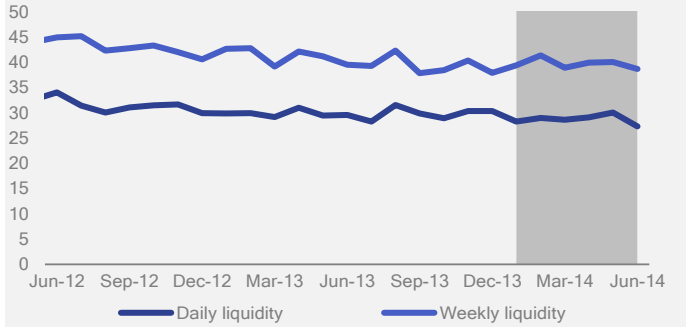
EU shadow banking liabilities, measured using an activity-based approach, declined in 4Q13 to EUR 7.9tn, down EUR 430bn from a year earlier. EU shadow banking liabilities totalled 19% of EU bank liabilities, compared with 98% in the US, where shadow banking liabilities remained broadly stable over the past few quarters. The EU MMF sector became somewhat less liquid, probably due to the attempt to restore profitability by marginally accepting more maturity risk within the sector's portfolio. Interconnection with the banking sector increased, with credit institutions accounting for 74% of MMF assets.

EU shadow banking: EU shadow banking liabilities measured using an activity approach declined in 2H13, by around EUR 600bn, reaching a low of EUR 7.9tn. These developments were driven mainly by changes in the size of repo markets, which accounted for 69% of EU shadow banking liabilities. Other EU shadow banking activities such as MMF liabilities, ABS markets and securities lending also declined. EU shadow banking liabilities amounted to 19% of EU banking sector liabilities, down one percentage point from 2Q13, even though bank balance sheets shrank in parallel. There are several ways to measure the EU shadow banking system; the approach used here is activity-based, which may be comparably smaller than other entities-based estimates and reflect different trends.

International comparison: US shadow banking liabilities measured by an activity-based approach remained broadly stable in 4Q13 and 1Q14. Shadow banking liabilities stood at USD 16.4tn, down from a peak of USD 22.7tn in 1Q08. Liabilities of ABS issuers and Government Sponsored Enterprises accounted for 56% of the total, followed by repos (18%) and MMFs (16%), while commercial paper markets and securities lending were a combined 10%. As of 1Q14, US shadow banking liabilities were equivalent to about 98% of US banking sector liabilities, down from a peak of 170% in 2008.

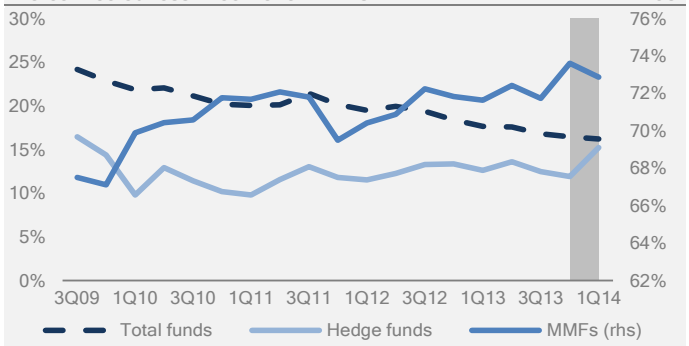
MMF maturity and liquidity transformation: Between December 2013 and June 2014, the average maturity, and in particular the average life, of EU prime MMF assets hiked up (+3% and +14%). In contrast, daily liquidity levels fell by 10%, while weekly liquidity increased 2%. These mixed developments in average MMF liquidity probably reflect efforts by MMFs to restore profitability by accepting

Liquidity: Average liquidity of MMF assets unchanged T.57



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, in %. Aggregation carried out using individual MMF data weighted by AuM.
Sources: Fitch Ratings, ESMA.

Interconnectedness: Decline for MMFs T.58



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

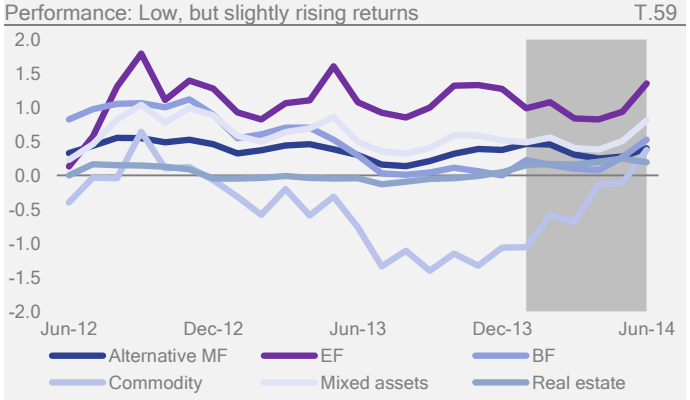
marginally more maturity risks within their portfolios. MMFs perform banking-like activities, e.g. maturity and liquidity transformation: MMF shares can be redeemed on a daily basis, while their assets have a short-term maturity exceeding that of their liabilities. As a result, MMFs are exposed to the risk of an investor run. In addition, unlike other mutual funds, some MMFs promise to redeem shares at a Constant NAV (CNAV), independently of the fluctuation in the value of their assets, thus giving an advantage to the first mover in the event of a run. The European Commission recently proposed a Regulation to address some of these concerns. According to this, all funds would have to maintain a buffer of liquid assets to face investor redemptions, with CNAV funds required to build a 3% capital buffer.

MMFs interconnectedness: MMFs 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, as loans and debt securities issued by these entities made up 73% of EA MMF total assets in 1Q14, up from 60% in 2006. In comparison, loans and debt securities issued by credit institutions amounted to 10% for other types of EA investment funds, including 15% for hedge funds.

Investors

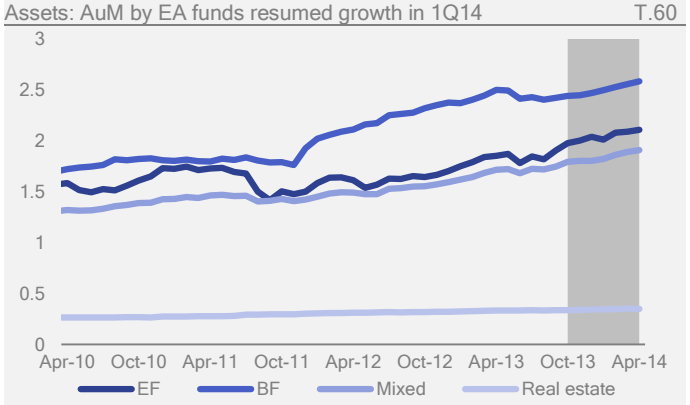
Funds industry

Performance: Low, but slightly rising returns T.59



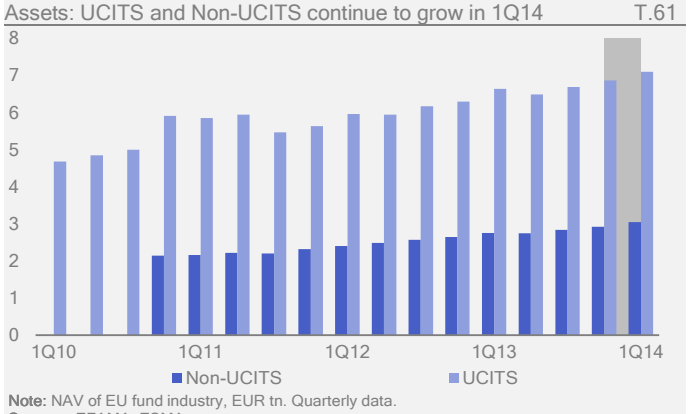
Note: EU domiciled investment funds' yearly returns (1M rolling) asset weighted, %.
Sources: Thomson Reuters Lipper, ESMA.

Assets: AuM by EA funds resumed growth in 1Q14 T.60



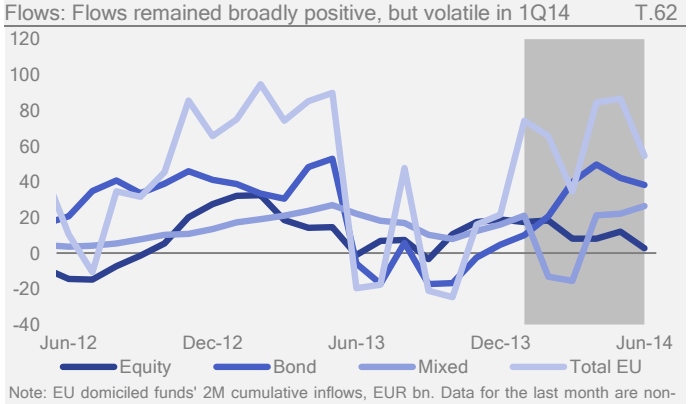
Note: Investment funds' NAV, by fund type. EUR tn.
Sources: ECB, ESMA.

Assets: UCITS and Non-UCITS continue to grow in 1Q14 T.61



Note: NAV of EU fund industry, EUR tn. Quarterly data.
Sources: EFAMA, ESMA.

Flows: Flows remained broadly positive, but volatile in 1Q14 T.62



Note: EU domiciled funds' 2M cumulative inflows, EUR bn. Data for the last month are non-cumulative.
Sources: Thomson Reuters Lipper, ESMA.

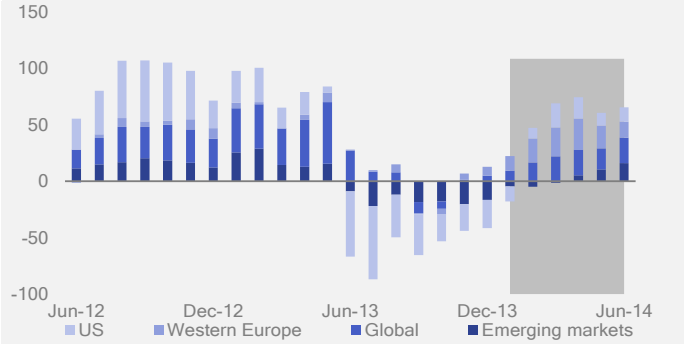
Returns for investment funds in 1H14 were low, but tended upwards to some degree, except for a temporary dip around March. This reconfirmed the tempering effects of the low interest rate environment on the fund industry. Nevertheless, the industry continued to expand, experiencing total growth of 6.7% in AuM, equalling EUR 0.5tn, since 4Q13. This development was partially driven by positive valuation effects, with capital inflows accumulating to EUR 204bn in 1H14, mainly concentrated on bond funds, while the industry's leverage increased in 1Q14, at least in some segments. In terms of asset allocation, investors continued to favour developed economies against EMs, based on improved growth prospects for the former and renewed political and macroeconomic concerns for the latter. Investors in bond funds showed some appetite for high-yield bonds and corporate debt in 1Q14, while in 2Q14 fund inflows reoriented towards other classes of fixed income funds. Both trends are consistent with hunt-for-yield behaviour.

Performance: In 1H14 rates of return (RoR) remained low, despite experiencing modest increases in late 2Q14. Commodity funds were an exception: the average RoR increased substantially and in 2Q14 returned to positive territory. Equity funds performed strongest with a RoR at 1.4% in June 2014. Mixed and bond funds performed second and third strongest with RoRs of around 0.8% and 0.5%, respectively. In June 2014, commodity funds realized RoRs around 0.4%, following almost two years of negative profitability. Generally speaking, the low level of performance in the investment fund industry matches the widespread decline in RoRs also observed in other asset markets, both in the EU and worldwide, and the associated phenomenon of hunt-for-yield. Potential drivers of improvement at the end of 1H14 may include the restructuring of portfolios towards stronger performing geographies and asset classes. The recovery of commodity funds from previous losses was presumably driven mainly by commodity markets, which returned to positive performance from late 2013.

Assets: Total assets managed by EA funds stood at EUR 8.5tn in April 2014, up 6.7% from EUR 7.9tn over the last six months and driven mainly by valuation effects. The industry's growth was due chiefly to bond funds (EUR 3tn, +8.5%), and somewhat less so to mixed and equity funds (EUR 2.1tn and EUR 2.3tn, +6% and +8%). Hedge funds grew their assets by 9.9%, holding EUR 0.2tn in April 2014. Real estate funds continued to expand at a lower rate of +2.5%, managing in April 2014 assets of EUR 0.4tn. Across the entire EU, in April 2014 the fund industry managed assets worth EUR 8.5tn. In terms of fund composition by legal forms, UCITS funds continued to dominate the industry, holding some 70% of all assets, equivalent to EUR 6.9tn, leaving about EUR 2.9tn of assets to non-UCITS funds. As UCITS experienced less growth in assets than non-UCITS (+6.5% versus+7.3%), the industry composition in terms of legal structures remained roughly stable, tilting only slightly towards a higher fraction of non-UCITS.

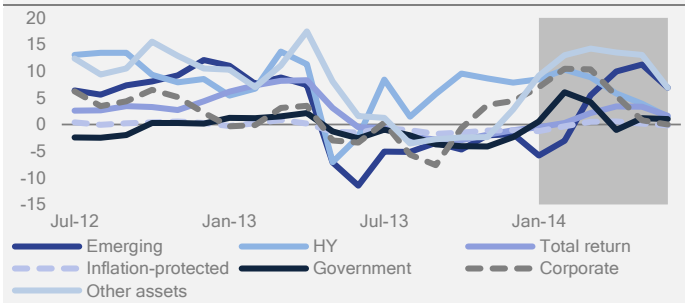
Flows: In 1H14 EU investment funds saw total positive fund inflows of some EUR 204bn, driven by attractive bond and stock markets and improving macroeconomic prospects in

Flows: BF returned to favour in 1H14 T.63



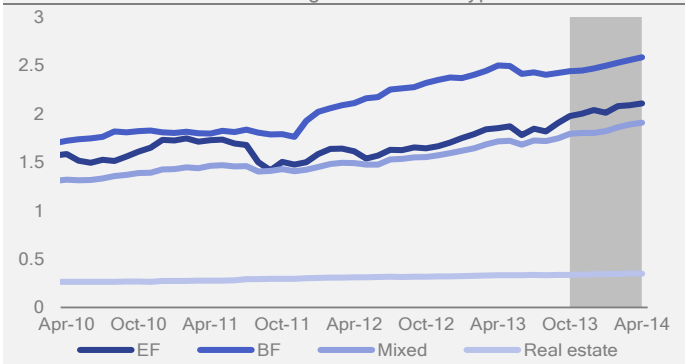
Note: 2M cumulative bond flows by regional investment focus, EUR bn. Data for last month non-cumulative.
Sources: Thomson Reuters Lipper, ESMA.

Flows: Positive flows for all BF assets T.64



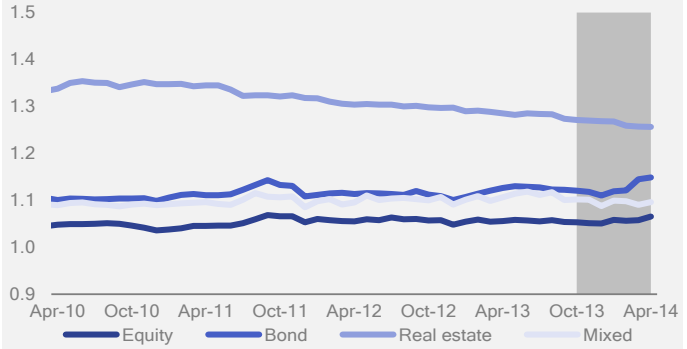
Note: 2M cumulative flows for bond funds, EUR bn. Funds investing in Corporate and Government bonds that qualify for another category are only reported once (e.g. funds investing in Emerging Government bonds will be reported with the Emerging; funds investing in HY Corporate bonds will be reported with the HY). Data for last month non-cumulative.
Sources: Thomson Reuters Lipper, ESMA.

NAV: Since 3Q13 EF shares outgrew other fund types T.65



Note: Investment funds' NAV, by fund type. EUR tn.
Sources: ECB, ESMA.

Leverage: Real estate funds deleveraged in 4Q13 and 1Q14 T.66



Note: Leverage computed as the AuM/NAV ratio, by fund type.
Sources:ECB, ESMA.

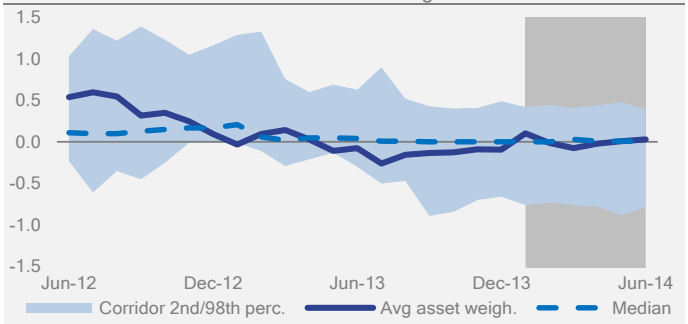
developed economies. These inflows mainly benefited bond funds (EUR 109bn), equity funds (EUR 29bn), mixed funds (EUR 34bn) and alternative funds (EUR 13bn), with most other fund types contributing negatively to aggregate inflows. In addition, MMFs received an inflow of funds of EUR 16bn (cf. MMF section). A stark change in the pattern of flows was thus observed: in 2H13 flows were focused on equity and mixed segments, while in 1H14 the flows were concentrated in the fixed income segments. Mutual funds increased their holdings of bonds during a period in which banks reduced their activities in the sector due to altered business models and regulation. In a context of booming primary bond markets, a shrinking pool of market makers may, under certain circumstances, limit the functionality of secondary bond markets. This suggests that the market may be growing more vulnerable to episodes of illiquidity.

Investments: Investors followed stable patterns during 1H14 with regard to their geographical preferences, as investments into BF and EF were concentrated in developed markets or allocated globally. On the other hand, in the first quarter investors kept their distance from EM: flows were negative over this period, especially for equity funds, although the pace of outflows did slow in comparison to late 2013. BF flows to EM reverted to positive values in April. The relative risk aversion towards EM partly reflected geopolitical tensions in UA, as well as renewed concerns over the sustainability of debt and economic growth in some major emerging economies. As regards asset classes, all BF benefited from the general investor preference for fixed income funds, with more sizeable inflows in 1Q14 for funds investing in HY bonds and corporate debt corroborating the hunt-for-yield pattern. In 2Q14, this trend dislocated to other classes of fixed income funds, also including funds focused on EM.

Leverage: The NAV of European investment funds continued to rise in 1Q14. As of April 2014 the NAV of BF stood at EUR 2.6tn (+4.8%), followed by EF (2.1tn; +4.8%), mixed funds (1.9tn; +4.9%) and real estate funds (350bn; +1.23%). Despite some fluctuations at the beginning of 2014, EF shares grew as fast as the shares of the other big fund categories. Leverage continued to decrease for mixed and real estate funds, indicating that NAV growth rates slightly outperformed those for AuM. However, after experiencing some temporary downward quirks in 4Q13, the leverage ratios of bond and equity funds began to climb, probably driven by strong valuation effects in 1Q14 in respective markets (cf. T.1). The BF industry in particular loaded additional balance sheet risks up to a level last seen in October 2011. At 1.26, the leverage ratio of real estate funds remained higher than that of all other investment fund categories. In terms of the structure of the EU investment fund sector's liability side, its derivative and debt positions grew between 4Q13 and 1Q14 by 20% and 13%, much faster than its NAV, which increased at a rate of 5.5%. On the asset side, derivatives/other assets (+8.3%) and equity holdings (8.4%) outpaced loan and deposits claims (+7%). (All investment fund figures include hedge funds.)

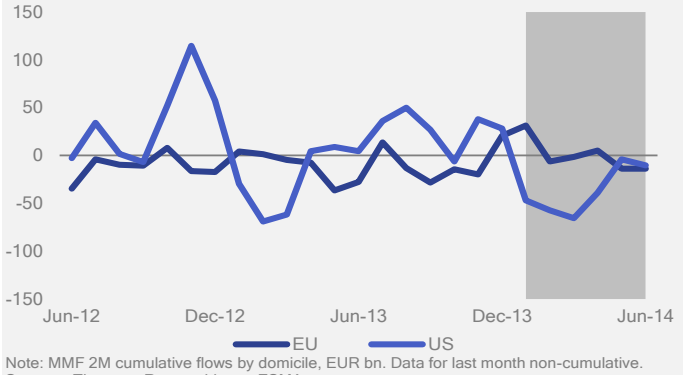
Money market funds

Performance: Rates of return low or even negative T.67



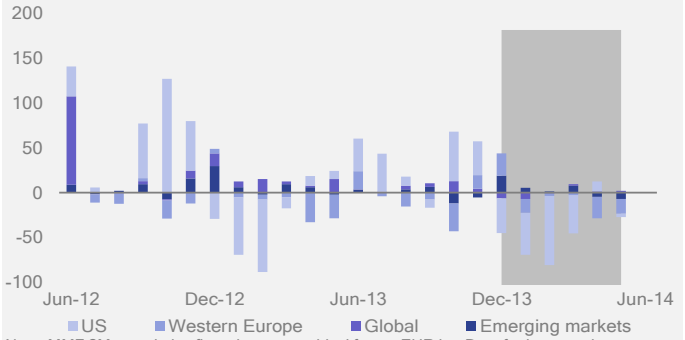
Note: EU domiciled MMF's yearly returns (1M rolling), %. The graph shows the returns' median, the returns' average asset weighted and the difference between the returns corresponding to the 98th and the 2nd percentile (light blue corridor).
Sources: Thomson Reuters Lipper, ESMA.

Flows: EU-domiciled MMF net inflows vs. US-based outflows T.68



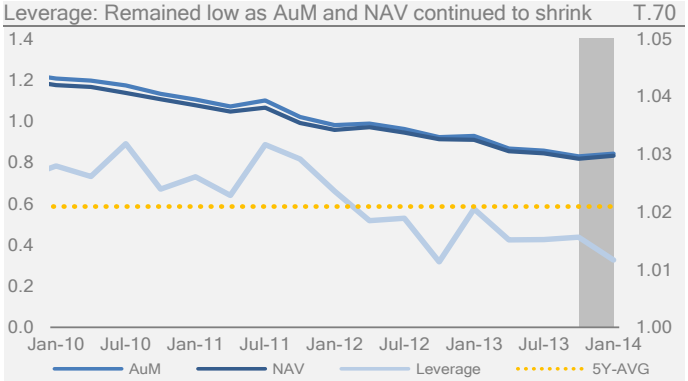
Note: MMF 2M cumulative flows by domicile, EUR bn. Data for last month non-cumulative.
Sources: Thomson Reuters Lipper, ESMA.

Investment focus: MMFs disinvested, in particular in US T.69



Note: MMF 2M cumulative flows by geographical focus, EUR bn. Data for last month non-cumulative.
Sources: Thomson Reuters Lipper, ESMA.

Leverage: Remained low as AuM and NAV continued to shrink T.70



Note: NAV and AuM of EA MMFs, EUR tn. Leverage computed as the AuM/NAV ratio.
Sources: ECB, ESMA.

RoRs of EU MMFs continued their downward trend in 1H14, at least for the less profitable parts of the industry. Nonetheless, EU markets experienced inflows of EUR 16bn. Despite continued outflows, the AuM of EA MMFs increased to EUR 0.84tn in 1Q14. The industry's leverage decreased, while in 1Q14 the average lifespan of EU prime MMFs' assets rose and their liquidity fell. This suggests the advisability of greater prudence in monitoring near-term developments for both the industry and supervisors. As for other fund segments too, recent industry developments tallied with the evidence pointing to hunt-for-yield as a consequence of the low-interest-rate environment.

Performance: In 1H14, the average rate of performance of MMFs fluctuated around break-even, reaching 0.03% in June 2014. Some 50% of the entire industry continued to experience negative RoRs of up to -0.78%. The dispersion of MMF RoRs continued to trend lower, indicating that losses increased for non-profitable MMFs while profits decreased for profitable MMFs. The weak performance of the MMF sector reflected the stability of money market yields at very low levels and strong demand for liquid investment forms.

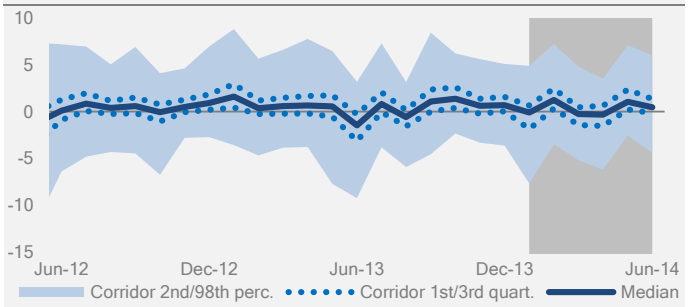
Flows: After almost two years of outflows, in 1H14 the EU MMF industry failed to maintain the stabilising trend in net flows that had begun in late 4Q13. In 1H14 flows entered negative territory again and EU MMF funds lost EUR 15bn. During the same period the US industry experienced outflows of EUR 107bn. Funds with a focus on US assets bore the brunt of this capital reallocation, losing EUR 105bn of their shares. Similarly funds investing primarily in global asset markets shed capital (EUR -0.6bn), while funds investing in Western European markets stayed roughly unchanged (EUR -1.2bn). In contrast, funds investing in EM expanded their share base with a total inflow of EUR 16bn. EU MMFs are mainly invested in unsecured financial debt, although the allocation to sovereign bonds increased in 1Q14.

Assets: The reduction in EA MMFs' AuM was reversed in 4Q13 after a long period of previously negative net flows for the European industry: in 1Q14 the EA MMF industry stood at EUR 0.84tn, 1.54 per cent up on 3Q13. Similarly, the industry's NAV increased by 1.94% to reach EUR 0.83tn.

Leverage: The reduced leverage resulting from the changes observed in AuM and NAV was considerable, bringing it close to a value of 1.01. Even so, in times of elevated valuation risks any potential upward movement in leverages of MMFs calls for the industry and supervisors to monitor near-future trends very carefully. Currently, these concerns are somewhat heightened by recent increases in the average life of EU MMFs assets and the associated reductions in the liquidity of these assets (cf. T.56 and T.57).

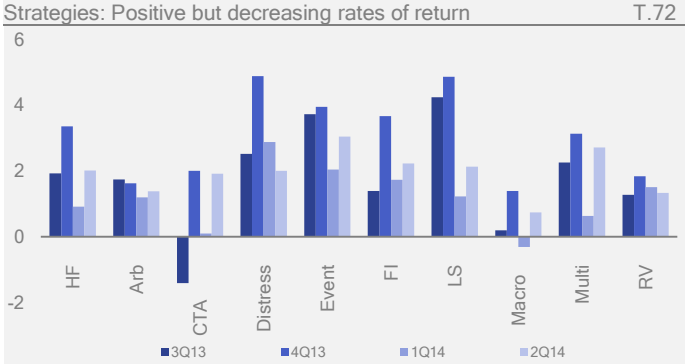
Alternative funds

Performance: HF returns stable at low level T.71



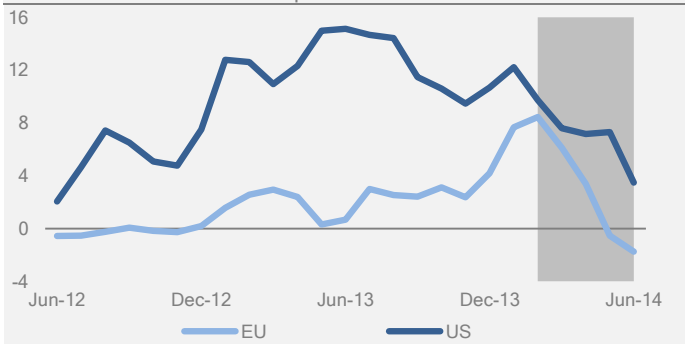
Note: EU domiciled hedge funds' monthly returns, %. The graph shows the returns' median, the difference between the returns correpsonding to the 98th and 25th percentiles (light blue corridor) and the difference between the returns corresponding to the 1st and 3rd quartiles (dotted line corridor).
Sources: TASS Lippers, Eurekahedge, Barclayhedge, HFR, ESMA.

Strategies: Positive but decreasing rates of return T.72



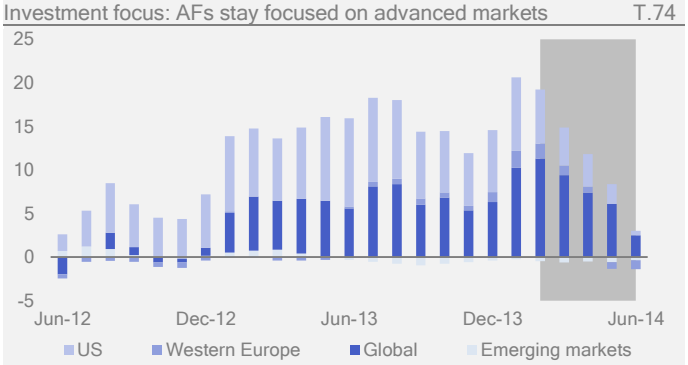
Note: Growth of hedge fund performance indices by strategy: Hedge fund index, arbitrage, Commodity Trading Advisor, distressed debt, event driven, fixed income, long/short equity, macro, multi-strategy, relative value; %.
Sources: Eurekahedge, ESMA.

Flows: Flows to AF lower - still positive for US T.73



Note: Alternative mutual funds' 2M cumulative flows by domicile, EUR bn. Data for last month non-cumulative. Data on alternative mutual funds represents only a subset of the entire alternative fund industry.
Sources: Thomson Reuters Lipper, ESMA.

Investment focus: AFs stay focused on advanced markets T.74



Note: Alternative mutual funds' 2M cumulative flows by geographical focus, EUR bn. Data for last month non-cumulative. Data on alternative mutual funds represents only a subset of the entire alternative fund industry.
Sources: Thomson Reutters Lipper, ESMA.

The average performance of the alternative fund industry in 1Q14 fell well short of its recent history. Nevertheless, and in line with their risk profile, alternative funds remained the fund type with the highest RoR. Accordingly, most strategies recorded positive performance, especially for fixed income funds, event driven funds and distressed debt funds. With an inflow of EUR 10bn in shares issued for EU alternative mutual funds, a substantial increase in AuM and roughly unchanged NAV for EA alternative funds, the European alternative funds industry enjoyed buoyant growth, driven mainly by valuation effects. In terms of asset allocation, EU alternative mutual funds showed a marked preference for developed countries and global markets over EM and benefited from the arbitrage opportunities arising from uneven macroeconomic prospects between geographical areas.

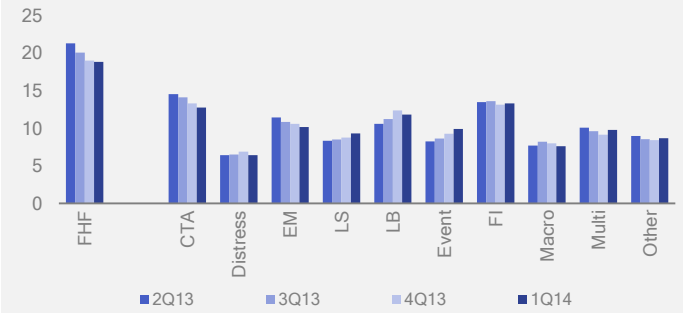
Performance: The EU hedge fund industry in 1H14 performed on average with monthly RoRs between -0.4% and 1.2%, implying a downward shift in distribution compared to 2H13. Annualised to yearly figures, this equates to an average yearly growth rate of 4.2% in the median for 1H14. In that quarter the dispersion of EU hedge fund RoRs fluctuated, initially spiking higher in January and subsequently falling back. Towards the end of 1H14 EU alternative mutual funds performed better than EU hedge funds in general (Cf. T.59).

Strategies: With regard to fund strategies, a broad-based deceleration took place, but – with the exception of macroeconomic funds – the record was still positive when compared with 4Q13. Lately, hedge funds' correlation with equity markets has risen considerably, however, increasing fears over the potential risk of losses in the event of a market downturn. Alternative funds (AF) continued to benefit in particular from persisting improvements in the macroeconomic outlook in the EU as well as from monetary and fiscal policy developments in the US. On the other hand, downgraded growth expectations in some EM weighed on funds investing in those areas, but also provided arbitrage opportunities to hedge funds. Event-driven funds reported the highest performance in 1H14 (+5.2%), followed by distressed debt funds (+4.9%) and fixed income funds (+4.0%). On a yearly basis, event-driven funds delivered the best performance (+12.8%).

Flows: In 1H14, the EU alternative mutual fund industry received fund inflows of EUR 10bn, roughly the same amount as in 2H13, while US alternative mutual funds issued EUR 20bn of new shares and alternative mutual funds domiciled elsewhere gained another EUR 2bn in shares. It is worth noting, however, that alternative mutual funds represent only a minor share of the entire AF sector, currently estimated at some 10%.

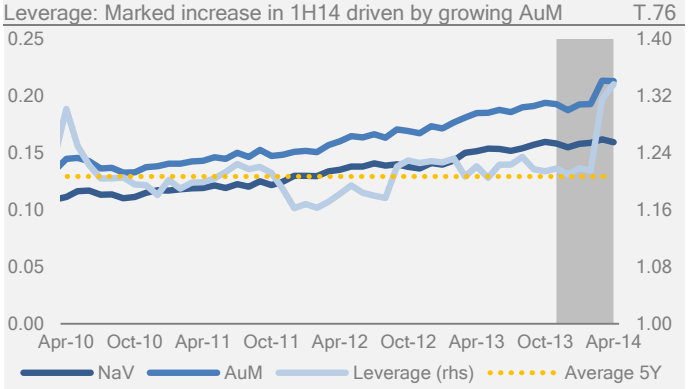
Investment focus: The resulting EUR 32bn of new inflows into the global alternative mutual fund industry were allocated mainly to funds focusing on global markets (EUR 21bn), while funds with a focus on European (US) assets were able to attract EUR 1.4bn (EUR 10bn). Alternative mutual funds with an investment strategy dedicated to EM lost EUR 1.3bn of shares due to disinvestment.

Strategies: Equity long bias, long/short and macro gain weight T.75



Note: Market share of hedge funds' AuM by strategy: Fund of hedge funds, Commodity Trading Advisor, distressed debt, emerging market, event driven, fixed income, long/short equity, equity long bias, macro, multi-strategy, other. Funds of hedge funds are not included in the total. % of total.
Sources:BarclayHedge, ESMA.

Leverage: Marked increase in 1H14 driven by growing AuM T.76

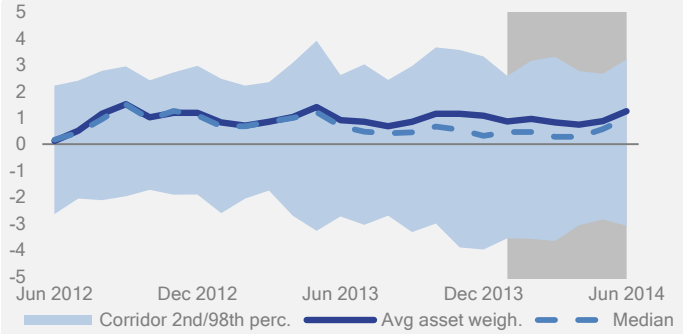


Note: NAV and AuM of EA hedge funds, EUR tn. Leverage computed as the AuM/NAV ratio.
Sources: ECB, ESMA.

Assets: As of April 2014 assets managed by EA AF accounted for EUR 213bn, up from 194bn (+9.9%) at the end of 3Q13. This compared to a NAV of EUR 160bn, roughly unchanged since October 2013. The EA hedge fund industry thus experienced strong growth driven mainly by valuation effects. Since AF have recourse to external funding, their leverage continued to exceed that of most other funds and increased in 1Q14, to 1.34. However this figure does not account for off-balance-sheet techniques that AF may use to increase their leverage, e.g. derivatives. The rules applicable under AIFMD tighten up the disclosure obligations stipulated for AF and their reporting duties to supervisory authorities, which will make information available on the leverage embedded in financial derivatives. At the global industry level, equity long bias funds, event-driven funds, distressed debt funds and long/short equity benefited most from the fund inflows reported for 4Q13 and 1Q14, enabling them to continue boosting their respective shares in the industry during that period to 12%, 10%, 6% and 9% of the industry's AuM. Hedge funds' past strategic reorientation to market segments supported by macroeconomic trends and the low interest rate environment has thus been interrupted for the moment, as investors start to shift their focus back to more industry specific strategies.

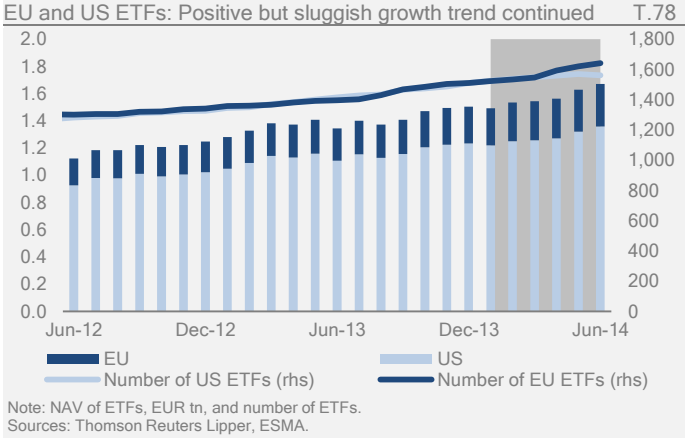
Exchange-traded funds

Performance: Moderate increase in rates of returns T.77



Note: EU domiciled ETFs' yearly return (1M rolling), %. The graph shows the median and average asset weighted returns and the difference between the returns corresponding to the 98th and the 2nd percentile (light blue corridor).
Sources: Thomson Reuters Lipper, ESMA.

EU and US ETFs: Positive but sluggish growth trend continued T.78



Note: NAV of ETFs, EUR tn, and number of ETFs.
Sources: Thomson Reuters Lipper, ESMA.

In 1H14, ETF returns increased moderately by 17 bps, while the industry's performance displayed heterogeneity similar to that of mutual funds. ETFs continued to demonstrate strong tracking accuracy. The market value of EU ETF shares increased by around EUR 30bn to EUR 313bn. The industry remained dominated by equity funds (EF) which accounted for 74% of NAV.

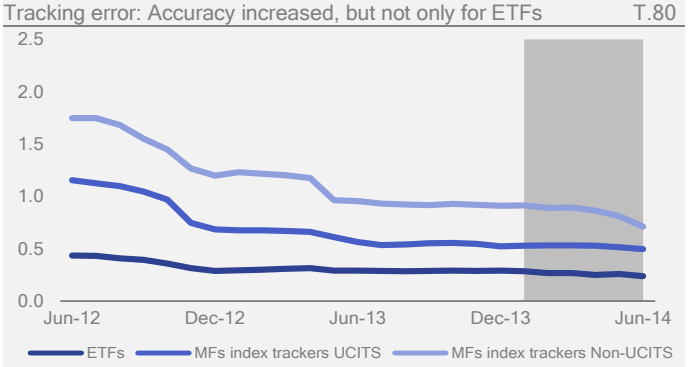
Performance: In 1H14 performance rates of EU ETFs, i.e. funds which commit to tracking individually pre-specified financial indices and are traded on secondary markets, increased moderately by 17bp, reaching 1.25% (asset weighted) in June. However, EU ETFs display considerable heterogeneity in annualized returns, with the returns of the best and worst performing ETFs varying between 3.2% and -3.1%. For the most part, these variances are due to differing performances by the various benchmarks tracked. The heterogeneity in ETF performance rates also appears to be driven by diverging rates of return for ETFs focused on different asset classes, as the pattern displayed by ETFs here resembles that observed for mutual funds (cf. T.59).

Assets: The ETF industry continued its rapid growth: in 1H14 assets under management of EU and US ETFs soared by EUR 40bn and EUR 139bn respectively. In June 2014 EU ETF sector size totalled EUR 313bn in assets, managed by about 1,600 ETFs, of which 60% used physical replication (investing directly in index constituent assets) and 40% reproduced their respective benchmarks synthetically by entering into swap agreements. On average, European ETFs

Investment focus: Equity remained the focus of ETFs T.79

Note: NAV of EU ETFs by asset type, EUR bn.
Sources: Thomson Reuters Lipper, ESMA.

Tracking error: Accuracy increased, but not only for ETFs T.80



Note: Tracking error defined as standard deviation of fund excess returns compared to benchmark. Yearly standard deviation reported on monthly frequency. End of month data.
Sources: Thomson Reuters Lipper, ESMA.

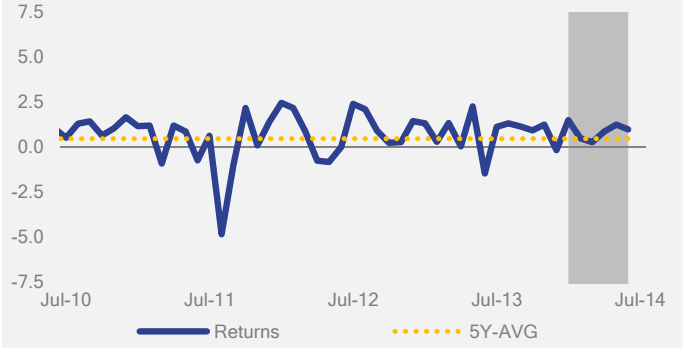
were very small compared to their counterparts in the US, where 1,560 ETFs managed assets worth EUR 1.4tn. Whereas in the US retail investors directly own a significant proportion of ETF shares, the situation in Europe differs, as retail investors hold only 10% to 20% on average of the shares in ETFs. European ETFs are mostly based in EI, LU and FR.

Investment focus: In 1H14 ETFs tracking equity market benchmarks benefited most from the capital inflows to the ETF industry, being able to issue new shares worth EUR 20bn, while fixed income products received an inflow of EUR 10bn. Other ETFs' investment strategies saw more modest inflows. The NAV of the EU ETF industry remained predominantly concentrated in funds investing in equities (74%). The substantial inflows into the fixed-income segment thus meant that, driven by the general market preference for fixed-income products in 1H14, ETFs following fixed-income benchmarks were able to increase their market share.

Tracking accuracy: In 1H14 ETFs continued to demonstrate high accuracy in tracking their respective benchmarks. The comparative performance analysis of ETFs and index funds with respect to their benchmarks shows ETFs maintaining superior tracking accuracy during the entire period observed. However, index trackers in the alternative fund universe also significantly improved their relative tracking accuracy.

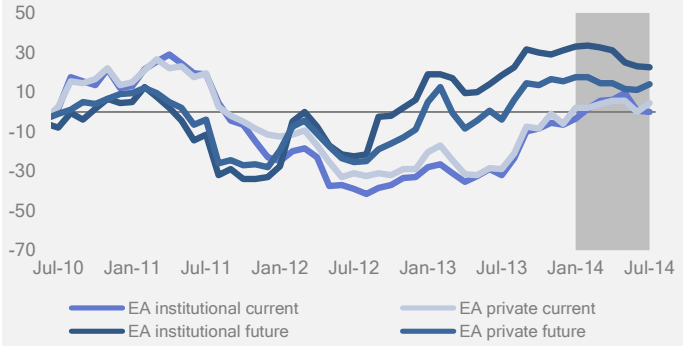
Retail investor trends

Portfolio returns: Declining volatility around low average T.81



Note: Monthly returns on a portfolio composed of 47% stocks (Stoxx600), 42% deposits (1Y Euribor) and 11% bonds (Barclays Euro Aggregate 7-10Y).
Sources: Thomson Reuters Datastream, EIOPA, ESMA.

Investor sentiment: Convergence toward optimism T.82

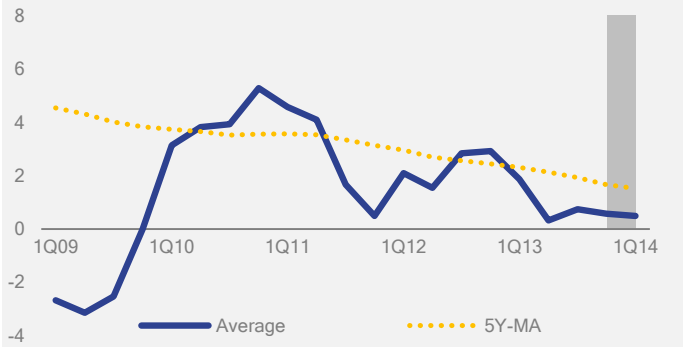


Note: Sentix Sentiment Indicators for Euro Area private and institutional investors for a 10Y horizon. The zero benchmark marks a risk-neutral position. Monthly frequency.
Sources: Thomson Reuters Datastream, ESMA.

In 1H14, returns on a representative retail investment portfolio remained positive, moving closely around their recent low average. A mid-period dip was followed by a mild rebound in 2Q14. Investor sentiment vis-à-vis the current situation continued to improve through June before dropping back to end-2013 levels in July. Meanwhile, optimistic expectations with regard to future developments were somewhat more tempered. Low disposable income and liability growth means that households had little opportunity for additional saving and investing. Households' financial assets grew above average, owing mainly to growth in shares, mutual funds and private pensions. Median amounts held by the few households that own the respective financial assets suggested that this growth benefited only a small minority. Numeracy and problems with providers affected retail investors' trust and switching behaviour. Nevertheless, general trust in providers and satisfaction with services and providers increased year-on-year.

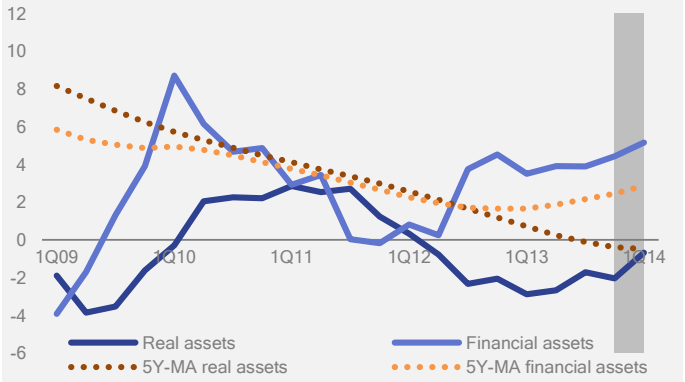
Portfolio returns: In 1Q14, the monthly returns on a representative portfolio of retail investors' financial wealth decreased steadily, although remaining positive, from 1.51% to 0.28% in March 2014. The weights used for each component of the portfolio are based on averages computed over 2007-2010 and kept constant for the whole period. This reduction may have been driven by the political situation unfolding in Crimea, as concerns over UA and RU geopolitical developments weighed on global equity markets. Since April 2014, strongly performing equity markets drove a rebound in

Disposable income: Scant growth T.83



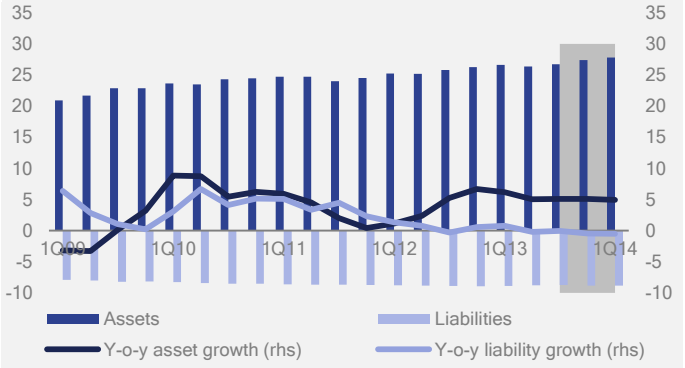
Note: Annualized growth rates of average gross disposable income in 14 EU countries (BE, CZ, DK, DE, ES, FR, IT, NL, AT, PL, PT, FI, SE, UK), %.
Sources: ECB, ESMA.

Asset growth: Real asset growth still negative T.84



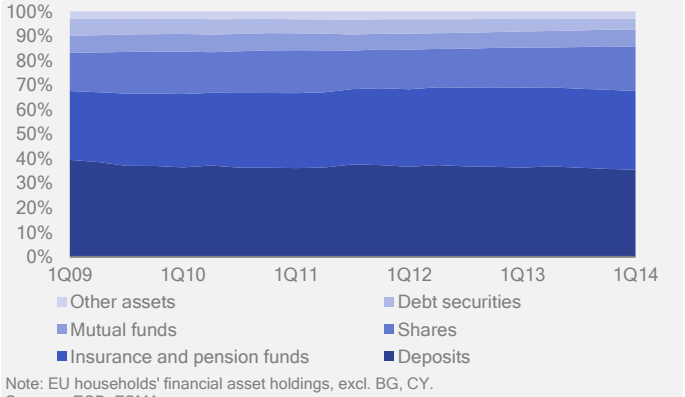
Note: Annualized growth rates of EA households' real and financial assets, %.
Sources: ECB, ESMA.

Financial assets and liabilities: Liabilities still not growing T.85



Note: EU households' financial assets and liabilities, excl. BG, CY, EUR tn (lhs), %(rhs).
Sources: ECB, ESMA.

Financial asset composition: Deposits/Insurance most popular T.86



Note: EU households' financial asset holdings, excl. BG, CY.
Sources: ECB, ESMA.

the portfolio's performance, lifting returns to 1.25% in May and 0.98% in June. Currency and deposits accounted for 33% of the average household's financial wealth, insurance and pension fund technical reserves 29%, shares 27%, and other instruments 11%. The insurance and pension fund technical reserves can be decomposed into 50% shares, 35% bonds with an average maturity of 7 to 10 years and 15% deposits. Accordingly shares represent 47% of total household financial wealth, currency and deposits account for 42% and bonds for 11%.

Investor sentiment: In 1H14, private and institutional investor sentiment with regard to the current economic situation continued the improvement in effect since 2H13. Various factors may have contributed to this, including continued economic stabilisation in crisis countries, progress on the EU banking union, continued monetary policy support, and positive value effects in asset markets. Nevertheless, investor assessment of future developments – on the part of both institutional and private investors – was moderated somewhat, possibly to include geopolitical risks and their potential implications for financial markets.

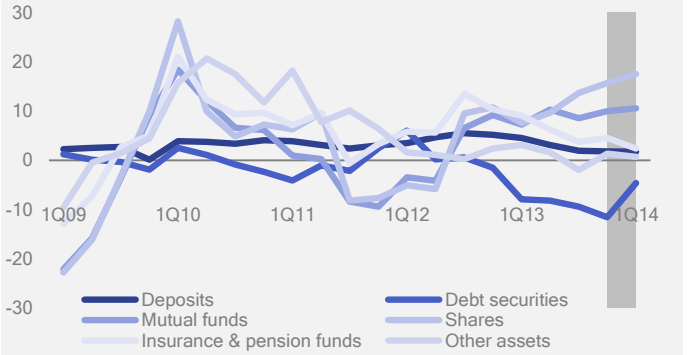
Disposable income: While disposable income growth was positive in 1Q14, it still fell from 1.9% y-o-y growth in 1Q13 to 0.5% in 1Q14. Disposable income growth was higher in the EA (1.4%) than in the rest of the EU. The weighted average was 1.2% (of the 14 EU countries that report quarterly disposable income). Income growth accelerated in only four countries compared with early 2013 figures, whereas it slowed in the other ten countries observed.

Asset growth: On average the value of households' real assets continued to decline in the EA. This was mainly due to the ongoing drop in property prices in certain EA countries. The compound annual growth rate of real assets owned by EA households worked out at -0.4% over the last five years. Financial assets grew more slowly in 4Q13 compared to the previous four quarters due to slower growth in the two asset classes that make up the bulk of retail investors' portfolios: deposits and insurance and private pensions.

Financial assets and liabilities: EU households held EUR 27.8tn in financial assets and EUR 9.4tn in financial liabilities in 1Q14. The average liabilities-assets ratio in the EU was 32% in 1Q14, down slightly on its five-year MA of 35%. This was because, on average, households' aggregate liabilities were stable or decreased while their financial assets edged up a little – the result of households' demand for loans remaining low while their financial assets increased in value. This relationship may change in future, since household demand for loans was above its historical averages in 1Q14 according to the ECB's bank lending survey. However, the survey indicates a slight tightening of credit standards for housing loans in 2Q14 and attendant easing in credit standards for consumer loans. Since housing loans account for the bulk of lending to households, the net effect is unlikely to bring a significant push to household liability growth.

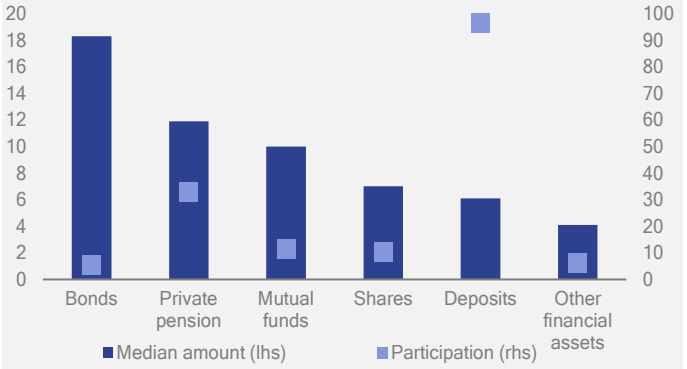
Financial asset composition: In 1Q14, EU households held around EUR 9.8tn in deposits, representing 35% of their total financial assets. Holdings of insurance and pension

Financial asset growth: Shares growing strongly T.87



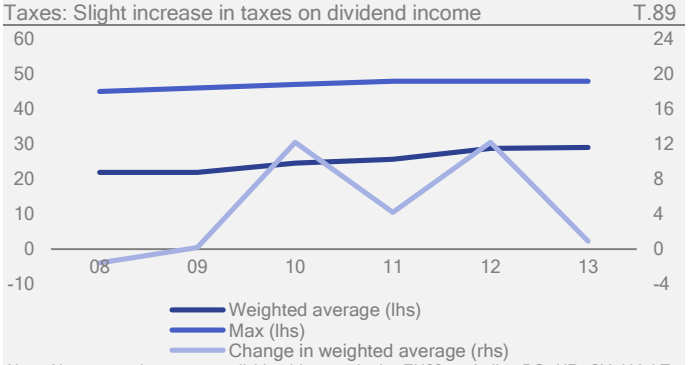
Note: Weighted average annualized growth in EU households' financial assets, excl. BG, CY, and IE regarding mutual funds and DE regarding insurance.
Sources: ECB, ESMA.

Asset ownership: Bonds top shares T.88



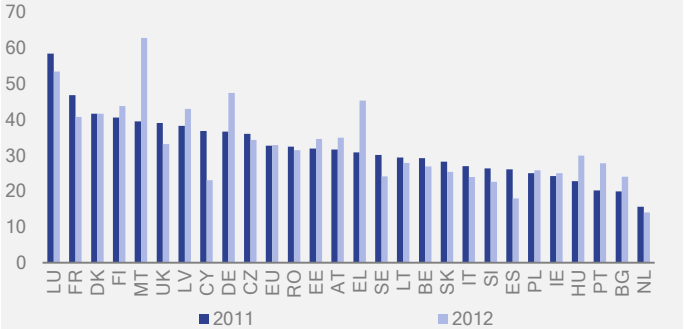
Note: Median conditional amount owned by EA household (excl. EE, IE) 2008-2011, in EUR thousands (lhs) and average participation in % of households (rhs).
Sources: ECB HFCS, ESMA.

Taxes: Slight increase in taxes on dividend income T.89



Note: Net personal tax rate on dividend income in the EU28 excluding BG, HR, CY, LV, LT, MT, RO, %; weighted by household shares and mutual fund holdings in the respective MS relative to the sum of shares and mutual funds held by households in all MS.
Sources: OECD, ECB, ESMA.

Satisfaction: Slight decrease in problems reported T.90



Note: Share of individuals surveyed who responded "8-20" to the question on investment products, pensions and securities: "On a scale from 0 to 10 to what extent do you trust suppliers to respect the rules and regulations protecting consumers?", %.
Sources: European Commission DG SANCO Market Monitoring Survey 2011/12, ESMA.

funds followed closely in volume, amounting to EUR 8.8tn. The value of shares held by EU households totalled EUR 5tn. EU households also held mutual fund shares worth EUR 1.9tn in 1Q14. This made up 7% of their total financial assets. The share of debt securities in the aggregate household portfolio stagnated at 4.5% in 1Q14. The other financial assets held by EU households were worth altogether EUR 800bn in 1Q14 and represented 3% of their total financial assets.

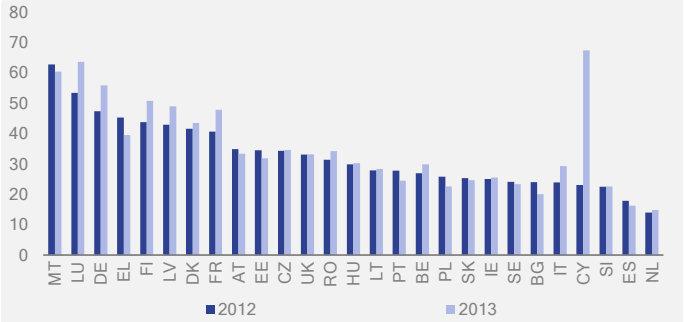
Financial asset growth: In 1Q14 average growth in EU households' share and mutual fund assets topped the five-year average. Share assets grew by double digits, presumably due to more favourable market conditions rather than higher household participation. EU households' deposits increased below their five-year average in 1Q14. Debt securities, insurance and pension fund assets and other assets grew at a rate significantly below their five-year average, while mutual funds posted growth well above their five-year average (influenced by the significant outflows in 2008 and early 2009). Since IT households owned around 50% of all debt securities owned by EU households, their impact on year-on-year change was high (and negative). However, even without IT, debt securities' year-on-year average change was negative.

Asset ownership: Between 2008 and 2011, approximately 5% of EA households owned bonds, but the median amount held was high compared to other financial assets. Private pensions were more widely held (33%) while the median amount owned was only around EUR 12,000. Shares and mutual funds were owned by 10% and 11% of households respectively, while median amounts owned stood at EUR 7,000 and 10,000. Retail investors directly invested in securities were rare compared to the group of retail investors which owned securities indirectly through an insurance or a pension. The majority of households did not own securities of any kind.

Taxes: Neither participation nor conditional median amounts of financial assets owned by households seem to be correlated with taxes. For example, one large MS has one of the highest net personal tax rates on dividend income in the EU but above average participation (13% of households hold shares). In contrast, another MS's tax rate is 0% and only 1.8% of households hold shares. Hence, factors other than taxes must play a more important role for households when deciding whether or not to hold shares. 11 out of 21 EU countries increased taxes on dividend income between 2008 and 2013. During that time, the average tax rate climbed from 21% to 24%, returning to levels of the early 2000s.

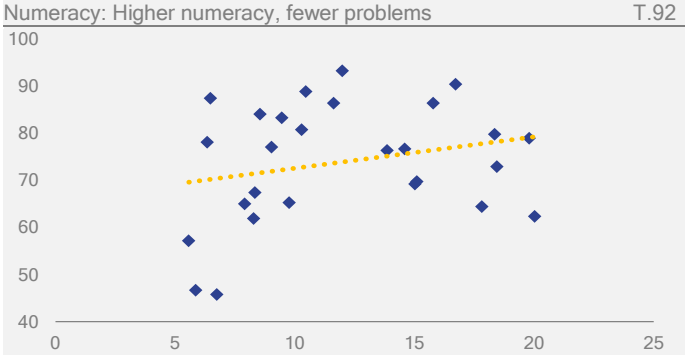
Satisfaction: The percentage of individuals dissatisfied with investment products or services in the EU28 fell slightly between 2012 and 2013. While in 2010 20% of survey respondents said they had experienced a problem with an investment product or provider, in 2013 that figure had fallen to 10%. The share of respondents reporting problems with investment products in 2013 was higher on average than for the other markets screened in 15 out of 28 countries in 2013. The share of individuals reporting problems with investment services providers or products was as low as 1.5% in one MS and highest with 21% in another MS.

Trust: Renewed rise in trust T.91



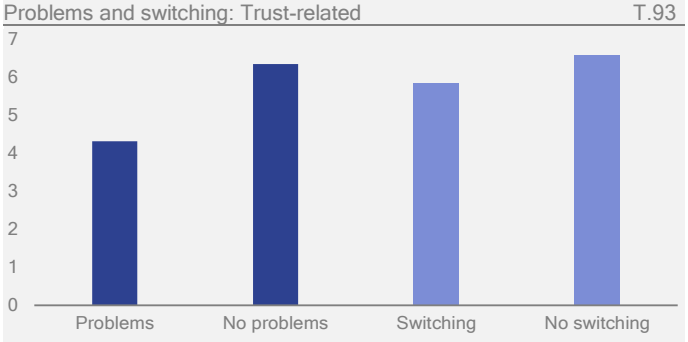
Note: Share of individuals surveyed who responded "8-20" to the question on investment products, pensions and securities: "On a scale from 0 to 10 to what extent do you trust suppliers to respect the rules and regulations protecting consumers?", %.
Sources: European Commission DG SANCO Market Monitoring Survey 2012/2013, ESMA.

Numeracy: Higher numeracy, fewer problems T.92



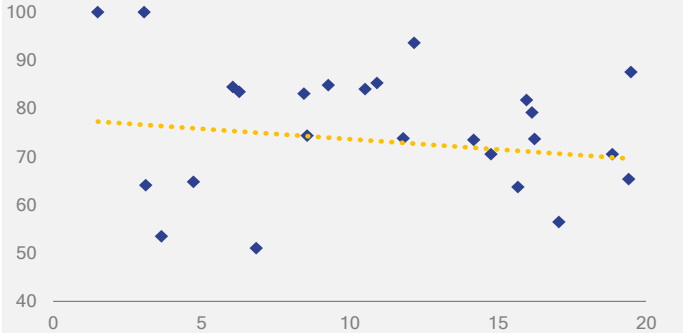
Note: X-axis: % of individuals surveyed who complained about problems with providers or products. Y-axis: % of individuals that said they had problems.
Sources: European Commission, DG SANCO Market Monitoring Survey, 2012 and Special Eurobarometer 342, 2011, ESMA.

Problems and switching: Trust-related T.93



Note: Weighted average trust score (see chart T.35), depending on the responses to a question on problems (see chart T.34), and another on switching:
"Have you switched service or provider in the past year?"
Sources: European Commission DG SANCO Market Monitoring Survey 2013, ESMA.

Problems and complaints: Barely related T.94



Note: Y-axis: Share of individuals surveyed who complained about problems with providers or products. X-axis: Share of individuals that said they had problems, %.
Sources: European Commission, DG SANCO Market Monitoring Survey 2013, ESMA.

Trust: Retail investors' trust in EU financial services providers increased markedly between 2012 and 2013. In 2012, 32% of surveyed individuals in the EU27 answered that they trusted investment services providers to respect consumer protection rules. In 2013, that number had increased to 35% (2010: 26%). However, the range between the top and bottom values across MS increased as well: In 2012 the lowest and highest proportion of respondents in a country trusting providers to respect the rules were 17% and 63%. In 2013, those figures stood at 15% and 67%. In addition, the standard deviation had increased by 3 percentage points from 11 to 14%. The proportion of respondents having problems was negatively correlated with the proportion of respondents trusting investment services providers.

Numeracy: Where respondents exhibited lower numeracy more problems were reported as well. Numeracy is the ability to reason and apply basic numerical concepts which is an essential ingredient for sound financial decision making. Approximately 45% of Europeans correctly answered basic arithmetic questions. The correlation between numeracy and comparability of products was negative. This means that where respondents were less numerate they reported to find it easy to compare products. This finding suggests that less numerate respondents do not seem to understand which information they need to compare investment products properly.

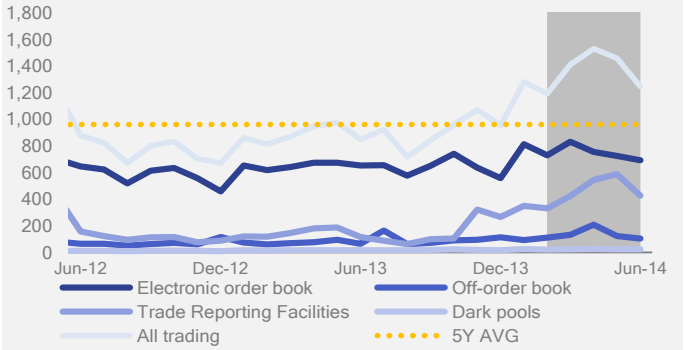
Problems and switching: The incidence of problems appears to be related to lower levels of trust toward financial service providers. Where respondents indicated they had switched a service provider, however, trust levels were intermediate: Investors that experienced problems expressed on average 40% lower trust in their providers of investment products. Respondents that had switched their provider in the last year reported lower levels of trust than respondents that had not switched.

Problems and complaints: In 2013 there existed a positive correlation between problems and complaints, i.e. where investors had more problems they also tended to complain more. However, the correlation was surprisingly weak. This suggests that other factors played an important role when deciding whether to complain. Those factors may include ease of complaining, severity of problem and amounts involved, perceived chances of the complaint being upheld and time until complaint is treated among others. However, data on those features of complaints or "non-complaints" are very scarce.

Market infrastructures

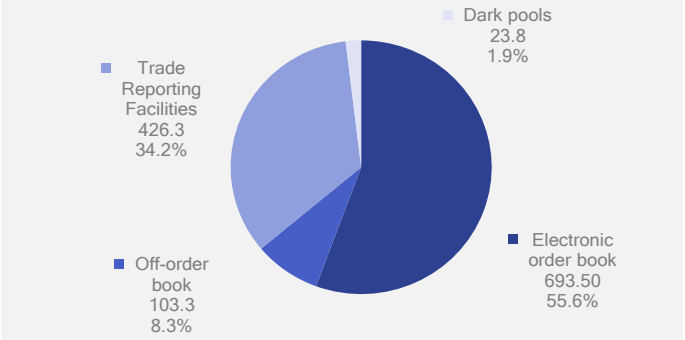
Trading venues

Turnover: Strong 1Q14 rise partially reversed in 2Q14 T.95



Note: Turnover on trading venues by category, EUR bn. 5Y-AVG= 5Y average of all trading.
Sources: FESE, ESMA.

Equity trading: Turnover by transaction types T.96



Note: EUR bn and in %. Data as of June 2014.
Sources: FESE, ESMA.

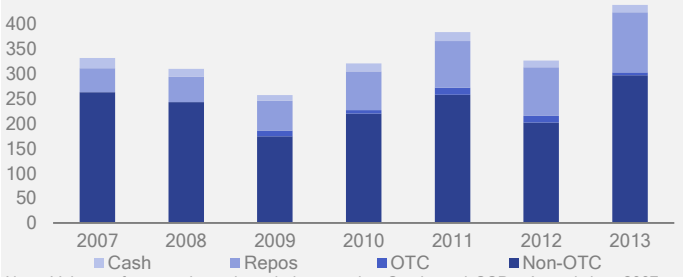
In 1H14, EU trading venue turnover fell after showing strong gains through May, although it remained above its five-year average. Trade Reporting Facilities (TRF) dominated these movements. Equity trading continued to be conducted mainly through electronic order books, though the share of trade-reporting facilities trades increased to more than one-third.

Turnover: Monthly trading turnover increased strongly and steadily through April, reaching over EUR 1,500bn, before receding to January levels of above EUR 1,200bn. After having recorded EUR 950bn end-2H13, the temporary peak implied a level not seen since May 2010 and 50% above the five-year average. Reporting activity via TRF showed the greatest dynamism: having peaked at nearly EUR 600bn, it grew nearly six-fold since September 2013; off order book trades nearly doubled over the same period before also receding. The share of the largest segment, EOB trades, remained fairly flat.

Transactions: Equity trading continued to be transacted mainly through EOB, though its share dropped from its initial rise to over 60% of total turnover in January 2014 to under 50% in April 2014 before rebounding to about 55% in June. Conversely, the reporting of trades via Trade Reporting Facilities increased from 28% in January to over 40% in May, before dipping again to 34% in June. Trading in dark pools remained limited, below 2% of total turnover; this figure refers only to exchanges and some MTF-operated dark pools. Off-order book trading was volatile, initially dropping from 12% to 7% in January and briefly recovering to 14% in April, before falling back towards 8% in May.

Central counterparties

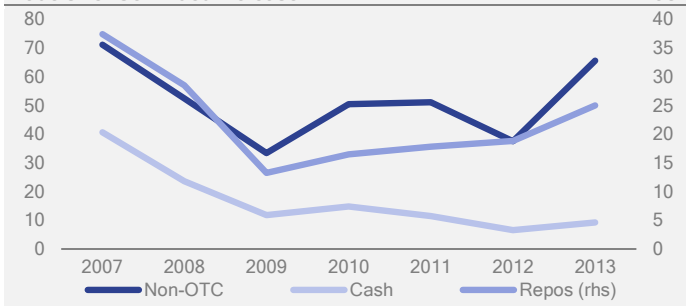
Value cleared: Strong rebound in non-OTC T.97



Note: Volume of transactions cleared by reporting Continental CCPs. Annual data 2007 - 2013; EUR tn: Cash, Repos, non-OTC and OTC derivatives. Uneven reporting across years and CCPs. Includes CCP Austria, Eurex Clearing A.G.; MEFF, LCH Clearnet S.A. (but not LCH Clearnet Ltd), ICE Clear Europe, Hellenic Exchanges Holdings S.A, Keler CCP, CC&G, KDPW CCP S.A., Casa Romana de Compensatie S.A., Casa de Compensare Bucuresti, Nasdaq OMX Clearing.
Sources: ECB and ESMA.

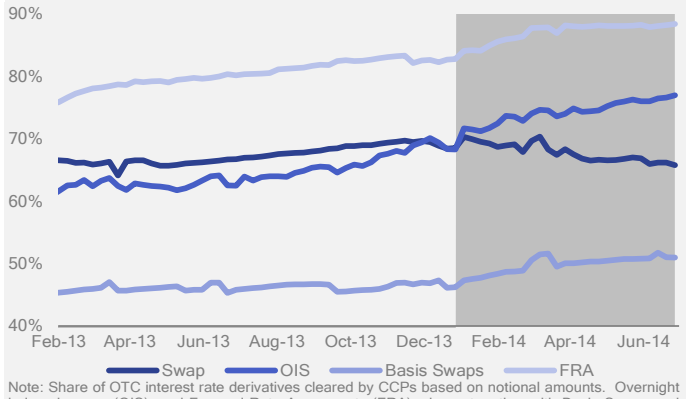
In 2013, the cumulative value of trades cleared through Continental EU CCPs returned to a growth path, surpassing the 2011 high. This growth was led by non-OTC derivatives. These developments show the continued importance of this asset class through end-2013, which is dominated by IRS, and the growing relevance of central clearing. Developments in 1H14, tempered the trend somewhat when, at a global level, the cumulative notional value of IRS fell relative to 2H13, with the share of centrally cleared IRS also declining. For 2013, the average trade size of centrally cleared products grew across asset classes, with repos accelerating ahead of trend growth while non-OTC trade size rebounded strongly and cash transactions grew marginally.

Trade size: Continued increase T.98



Note: Average size of transactions cleared by reporting Continental CCPs. Annual data: 2007 - 2013; EUR mn lhs and bn rhs: Cash, Repos, and non-OTC derivatives. Uneven reporting across years and CCPs. Includes CCP Austria, Eurex Clearing A.G.; MEFF, LCH Clearnet S.A. (but not LCH Clearnet Ltd), ICE Clear Europe, Hellenic Exchanges Holdings S.A, Keler CCP, CC&G, KDPW CCP S.A., Casa Romana de Compensatie S.A., Casa de Compensare Bucuresti, Nasdaq OMX Clearing.

Interest rate swap clearing: Marginal drop in cleared share T.99



Note: Share of OTC interest rate derivatives cleared by CCPs based on notional amounts. Overnight indexed swaps (OIS), and Forward Rate Agreements (FRA). shown together with Basis Swaps and Swaps.
Sources: DTCC, ESMA.

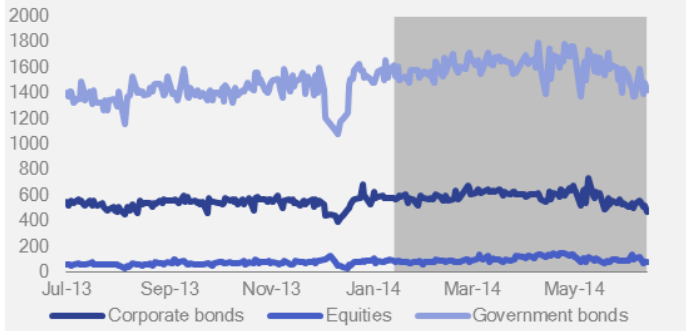
Value cleared: According to annual ECB data, the cumulative value of transactions cleared by Continental CCPs operating in the EU grew by over EUR 100tn in 2013, more than offsetting the 2012 drop. The proportion of non-OTC derivatives, which constitute the largest part of values cleared, drove this rebound, as their share recovered from 62% in 2012 to 68% in 2013. Meanwhile, the share of repos fell from nearly 30% to 27%, while the share of cash products dropped marginally to just over three per cent.

Trade size: The average size of centrally cleared transactions on the Continent grew across most asset classes. Repos – the asset class displaying by far the largest average transaction size – increased ahead of their recent trend. Non-OTC derivatives trade sizes also grew significantly, attaining levels not seen since 2007. The average size of cash trades remained small, however, though the trend decline was arrested.

Interest Rate Swap clearing: In terms of gross notionals, the global value of centrally cleared IRS contracts contracted by around USD 30bn to just under USD 260bn end-June. As this decrease was somewhat faster than that for IRS in general, it also represented a slight drop in the percentage of globally cleared IRS contracts, from over 63% to not quite 61%. This represents a share of cleared IRS similar to that recorded in June 2013. The decline in the value of overall IRS contracts was relatively smooth by comparison with that of centrally cleared IRS contracts, which dropped to just over USD 250bn mid-March. The fall in the number of swaps cleared dominated the aggregate movement. Conversely, the share of centrally cleared Basis Swaps rose by four percentage points (pp) to more than 50%; OIS jumped 4pp to 77%; FRAs by 5 percentage points to over 88%.

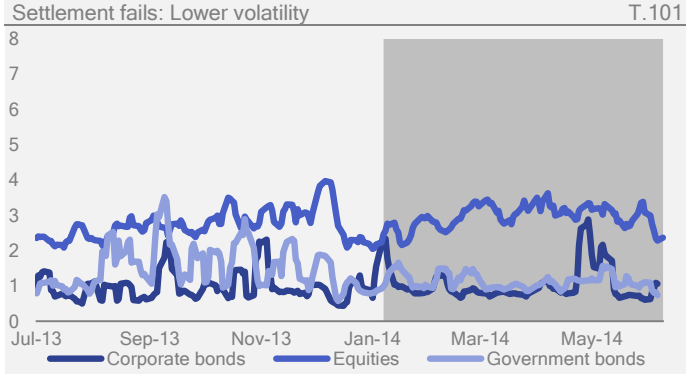
Central securities depositories

Settlement activity: Broadly flat T.100



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 transaction not considered. Cut-off date 30/06//2014.
Sources: NCAs, ESMA.

Settlement fails: Lower volatility T.101



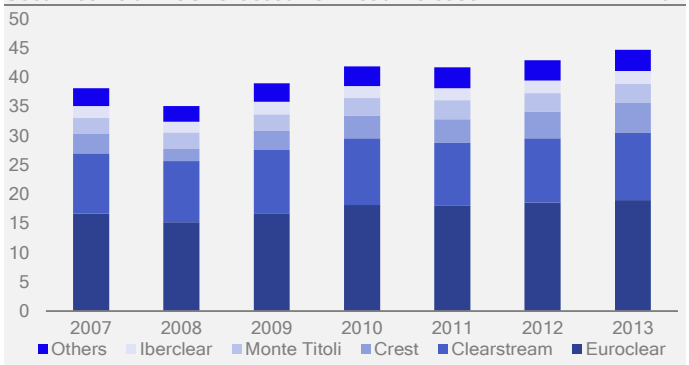
Note: Share of failed settlement instructions in EU; % of value, 5D MA. Free-of-payment transactions not considered. Cut-off date 30/06/2014.
Sources: NCAs, ESMA .

In 1H14, EU settlement activity remained broadly flat and even tailed off somewhat towards the end. The frequency of elevated settlement fails declined, although for equities the percentage of fails trended up a little. Considering developments across CSDs in 2013, growth in the value of securities held in EU accounts was concentrated in the largest and smallest players across the EU. As for the value of settled transactions, the rebound from 2012 was strong and concentrated in a large financial market.

Settled transactions: NCA-provided data indicate that settlement activity was broadly flat in 1H14, tailing off somewhat from May onward. The highest volatility was exhibited by government bonds, which, after having risen through May, subsequently exhibited a pronounced drop. Corporate bond settlement developed rather flatter and more calmly, tapering off somewhat less from May. For equities, however, the trend was rather flat, with a slight uptick in June.

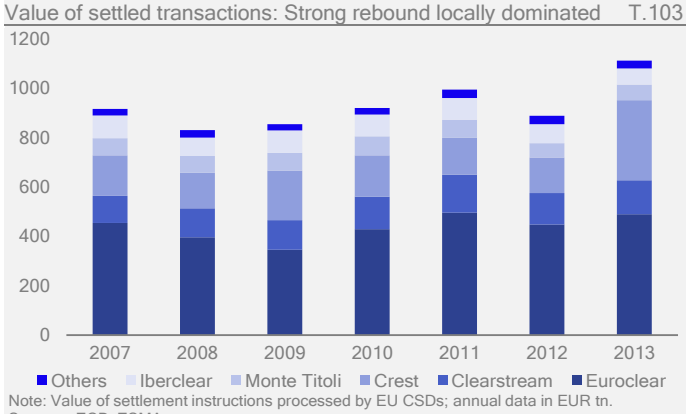
Settlement fails: Overall, the occurrence and volatility of settlement fails across MS became less pronounced in 1H14, when compared with 2H13. This was particularly noticeable for government bonds. For corporate bonds, the incidence of elevated fails also slowed during 1H14, although a sudden spike appeared during May. For equities, on the other hand, NCAs recently reported an uptrend in settlement fails following initially declining in 2014. The size and frequency of settlement fails can offer some indication of market volatility, discipline, and liquidity, among other things.

Securities held in CSDs' accounts: Broad increase T.102



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

Value of settled transactions: Strong rebound locally dominated T.103



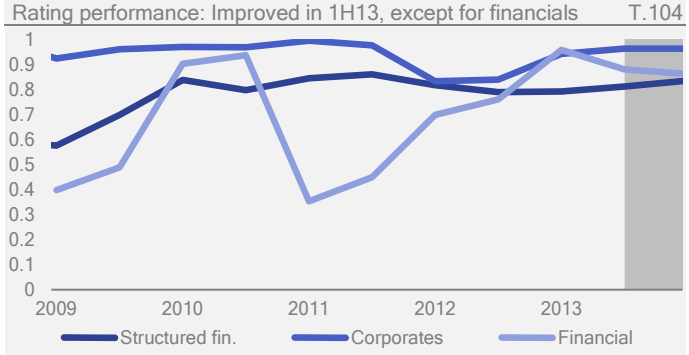
Note: Value of settlement instructions processed by EU CSDs; annual data in EUR tn.
Sources: ECB, ESMA.

Securities held in CSDs' accounts: The value of securities held in custodial accounts by CSDs increased by roughly EUR 1.8tn to just under EUR 45tn in 2012. This represented continuation of the upward trend established following the marked contraction in 2008, which was interrupted briefly in 2011. While the relative shares remained similar to before the subprime crisis, there was some concentration in major economic and financial centres, even as some smaller players showed considerable dynamism.

Value of settled transactions: In 2013, the value of settlement instructions processed by CSDs in the EU exceeded EUR 1qn, constituting an increase of around 200tn. This re-established the prevailing trend rise since 2009 that was interrupted by the 2012 drop. In terms of relative shares, the two largest CSDs concentrate around 75% of transactions, measured in value, between themselves – up 10 percentage points from 2012. The value of transactions processed in a large MS with a large financial sector marked the greatest gains, with its market share nearly doubling. Meanwhile, the value of transactions in two large and vulnerable MS continued to decline. As with the value, the number of annual transactions settled by EU CSDs increased in 2013. A rise of over twenty million transactions was recorded, leaving over 350mn transactions settled in the EU. The relative share of the two largest Continental CSDs remained stable, while that of a CSD in a large MS with a large financial sector increased slightly, to over 16%.

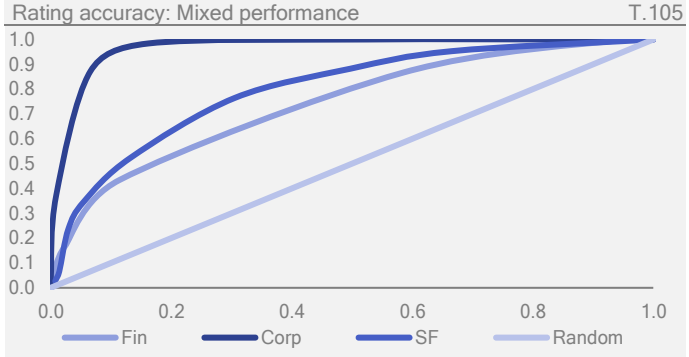
Credit rating agencies

Rating performance: Improved in 1H13, except for financials T.104



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 100% the higher the accuracy of the ratings (i.e. defaults occur among low credit ratings).
Sources: CEREP, ESMA.

Rating accuracy: Mixed performance T.105



Note:Cumulative accuracy profile (CAP) curves for the 3 largest credit rating agencies. 2008-2013H1. 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.

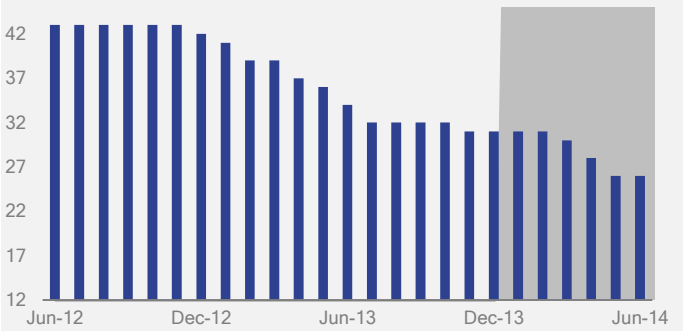
Although both the accuracy ratio (AR) and the CAP measures of operating efficiency indicate a relatively solid performance, differences are noticeable across asset classes. Non-financial corporate (NFC) ratings remain the strongest performer, SF ratings improved slightly while financials deteriorated a little, although less so than in the previous period.

Rating performance: Overall, rating performance remained solid throughout 2013, when the AR was above 80% for all three asset classes. Differences across asset classes remain relevant, however. For non-financial corporates, the AR remained practically unchanged at 96.2%, while AR of SF improved slightly to 83.5% (up from 81.2%). For financials, the AR continued to decrease, albeit more slowly, and now stands at 86%, down from 87.9% mid-2013. Considering the CAP curve and a five-year horizon, the heterogeneity between respective asset classes is even more marked – NFCs clearly outpace financial and SF ratings. The difference between the respective asset classes has, however, been narrowing as years with a higher incidence of defaults in higher rating classes slowly exit the sample.

Rating accuracy: The shape of the CAP curve and the value of the AR are determined by the relative incidence of defaults on the rating scale. The higher rating grades in which the defaults occur (e.g. AAA, AA) the closer the CAP curve is to the random curve and the lower the AR. The shape of the financials CAP curve has been largely impacted by defaults in AA and A categories. The shape of the SF rating CAP curve has been influenced by defaults occurring across the rating scale.

Financial benchmarks

Euribor panel: Further withdrawals T.106



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

Reform progress under review T.107

EBA-ESMA Review of Euribor

On February 20, 2014, EBA and ESMA published the results of their joint Review of the Euribor-EBF reform progress. The Review assessed reform progress on the part of the administrator against the Recommendations made by EBA and ESMA in January 2013 to address the most pressing problems at that time.

The Review found that Euribor-EBF had made significant progress in implementing the EBA-ESMA Recommendations, addressing weaknesses and shortcomings in its governance and technical framework. The reforms provide the basis for improved transparency of the benchmark-setting process, enhanced governance of the benchmark, and improved quality of the resulting index.

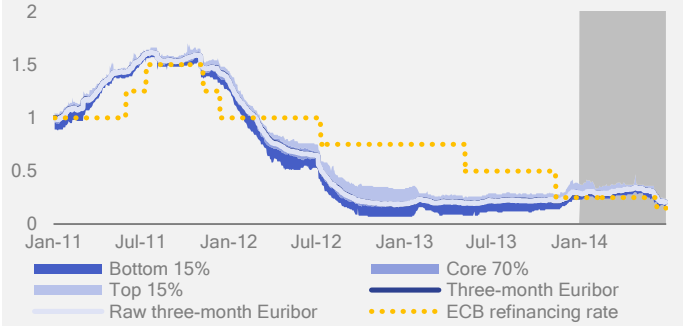
IOSCO review of Euribor, Libor and Tibor

During the reporting period, IOSCO conducted a review of implementation of the IOSCO Principles for Financial Benchmarks Libor, Euribor and Tibor. The review had previously been commissioned by the Financial Stability Board's Official Sector Steering Group (OSSG) to inform the FSB. The Principles against which administrators were assessed address governance-related, transparency and accountability issues.

Euribor contributions: Dispersion measure more volatile T.108

Note: For each of the 8 Euribor tenors, the difference between the highest and lowest contributions submitted by panel banks is computed and normalized by the corresponding Euribor rate. The chart shows the maximum of those differences across the 8 tenors, in percentage points. The increase in the series since July 2012 is linked to technical factors such as the low level of Euribor rates. The lower the rate, the higher the impact of a given dispersion in the contributions. The spike in July 2012 reflects the fact that one of the panel banks submitted a quote for the two-week tenor which was 7 times higher than Euribor.
Sources: Thomson Reuters Eikon, ESMA.

Dispersion of submission levels: Stable through 1H14 T.109



Note: Dispersion of three-month Euribor submissions, in %. "Raw three-month Euribor" defined as a rate calculated without trimming the top and bottom submissions of the panel for the three-month Euribor.
Sources: Thomson Reuters Eikon, ESMA.

The continuity of financial benchmarks in the EU remains a key concern for ESMA. Administrators of key interest reference rates have made significant progress in enhancing the governance, transparency and reliability of their benchmarks. Wider reform measures are being discussed at FSB level, which may also imply addressing the issues related to transitioning from existing to reformed benchmarks.

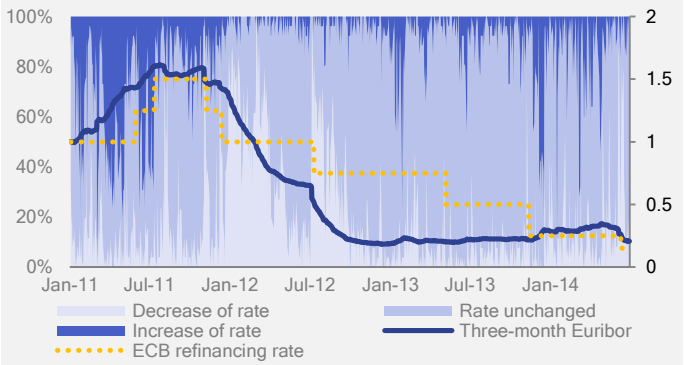
Benchmark continuity: The continuity of key financial benchmarks in the EU remains a concern, as benchmark panel exits persisted and it was decided to discontinue certain benchmarks during the reporting period. The number of contributors to the Euribor panel dropped from 31 to 26 banks. Reforms were carried forward with the introduction of enhanced rules for panel banks by which the administrator seeks to ensure a minimum level of quality and reliability of individual contributions to the benchmark. Following continued panel deterioration, the less widely used Eonia Swap Index was discontinued by the administrator as of 1 July 2014.

Policy responses: Ensuring an acceptable quality standard of a benchmark and maintaining its stability is a vital responsibility of benchmark administrators and submitters. Reforms initiated by EU and international public authorities aim to encourage these efforts. Far-reaching reform measures have been initiated by the European Commission, FSB and IOSCO, as well as ESMA and EBA, and national institutions that aim to ensure high quality of the benchmark-setting processes and the resulting indices, while reducing the likelihood of manipulation. Initial steps addressed the most pressing problems at the time, when reform activities were still under discussion and a legal framework had not yet been proposed. Current reform efforts focus on establishing a new legal framework for benchmarks in the EU and a wider reform of global interbank reference rates at FSB level. Investigations by competent authorities in the EU and elsewhere into potential manipulations of price indices used as financial benchmarks are ongoing. Recent investigations and claims of manipulations extend to foreign exchange fixings, oil and precious metal indices.

Quality of contributions: In addition to investigating outright manipulation, authorities monitor submission patterns to address concerns over data quality. In the case of Euribor, patently erroneous submissions, i.e. including so-called fat finger errors, appear to be rare. Dispersion of submitted quotes has declined since mid-2013, presumably following heightened scrutiny by the authorities and enhanced controls by panel banks, although it did pick up again somewhat in recent weeks as volatility increased in money markets. The most recent spikes towards the end of 1H14 are due to one bank's elevated contributions to the one-week and two-week tenors. Enhanced governance and submission rules at administrator and panel bank level offer some assurance that the quality and reliability of contributions has nevertheless improved.

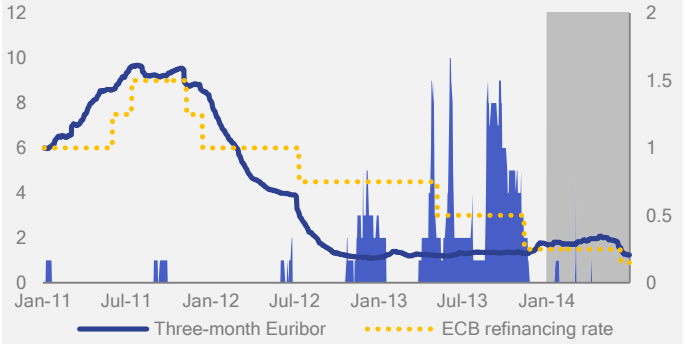
Dispersion of submission levels: In 1H14, dispersion of rates submitted for the three-month tenor remained broadly stable among panel banks, with a slight decrease at the beginning of the reporting period. Reported dispersion had fallen markedly by the beginning of last year, both at the high

Variation in daily changes: More rate increases T.110



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

Submissions staleness: Improvement in 1H14 T.111



Note: Number of panel banks that kept their three-month Euribor submission unchanged for the preceeding month (approximately).
Sources: Thomson Reuters Eikon, ESMA.

and low end of the distribution, and remained muted. Dispersion of the top 15 % percentile (i.e. the banks reporting the highest rates) remains close to that of the corresponding bottom percentile, meaning banks almost equally report higher or lower rates compared to Euribor. The gap between the actual Euribor and the non-trimmed average rate for the three-month tenor has narrowed steadily since 2H12. For the calculation of Euribor, the calculation agent eliminates the top and the bottom 15% of submitted rates. Low volatility in the underlying rates tends to reduce dispersion of individual quote submissions and hence the gap between Euribor and its non-trimmed counterfactual.

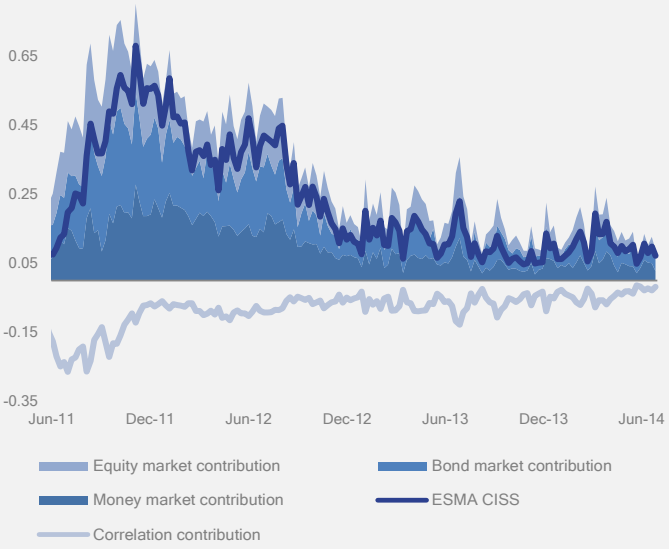
Variation in daily changes: During 1H14, an average of 70% of banks decided to remain with their previous day's submission, while roughly 13% decided to raise their quote and 17% chose to lower it. This compares with 2H13 figures of 80% of banks not changing their submitted quotes, 12% increasing them and 8% lowering them. Overall, the slight rise in the number of daily increases translated into a slight uptick in the levels of the three-month Euribor in 1H14.

Stale reporting: Following high levels of stale reporting throughout 1H13 and 2H13, the phenomenon was less pronounced during 1H14. Stale reporting can signal a lack of responsiveness to market movements by submitted quotes. In the previous low volatility environment it was also due to banks adhering to their previous judgment on rate levels over a number of days.

Trends
Risks
Vulnerabilities

ESMA Risk Dashboard

Systemic stress: Systemic stress low but volatile R.1



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.

Main risks: Sources R.2

Risk category	Systemic risk	Change since 1Q14	Outlook for 3Q14
Liquidity risk	●	↗	↗
Market risk	●	↗	↗
Contagion risk	●	→	→
Credit risk	●	↘	↘

Note: Assessment of main risk categories for markets under ESMA's remit since last quarter and outlook for the following quarter. Systemic risk assessment based on categorisation of ESMA Systemic Risk Heat Map, green=low, yellow=moderate, orange=high, red=very high. Systemic Risk Heat Map measures current risk intensity. Upward arrows indicate a risk increase; downward arrows indicate a risk decrease.

Main risks: Categories R.3

Economic environment	Change since 1Q14
Macroeconomic conditions	→
Interest-rate environment	↗
Sovereign-bank nexus	→
Securities markets conditions	
Risks in EU sovereign debt markets	↘
Market clustering	→
Funding risk	→
Valuation risk	↗
Market functioning	↗

Note: Assessment of main risk sources under ESMA's remit: change since the last assessment. Upward arrows indicate an increase in the contribution to risks, downward arrows indicate a decrease in the contribution to risks.

In 2Q14, EU systemic stress indicators reverted to relatively low levels. The prevailing sanguine market sentiment was at odds with sluggish economic fundamentals and partially related to the ultra-low interest rate environment. Market and liquidity risk increased and look set to increase further, however, while credit risk fell but remained very high. The hunt for yield intensified and, in turn, sustained yield compression across risk classes, loaded new risks onto balance sheets, and drove valuation and market risks up. The risk of critical market corrections rose further. The systemic impact of any correction could be exacerbated by liquidity bottlenecks, such as might arise from thin dealer markets or rising collateral requirements. We maintain our overall systemic risk assessment for 2Q14, but expect a further deterioration in market and liquidity risks in the third quarter which may trigger a revision.

Systemic stress: Following a more volatile 1Q14, systemic stress levels abated early 2Q14, with the focus remaining on external risks. The CISS systemic stress indicator dropped back to the low levels of early 1Q14, also in line with anticipation of continued monetary policy support. While this reduction was broad-based, equity markets led money and, to a lesser extent, bond markets. Market risk, especially for valuations, continued to grow: Prices of financial assets remained close to historic highs across various asset classes in several MS, as market participants appeared increasingly sanguine. Illiquidity could exacerbate dislocations that result from an interest rate snapback or market corrections triggered by other events. Depending on the degree to which high valuations are credit-fuelled, a change in real debt burdens could have significant implications. The gradual and fragile nature of the recovery, even if more balanced across MS, implies that convergence in the real economy and continued reduction of risks related to legacy assets will take time. Geopolitical risks remained elevated, notably in UA.

Economic environment

Macroeconomic conditions: While EU macroeconomic conditions initially improved, the outlook of a sluggish and fragile recovery remained unchanged. Activity was uneven across MS, even if to a lesser extent than in previous years, as differences in developments among core economies became more apparent. Government and external current accounts broadly improved along with continued, if anaemic growth in the EA and stabilising dynamics in weaker MS. Yet, significant risks persist, including with respect to activity levels in several large MS. Questions also linger over the capacity to select and implement appropriate structural reform measures. Thus, several economies continued to exhibit weak growth and labour markets, with concerns over disinflationary trends important. These factors, where elevated, do not help reduce the burden associated with public and private debt. Risks of supply-side shocks remained elevated, especially in relation to external factors, including exchange rates and commodity prices as potential channels. Among these is uncertainty around EM, including China.

Interest rate environment: Interest rates remained near historic lows as leading central banks continued to provide monetary policy support and as yields continued to compress across sectors and risk categories. With its introduction of negative interest rates – lowering the deposit rate to -0.10% on 3 July 2014 – the ECB has entered unchartered territory, the effects of which on securities markets and investor

Main risks: Summary assessment R.4

Risk category	Summary
Liquidity risk	Liquidity risk in 2Q14 increased and looks set to increase further. Aggregate liquidity appeared ample, though its distribution was uneven across markets. Both this unevenness as well as dependence on monetary policy support are important factors in determining liquidity risk. The risks related to a snapback and subsequently arising demands from asset reallocation increased. Liquidity measured in sovereign bond markets was stable. In equity markets, a brief deterioration early in the quarter highlighted the potential for disruption. Bond market volatility remained inversely related to maturities. Market data did not indicate hedge fund liquidity concerns.
Market risk	Market risk was high and rising in 2Q14, notably on account of upbeat financial market sentiment moving ahead of fundamentals and potentially overly reliant on continued policy support. Revaluation risk is thus increasingly of concern. Price and quantity adjustments that would accommodate a change in the low interest rate environment and resulting dislocations could meet with bottlenecks, which would raise liquidity risk. Though aggregate equity PE ratios remained below their average, considerable heterogeneity exists across markets and MS: Valuations in some markets exceeded historical highs while current yields on bonds simultaneously remained very low. Moreover, a hunt for yield continued to compress risk premia across asset classes. Corporates relied on market finance and spreads of lower-rated corporate bonds continued to decline while high-yield issuance was solid. Where prices are fuelled by short-term and cheap credit rather than expectations about economic recovery, valuation risk would further rise.
Contagion risk	EU contagion risk remained broadly stable at an elevated level, though its nature shifted somewhat. The situation of smaller, more vulnerable EA sovereigns broadly improved along with another programme exit. Their yields converged and continued to approach those of core countries. On the other hand, default insurance bought against a few larger, more vulnerable sovereigns increased. Developments in Ukraine started to cause unrest in relevant market segments. EM risks remained an important consideration, including due to prevailing geopolitical risks, macroeconomic uncertainty, and related potential for destabilising capital flow reversals.
Credit risk	Though credit risk remained very high, structural reforms continued to yield improvements. Notwithstanding difficult macroeconomic conditions and their interaction with quantity and quality of private and public indebtedness, important measures continued to be achieved in the EU to address related risks and their potential fallout. Noteworthy are the establishment of the banking union, accelerated repayments of LTRO balances and return of several sovereigns to capital markets. Further relief is expected to come from ongoing stress tests and asset quality review in the EU banking sector. Tempering this is the accumulation of new risks on balance sheets, with high-yield debt issuance particularly strong.

Note: Qualitative summary of assessment of main risk categories in markets under ESMA's remit.

Market functioning: Risk summary R.5

Risk	Summary
Bench-marks	Investigations into potential benchmark manipulations are ongoing. The silver fixes soon will be discontinued. Continuity of key interest rate benchmarks remains a concern: Euribor panel banks dropped to 26. IOSCO found that administrators of key interest reference rates made significant progress in enhancing governance and accountability of their benchmarks. Continuity of design reforms and data adequacy is needed.
Market infra-structures	During the current quarter, no major events threatening operational stability were observed. The market structure continues to evolve, including in response to regulation. Risks related to any potential interest rate snapback are carefully monitored, including with respect to resulting liquidity constraints and collateral scarcity.
Shadow banking	Shadow banking liabilities declined during 2H13 and stood at EUR 8tn (19% of EU banks liabilities) in 4Q13, down EUR 730bn from 2Q13. This was mainly due to smaller repo markets. Anecdotal evidence suggests increased reliance on non-bank lending, including through shadow banking activities. As this sector becomes larger its facilitating credit growth outside of the banking sector could raise financial stability risks.

Note: Qualitative summary of assessment of main risks to the functioning of markets under ESMA's remit.

behaviour will need to be observed with caution. Cross-regional dynamics remained complex, however, as central banks' guidance differs according to relevant developments and expectations. It will be important that market participants make pertinent use of guidance and any financing provided, in particular with respect to maturity and risk transformation.

Sovereign-bank nexus: Stabilising macroeconomic conditions, structural reform, and policy support contributed to improving both governments' and banks' positions. Further, the establishment of the banking union and banks' accelerated repayment of LTRO funds had a reassuring effect on markets. Improvements notwithstanding, uncertainty about banks' legacy assets remains a significant factor. Credible bank stress tests accompanied by an adequately calibrated asset quality review and suitable capital replenishment where needed are considered important next steps. In order to ensure that these broad improvements translate into a continued tempering of the risk of feedback loops, further risk diversification by investors will be valuable, including across assets and liabilities.

Conditions in securities markets

Risks in EU sovereign debt markets: The broad reduction of EU sovereigns' bond yields continued, with spreads of smaller vulnerable sovereigns continuing to push multi-year lows. Important factors include the stabilising macroeconomic outlook, particularly for programme countries, accompanied by improved government deficits and external current accounts. Positive sentiment was reflected in the exit of another sovereign from its programme. Given high levels of indebtedness, structural issues, and the tepid and fragile recoveries, vulnerabilities remain significant, however.

Market clustering: Correlation among EU sovereign yields remained high, especially in the EA and including some newer MS. As vulnerable sovereigns clustered more closely together, the coherence with core economies increased.

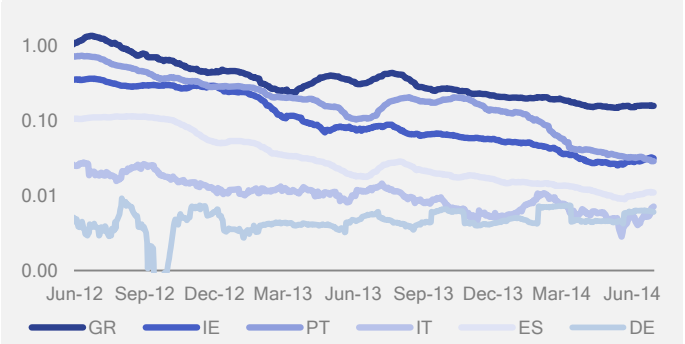
Funding risk: Funding risks appeared to have lessened in places, as LTRO repayments accelerated and debt maturities shortened marginally across sectors. Elevated high-yield issuance may point to future issues, however. Against a backdrop of deleveraging, with increased concentration of market making activities and increased reliance on institutional financing, a materialisation of an interest rate snapback could see bottlenecks arising with respect to asset reallocations resulting from related dislocations.

Valuation risk: Yields continued to compress across sectors and risk classes, as the low interest rate environment interacted with market sentiment and behaviour. These developments imply a heightened probability of a continued build-up of imbalances. The risk of a correction of valuations remains significant. For instance, asset prices are at highs, even in historical terms, across markets that would typically move in opposing directions, such as equity and bond markets. Intensified hunt-for-yield behaviour based on overly optimistic assumptions continues to be a concern and can lead to significant misallocation of capital.

Market functioning: Key structural issues that may become relevant to EU financial markets' stability relate to benchmarks, market infrastructures and shadow banking. For a summary risk assessment see textbox R.5.

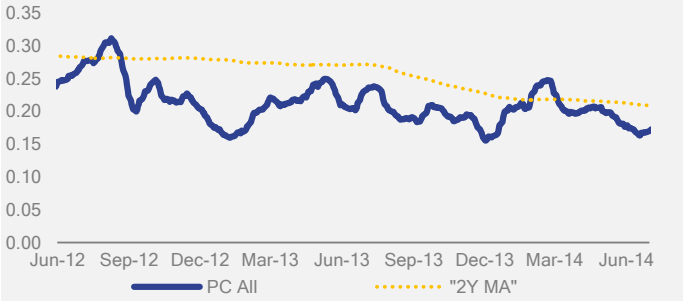
Liquidity risk

Sovereign bid-ask spreads: Decline halted R.6



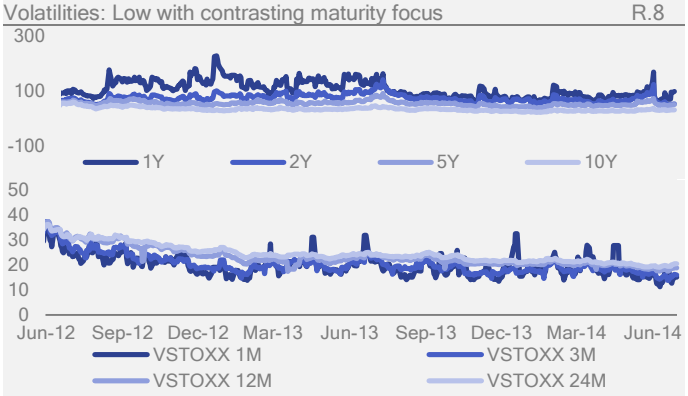
Note: 10Y EA sovereign bond bid-ask spread in percentage points; logarithmic scale, 30D moving average.
Sources: Thomson Reuters Eikon, ESMA.

Equity illiquidity index: Mild temporary deterioration R.7



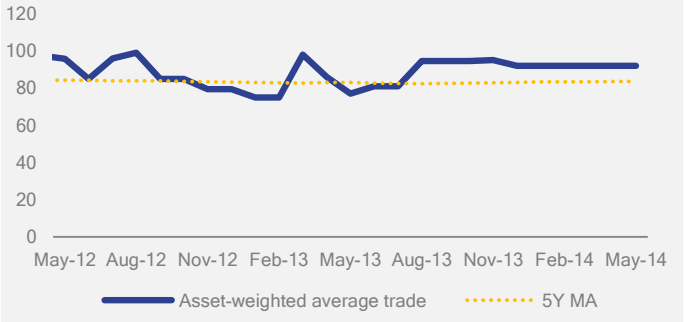
Note: Composite indicator of liquidity in the equity market for the Eurostoxx50 constituents, computed by applying the principal component methodology to six input liquidity measures (Amihud illiquidity coefficient; bid-ask spread, Hui-Heubel ratio, turnover value, inverse turnover ratio, MEC. The indicator range is between 0 (higher liquidity) and 1 (lower liquidity).
Sources: Datastream, ESMA.

Volatilities: Low with contrasting maturity focus R.8



Note: On top are 3M forward Euro-Euribor swaptions implied volatilities; below are Eurostoxx50 implied volatilities measured as indices; %.
Sources: Thomson Reuters Datastream, ESMA.

Hedge fund shares: Low liquidity premia R.9



Note: Monthly price index for HF shares traded on secondary markets. Computed as the asset-weighted average market value as a share of NAV, in %. 5Y MA plotted alongside.
Sources: Hedgebay, ESMA.

Liquidity risk in 2Q14 increased and looks set to increase further. Aggregate liquidity appeared ample, though its distribution was uneven across markets. Both this unevenness as well as dependence on monetary policy support are important factors in determining liquidity risk. The risks related to a snapback and subsequently arising demands from asset reallocation increased. Liquidity measured in sovereign bond markets was stable. In equity markets, a brief deterioration early in the quarter highlighted the potential for disruption. Bond market volatility remained inversely related to maturities. Market data did not indicate hedge fund liquidity concerns.

Sovereign bond bid-ask spreads: Bid-ask spreads were broadly stable across the EA. A degree of convergence continued, however, with those of the three largest EA sovereigns reverting back to end-2013 levels. A downward movement was particularly noticeable for one sovereign exiting an adjustment programme. Anticipation about possible policy responses to continued disinflationary trends may also have augmented liquidity. At the high-liquidity end, however, some increased volatility was recorded.

Equity illiquidity index: Liquidity conditions of large EU equities appeared favourable in 2Q14. The quarter commenced with the illiquidity indicator briefly breaching its two-year average, reflecting a slight tightening of conditions. This brief tightening of liquidity was similar to levels witnessed in 1H13, when concerns around potential bailout requirements in the EA were heightened. It is important to bear in mind that the indicator relates to typically highly liquid equities.

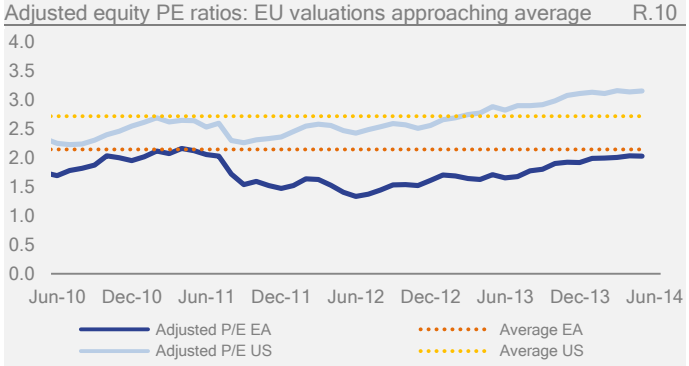
Bond volatility: Implied bond volatility remained fanned out evenly across the maturity spectrum, with a brief exception in June, and at levels similar to 1Q14. Volatility was considerably less settled at the shorter end of the curve, even breaching 1H13 levels early-June, around the time of monetary policy announcements. Overall, this fanned out distribution continued from end-October, signifying some heightened risk, with sensitivity particularly marked around early June.

Equity volatility: Implied equity volatility remained around its four-year average, trending down slightly at the longer end of the spectrum while implied volatility at the shorter end tended to oscillate just below, breaching the longer-term volatility mid-April. In June, volatilities fell markedly around the time of monetary policy announcements. Overall, this picture is consistent with a view that liquidity in equity markets currently is adequate, though reversal risk lingers.

Hedge fund shares' liquidity premia: The discount of hedge funds' book value to their valuation in the secondary market remained stable, consistent with relatively low liquidity concerns in this area. With average secondary market transactions trading at 92% of NAV, the discount remained marginally higher than the averages recorded since August 2013. Overall, a low discount points to somewhat lower liquidity concerns vis-à-vis hedge funds, as it signifies that traders on the secondary market require less of a liquidation premium.

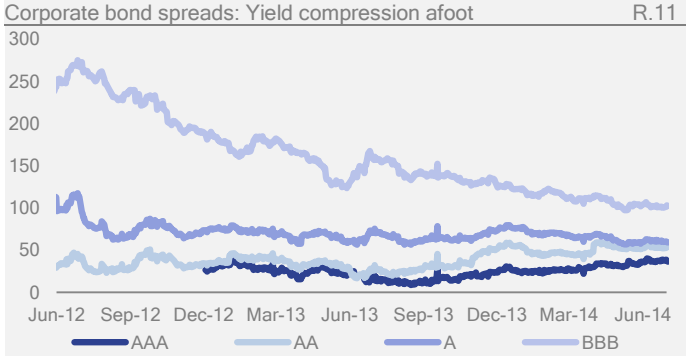
Market risk

Adjusted equity PE ratios: EU valuations approaching average R.10



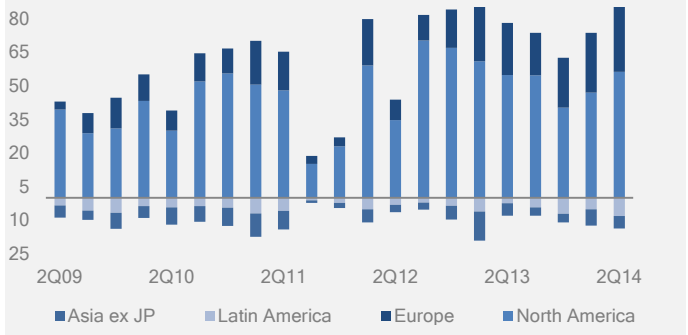
Note: Monthly earnings adjusted for trends and cyclical factors via Kalman filter methodology based on OECD leading indicators; units of standard deviation; averages computed from 8Y.
Sources: Thomson Reuters Datastream, ESMA.

Corporate bond spreads: Yield compression afoot R.11



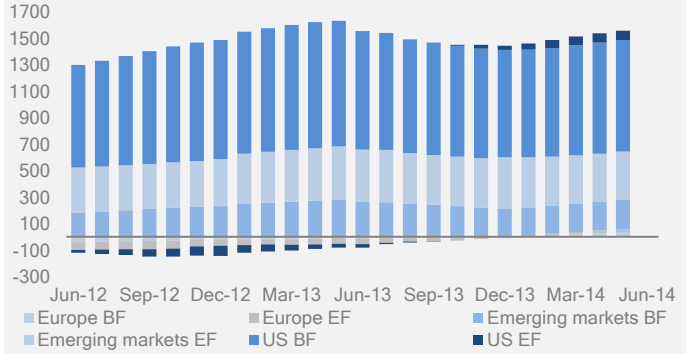
Note: Non-financial corporate bond spreads by rating grades between iBoxx non-financial corporate yields and ICAP euro euribor swap rates at maturities 5-7 years; EA, basis points. AAA-rated bonds data available since December 2012.
Sources: Thomson Reuters Datastream, ESMA.

HY issuance: Considerable activity R.12



Note: Quarterly data on high-yield corporate bond issuance by region of issue; EUR bn.
Sources: Dealogic, ESMA.

Cumulative investment fund flows: Bond inflows R.13



Note: Cumulative net flows into bond and equity funds (BF and EF) over time since 2004 by regional investment focus; USD bn. Data available until May 2014.
Sources: Thomson Reuters Lipper, ESMA

Market risk was high and rising in 2Q14, notably on account of upbeat financial market sentiment moving ahead of fundamentals and potentially overly reliant on continued policy support. Revaluation risk is thus increasingly of concern. Price and quantity adjustments that would accommodate a change in the low interest rate environment and resulting dislocations could meet with bottlenecks, which would raise liquidity risk. Though aggregate equity PE ratios remained below their average, considerable heterogeneity exists across markets and MS: Valuations in some markets exceeded historical highs while current yields on bonds simultaneously remained very low. Moreover, a hunt for yield continued to compress risk premia across asset classes. Corporates relied on market finance and spreads of lower-rated corporate bonds continued to decline while high-yield issuance was solid. Where prices are fuelled by short-term and cheap credit rather than expectations about economic recovery, valuation risk would further rise.

Adjusted equity PE ratios: Among robust corporate earnings, PE ratios in the EA continued to edge up towards their eight-year average, especially towards the end of the quarter. Valuation risks in the EU remained an important concern, however, as market confidence may be ahead of economic fundamentals and overly reliant on low interest rates. Further, differences across markets were considerable. Thus, valuation risk is more of a concern where crisis-related price corrections are no longer in evidence.

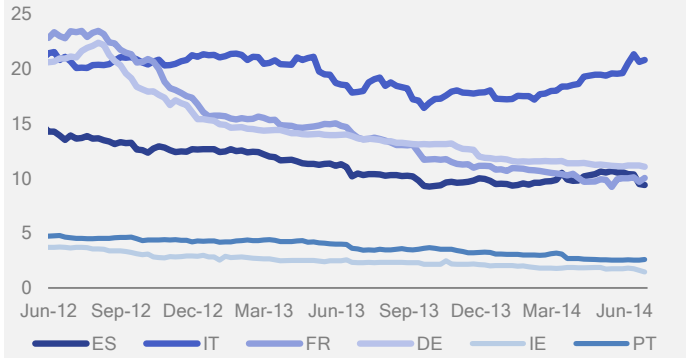
Corporate bond spreads: In 2Q14, non-financial corporate bond spreads continued to compress across risk categories. Yields of AAA-rated bonds increased, especially toward end-2Q14. For bonds rated below AAA, an initial reduction in yields halted in June. On the whole, yields on BBB-rated bonds fell slightly, however. Overall, these movements are consistent with a degree of convergence across risk classes. This continued a trend of broad-based yield compression since mid-2013. (The discrete jump for AA-rated related to a duration increase in the underlying basket.)

High-yield corporate bond issuance: In 2Q14, HY corporate bond issuance increased noticeably in the EU while being moderate in the US. In 2Q14, HY issuance was significantly higher than in the previous quarter: EUR 56.8bn compared to EUR 26.7bn in 1Q14. The level of issuance remained subdued for EM, increasing slightly in Latin America while decreasing in Asia. Such dynamics may be partly associated with a reduced risk perception. The combination of stabilised but sluggish economic environment together with the sustained low interest rate environment, however, would also incentivise investors to hunt for higher yields in order to maintain or improve their portfolio returns.

Investment fund flows: For all regions, flows from bond funds (BF) were positive at the beginning of 2Q14. In the EU, BF inflows continued to increase, amounting to USD 7.23bn for April and May 2014. For equity funds (EF) on the other hand, flows were negative compared to the first two months of 2014: USD -3.1bn, for April and May, versus USD 2.75bn earlier in the year. The US exhibited a similar trend with EF outflows of USD -6.8bn. For EM, the outflows through end-2013 reversed, as significant inflows were recorded especially for BF (USD 10.3bn for April and May 2014).

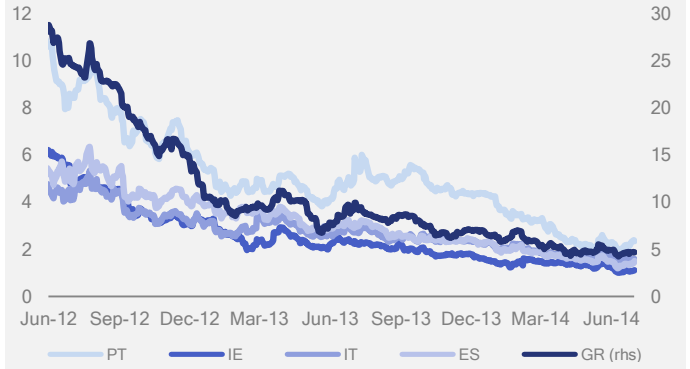
Contagion risk

Outstanding EU sovereign CDS: Focus on large vulnerable MS R.14



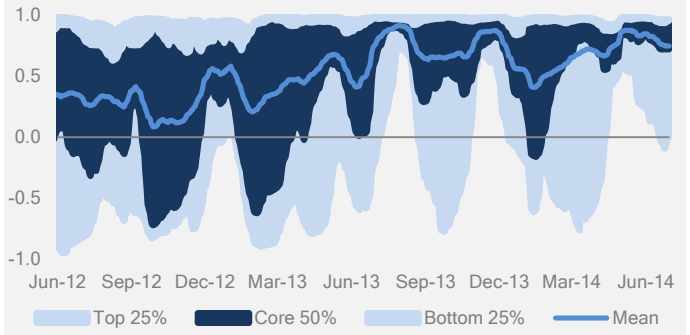
Note: Value of outstanding net notional sovereign CDS for selected countries; USD bn.
Sources: Thomson Reuters Eikon, ESMA.

Sovereign spreads: Uptick after convergence to new lows R.15



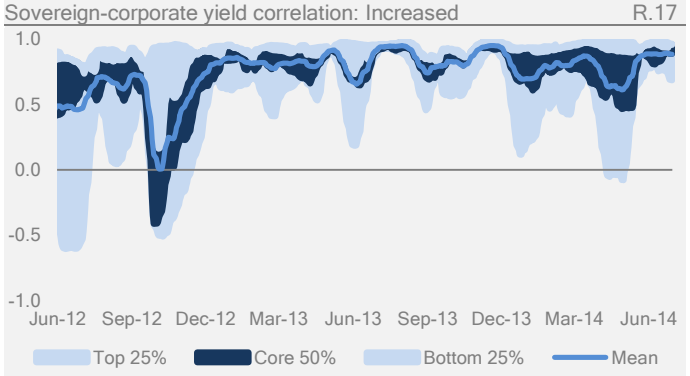
Note: Selected 10Y EA sovereign bond risk premia (vs. DE Bunds); percentage points.
Sources: Thomson Reuters Datastream, ESMA.

Sovereign yield correlation: Slight divergence outlier-driven R.16



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.

Sovereign-corporate yield correlation: Increased R.17



Note: Dispersion of correlation between Barclays Aggregate for corporate and 10Y sovereign bond redemption yields for BE, FI, FR, IT, NL.
Sources: Thomson Reuters Datastream, ESMA.

EU contagion risk remained broadly stable at an elevated level, though its nature shifted somewhat. The situation of smaller, more vulnerable EA sovereigns broadly improved along with another programme exit. Their yields converged and continued to approach those of core countries. On the other hand, default insurance bought against a few larger, more vulnerable sovereigns increased. Developments in Ukraine started to cause unrest in relevant market segments. EM risks remained an important consideration, including due to prevailing geopolitical risks, macroeconomic uncertainty, and related potential for destabilising capital flow reversals.

Outstanding EU sovereign CDS: Net volumes were stable for most MS in 2Q14, with a slight uptick registered for some in early June. While a continued increase for two larger and more vulnerable sovereigns formed part of a recent trend, in June their paths diverged. An increased amount of insurance sought against large, vulnerable MS may point to potential risks forming on the horizon, including due to macroeconomic conditions. The accelerated drop in CDS outstanding that accompanied successful exit from adjustment programmes by smaller MS slowed.

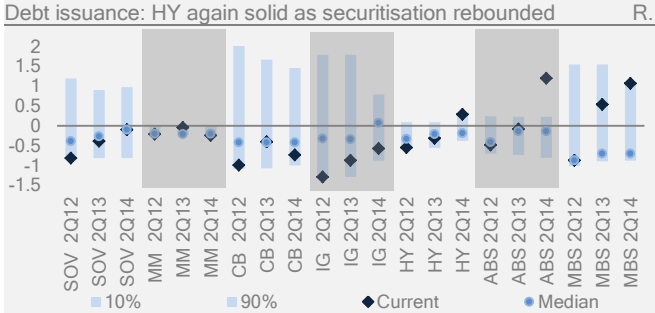
Sovereign spreads: Spreads of vulnerable EU sovereigns' 10Y bonds relative to Bunds generally fell, with lows recorded in early June. Within this development three movements are relevant. First, DE yields trended downward. Second, there was a degree of convergence among some smaller sovereigns as their trend decline continued. Against a background of continued international policy support, this is consistent with both a perception that reform efforts are beginning to bear fruit, thus reducing credit risk, as well as with a growing appetite for risk in a low interest rate environment. Third, spreads ticked up in June for a few larger and more vulnerable MS.

Sovereign yield correlation: The cohesion of movement of European sovereigns' 10Y bond yields relative to Bunds reverted back to 4Q13 highs mid-quarter, though this was partially reversed. As in June 2013, the convergence represented a wider development. An important qualitative shift was that negative correlation with rising DE 10Y yields was driven by improvements for several vulnerable sovereigns, including of several countries to the East as well as several EA sovereigns that returned to markets. Overall, this indicates that financial markets in the EA continued to stabilize. In particular, economic rebalancing achieved in MS that were buffeted by the crisis is being achieved and may even hint at some positive contagion from successful programme completion. Further, the acuteness of Ukraine crisis-related stresses abated, after having flared up in 1Q14 and having affected Central and Eastern European MS.

Sovereign-corporate yield correlation: Correlation between corporate bond yields and those of the sovereign of localisation stabilised at a high level. Initially they dropped to mid-2013 levels, thereafter recovering to approach end-2013 levels. Against the background of broadly declining sovereign yields, this remains consistent with risk differentiation among sovereigns and corporates.

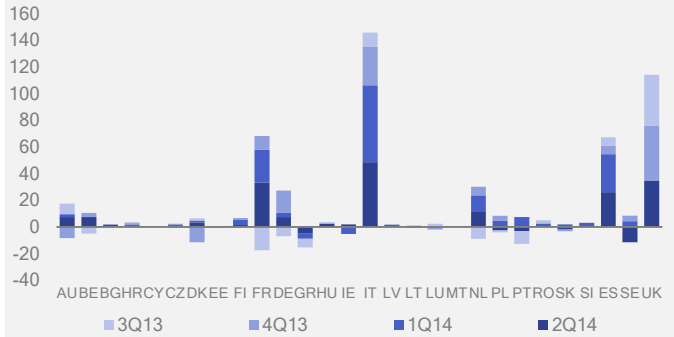
Credit risk

Debt issuance: HY again solid as securitisation rebounded R.18



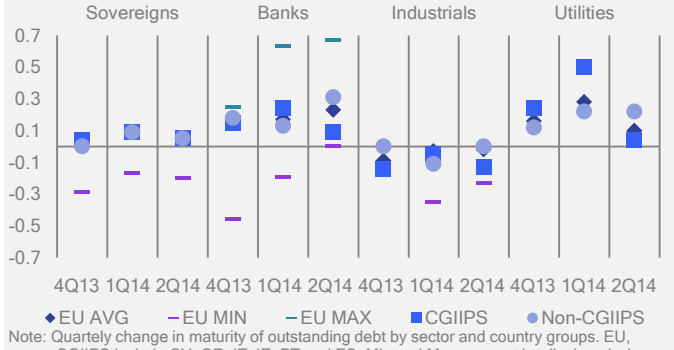
Note: Growth rates of issuance volume in per cent normalised by standard deviation for the following bond classes: sovereign (Sov); money market (MM); covered bonds (CB); investment grade (IG); high-yield (HY); asset backed securities (ABS); mortgage backed securities (MBS). Percentiles computed from 11Q rolling window. All data include securities with a maturity higher than 18M. Bars denote the range of values between the 10th and 90th percentiles.
Sources: Dealogic, ESMA.

Net sovereign debt issuance: Uneven across EU R.19



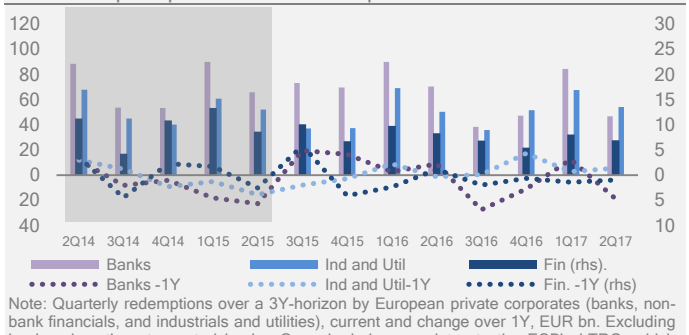
Note: Quartely net issuance of EU sovereign debt by country, EUR bn. Net issuance calculated as the difference between new issuance over the quarter and outstanding debt maturing over the quarter.
Sources: Dealogic, ESMA.

Debt maturity: Lengthening at slower pace R.20



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

Debt redemption profile: Increased emphasis on 2H15 R.21



Note: Quarterly redemptions over a 3Y-horizon by European private corporates (banks, non-bank financials, and industrials and utilities), current and change over 1Y, EUR bn. Excluding bank redemptions to central banks. Grey-shaded area relates to the ECB's LTRO, which expires in March 2015, and reflects additional financing needs for banks of about EUR 474.3bn.
Sources: Dealogic, ESMA.

Though credit risk remained very high, structural reforms continued to yield improvements. Notwithstanding difficult macroeconomic conditions and their interaction with quantity and quality of private and public indebtedness, important measures continued to be achieved in the EU to address related risks and their potential fallout. Noteworthy are the establishment of the banking union, accelerated repayments of LTRO balances and return of several sovereigns to capital markets. Further relief is expected to come from ongoing stress tests and asset quality review in the EU banking sector. Tempering this is the accumulation of new risks on balance sheets, with high-yield debt issuance particularly strong.

Debt issuance: In 2014, EU bond issuance decreased for covered bonds and investment grade bonds, while it was flat for sovereigns. High-yield issuance, on the other hand, continued apace. Securitisation issuance picked up strongly both for ABS and MBS, albeit from low levels. ABS issuance stood at EUR 11bn, EUR 6bn above the previous quarter. MBS issuance reached almost EUR 10bn, EUR 5bn more than in 1Q14, and was concentrated in some larger MS.

Net sovereign debt issuance: In 2Q14, issuance was broadly positive with some heterogeneity across sovereigns. A further stabilisation of the economic outlook across the EU together with upbeat investor sentiment continued to accommodate market access for more vulnerable sovereigns: issuance was positive, particularly for one large MS. During 1H14, three sovereigns returned to capital markets that effectively had been shut out.

Debt maturity: At the aggregate EU level, maturity profiles continued to lengthen across most sectors and country groupings, albeit at a slowing pace when compared with the previous quarter. This lengthening was especially pronounced for the group of more vulnerable countries. This lengthening of maturity profiles was the case for banks, sovereigns and utilities. Maturity profiles for industrials were stable for core countries and declining elsewhere. In terms of country groupings, the lengthening of maturity profiles slowed most for more vulnerable countries. In the previous quarter, the lengthening of maturity had been more even across peripheral and core countries.

Debt redemption profile: Corporate redemption activity remained cyclically high across sectors during 2Q14, especially for industrials and utilities. The redemption profile for banks was relatively high in 2Q14 even before considering LTRO repayments. These repayments are accelerated and in April 2014 already stood above 1Q14 repayments. As of end-June, the outstanding LTRO balance stood at EUR 490.6bn. Looking at a three-year horizon, profiles are shallower when compared to last year. This is especially so for banks, with a slight emphasis on 2H15 after the scheduled closing of the LTRO window. The profile is also shallower for industrials and utilities, though to a lesser extent. The three-year profile for financials is focused on the coming eighteen months and relatively unchanged from the previous quarter in the period thereafter.

Trends
Risks
Vulnerabilities

Trading venue developments, operational risk and new challenges

Contact: Tania De Renzis (tania.derenzis@esma.europa.eu)

This article describes recent trading venue developments, with a focus on the functioning of trading infrastructures and their operating systems, and aims to highlight potential operational risks that could warrant consideration from a systemic risk perspective.[1] EU trading markets have undergone significant changes in recent years. Regulatory developments, technological innovation and growing competition enhanced the opportunities to employ innovative infrastructures and trading practices. Systems are handling ever-larger amounts of data of increasing complexity. The challenges in guaranteeing reliable and sound systems are shifting and, in certain respects, growing. This has implications for the potential incidence of faults or other unforeseen events affecting trading systems. Based on recent publicly reported incidents, this article highlights some important features of the changing landscape. Technical incidents of a very different nature can occur relatively frequently, and this has given rise to increasing interest in understanding the potential unexpected consequences of operational risk. Few studies exist, however, on technical incidents and failures. In the constantly evolving trading market, analysis of technical events has not proved straightforward, with data availability a particular constraint. This makes the development of tools enabling further analysis and research essential.

Introduction

Whether due to increased transparency, coverage or occurrence, reports of trading systems' faults have become more frequent and higher-profile over the past decade. In the last two years alone, more than thirty cases of glitches have been considered important enough to merit coverage by financial newspapers. Major changes in trading markets have taken place in both the EU and globally. Substantial regulatory changes, such as the Markets in Financial Instruments Directive (MiFID) in the EU and the National Market System Regulation (RegNMS) in the US, have significantly reshaped the market. Much-increased competition among trading venues, compounded by ongoing development in trading technologies, has resulted in considerable benefits for investors (lower fees, improvements in market liquidity, easier market access, etc.). Accompanying this in recent years, however, there has also been a sharp increase in market complexity and fragmentation, with consequences for trading execution efficiency and transparency. Moreover, the need to keep systems technologically state of the art has necessitated substantial investments and continuous adjustments to infrastructures, increasing the scope for the occurrence of unforeseen events affecting existing systems.

Given the different nature and relatively high frequency of technical events, concerns have emerged regarding technical glitches and operational risk. Increasing attention has been devoted to understanding the potential unforeseen consequences for the ability of trading infrastructures to ensure orderly trading and, on a more general level, market efficiency. Against this background, further research is needed, with an increasing focus on identifying the potential risks that system incidents pose to financial market stability.

Several studies, both at a theoretical and empirical level, have focused on the effects of trading market developments - primarily market segmentation - on market liquidity and price information efficiency, devoting particular attention to the quality of trading, as well as the potential effects in terms of trading profitability for investors. This short article describes how the trading market has evolved in recent years, concentrating on aspects related mainly to the functioning of trading infrastructures and their operating systems and aiming to highlight potential vulnerabilities to operational risk that might warrant close systemic risk analysis.

The article continues by describing the trading market landscape in the EU, the current structure, type of trading venue and services provided, and the main benefits and risks arising from the latest developments. It goes on to discuss some significant past instances of technical faults, their scope and potential impact. Finally, the most recent measures and action undertaken by regulators and the industry are identified.

Trading landscape

As in the US, the trading landscape in the EU has witnessed notable changes over the past few years. Investors in the US equity market can today trade on around 300 different venues including:

- sixteen exchanges fully registered in the NMS[2];
- more than fifty active alternative trading systems (ATS);
- numerous broker-dealer platforms partially exempt from RegNMS requirements.

Increased competition in the provision of trading services and advances in trading technologies and strategies have broaden the scope for profitable opportunities but also increased fragmentation and complexities with unforeseen and unintentional effects.

[1] Facts and cases discussed in the present article are based on public knowledge and public documents. It does not refer to privileged or confidential documents or information. For the sake of impartiality, all companies' names and references have been anonymised.

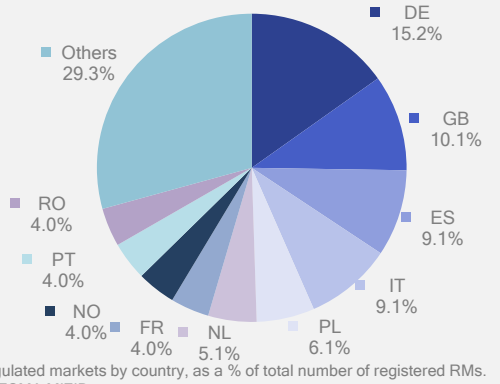
[2] The list of registered exchanges, ATS and broker-dealer platforms can be found on the SEC website.

Regulatory developments in the EU

Market in Financial Instruments Directive (MiFID)

MiFID, in force since 1 November 2007[3], replaced the 1993 Investment Services Directive (ISD), under which the so-called "concentration rule" was employed[4]. According to this, member states (MS) required all trading in financial instruments to be executed on a regulated market (RM), thus creating barriers to market entry and benefiting incumbent operators. MiFID abolished the concentration rule and allowed other trading platforms to compete with RMs for order flows. New types of trading venue developed with different and innovative trading services and financial instruments, targeting different market participants and different needs (V.1, V.2).

Regulated markets in EU MS V.1



Note: Regulated markets by country, as a % of total number of registered RMs.
Sources: ESMA MiFID.

Three types of trading venues are recognised under MiFID:

- a RM is defined as a "[...] multilateral system operated and/or managed by a market operator, which brings together or facilitates the bringing together of multiple third-party buying and selling interests in financial instruments – in the system and in accordance with its non-discretionary rules – in a way that results in a contract, in respect of the financial instruments admitted to trading under its rules and/or systems [...]";
- systematic internalisers (SI) as an "[...] investment firm which, on an organised, frequent and systematic basis, deals on own account by executing client orders outside a regulated market or an MTF [...]";
- multilateral trading facilities (MTFs) as a "[...] multilateral system, operated by an investment firm or a market operator, which brings together multiple third-party buying and selling interests in financial instruments – in the system and in accordance with non-discretionary rules [...]".

The main areas covered by MiFID are:

- investor protection: Procedures are designed to ensure that investors have adequate information about a firm's trade execution practices.[5] They also include best execution provisions, order handling and trade reporting rules,[6] ensuring that firms act in the best interest of clients when executing orders: prompt and sequential order execution rules; rules against front-running of clients' orders; and standardisation rules for trade reporting sufficiently detailed so that execution performances across different trading systems can be measured and compared.
- market access: Passport for investment firms. Investment firms authorised by a MS may provide services in any other MS and have the right of access to CCP and settlement systems in other MS.
- transparency: Provisions on pre-trade and post-trade transparency are included for equity investments[7] in order to create a level playing field where alternative market structures and trading systems can compete for trade execution, yet ensuring market quality (i.e. liquidity and price discovery).

MiFID II

Notwithstanding MiFID contribution to a more competitive and integrated EU financial market, additional work has been undertaken, leading to the publication on 12 June 2014 of MiFID II and the Regulation on Markets in Financial Instruments (MiFIR) in the EU Official Journal.[8] The main elements relative to trading venues are:

- market structure amendments: The so-called Organised Trading Facility (OTF) is introduced as a new form of organised multilateral trading platform for non-equity instruments;
- competition: Harmonised EU regime for non-discriminatory access to trading venues and CCPs as well as controls for algorithm trading activities;
- investor protection: Strengthening client asset protection, product governance and conduct rules;
- market transparency: i) Establishing a principle of market transparency for non-equity instruments, namely bonds and derivatives; ii) Provisions of core market data services and adequate quality. The proposals provide for the introduction of approved publication arrangements (APAs) that should improve the quality of trade transparency information published in the OTC segment, as well as the operation of an effective comprehensive consolidated tape[9] as soon as possible.[10]
- enforcement: Harmonising sanctions across jurisdictions.

3 See: http://ec.europa.eu/internal_market/securities/isd/mifid/index_en.htm

4 Art. 14(3) ISD.

5 Articles 13, 18 and 19 of Directive 2004/39/EC.

6 Articles 21, 22 and 25 of Directive 2004/39/EC.

7 Articles 27, 28, 29, 30, 44 and 45 of the Directive 2004/39/EC.

8 For further insight: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0065

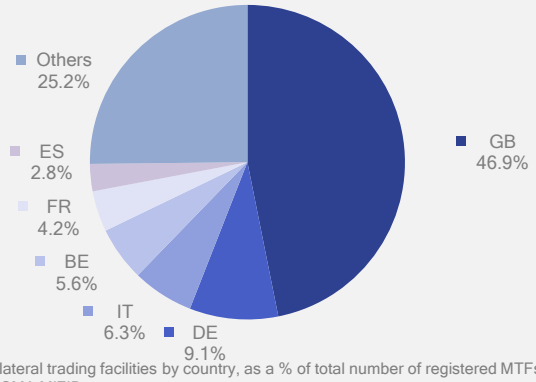
9 The consolidated tape is an electronic system that reports the latest price and volume data on sales of exchange-listed stocks. For the US, where the consolidated tape system is already in place, the data reflected are generated by all securities exchanges and third-market broker-dealers or ATS such as electronic communications networks.

10 Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU, Recitals 116-119.

Trading innovations

As competition has increased over the past years and new actors, other than RMs, have accessed the market, trading operators are constantly in search of new profitable opportunities. These dynamics, compounded by the continuous development in trading technologies, have resulted in significant changes, including variations in trading instruments and strategies, trading fees and commissions, and trading time.

Multilateral trading facilities in EU MSs V.2



Note: Multilateral trading facilities by country, as a % of total number of registered MTFs.
Sources: ESMA MiFID.

As per June 2014, the MiFID database[11] counts 99 RMs and 143 MTFs, competing on different markets, and 12 SIs, all large investment firms, two-thirds of them located in London. This surge in the number of trading platforms, especially with respect to MTFs, has been particularly strong in the UK (V.2), which accounts for 47% of the total number of registered MTFs.

Systematic internalisers V.3

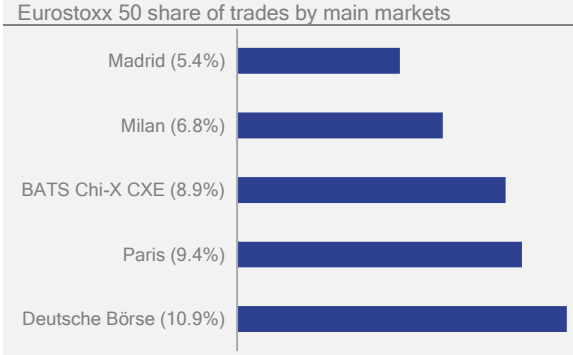
Institution	Country
FINECOBANK S.p.a.	IT
SOCIETE GENERALE	FR
Danske Bank	DK
Nordea Bank Danmark A/S	DK
Goldman Sachs International	GB
Knight Capital Europe Limited	GB
Nomura International Plc	GB
Citigroup Global Markets Limited	GB
Citigroup Global Markets U.K. Equity Limited	GB
UBS Ltd	GB
UBS AG (London Branch)	GB
Crédit Suisse Securities Europe Ltd	GB

Note: The list is updated as of June 2014.
Sources: MiFID Database, ESMA.

Trades executed on SIs are not subject to the pre-trade transparency requirements scheduled for RMs and MTFs and are subject to less stringent requirements on post-trade transparency. MiFID does however, require SIs to make public as close to real-time as possible[12] the volume and price of share transactions, depending on the size of the transaction, and the execution time.

The share of trade by MTFs has expanded considerably over the years. According to Fidessa, in 1H14, MTFs accounted for about 30% of the total number of trades for Euro Stoxx 50.

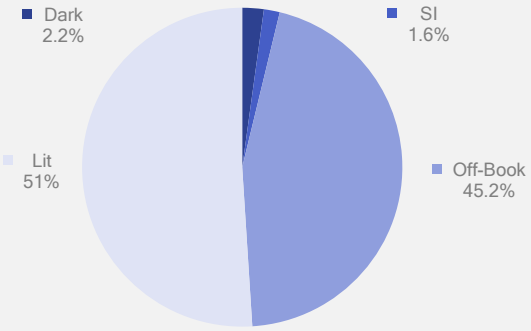
Eurostoxx 50 share of trades by main markets V.4



Note: Eurostoxx 50, number of trades by main markets, percentage over total, from January 2014 until June 2014.
Sources: Fidessa, ESMA.

MTFs also account for a large proportion of off-book trades, i.e. OTC trades reported on one of the reporting venues. 2% of Euro Stoxx 50 trading is executed on a different type of infrastructure, so-called dark pools[13]. These often include crossing systems[14] operated by large banks and can be exchange-owned or independent trading facilities. They have been criticised for their lack of transparency and the potential for less efficient pricing in traditional open stock exchanges due to trading fragmentation.

Euro Stoxx 50 share of trades by type V.5



Note: EuroStoxx 50, number of trades by type of trade, percentage over total, from January 2014 until June 2014.
Sources: Fidessa, ESMA.

MTFs adopted the same microstructure as RMs, pointing to lower fees and highly technological advanced trading

[11] http://mifiddatabase.esma.europa.eu/

[12] Article 28 of the Directive 2004/39/EC.

[13] The term dark pool refers to networks allowing traders to buy or sell large orders with pre-trade prices not visible. The price at which shares actually change hands is only revealed after the trade has been executed. The primary purpose of dark pools is to minimise market impact. By restricting access to undesired market participants (i.e. HFT firms) and not revealing quotes, institutional investors are able to minimise their information leakage.

[14] A crossing network is a trading system employing computerised systems to match buyers and sellers of large blocks of shares without using the stock exchange. Depending on the particular broker-dealer's system and the type of securities traded (i.e. exchange-listed or OTC securities), these crosses could occur at various times during the day, or after the close of trading, and could be priced at the last sale price or some other objective price. The advantage of the crossing network is the ability to execute a large block order without impacting the public quote.

platforms as factors contributing to their development. Investor demand for ever more advanced technological infrastructure has been increasing. Electronic trading and new types of trading strategies, such as low latency trading (LLT), including algorithm trading or HFT, are making greater requirements of information incorporation and trade execution efficiency. To be competitive, traditional exchanges were required to expand their services and improve infrastructure efficiency. Competition has become more closely related to trading speed and low latency (see V.6). Exchanges now compete on the ability to handle and process increasing amounts of data at ever shorter time intervals. The faster a firm's reaction to a market event in comparison to its competitors, the higher trade profitability becomes. In statistical arbitrage strategies, for example, the arbitrage opportunity may arise for a few milliseconds before parity.

Low latency V.6

In a capital markets context the concept of latency is related to the time needed to observe a market event, analyse it, process a message and send an order to the exchange that will then execute it. Low latency and ultra-low latency refer to trading events that require a few milliseconds for information to be gathered, processed and the trade executed. The main factors impacting latency include: distance between the exchange and the trading system; distance between two trading venues (for example in the case of an arbitrage strategy); and efficiency of the trading system infrastructure. The farther a trading engine is from an exchange, the higher the latency will be. It is for this reason that many LLT engines tend to be physically close to exchanges. Many exchanges have in fact started offering the possibility to co-locate their computer infrastructures with other venues and traders in order to reduce the time needed for a message to reach customers. Besides distance, the efficiency of the trading system infrastructure is also crucial. Low latency is related not only to time but also to the amount of messages processed within an extremely short time span - millions of messages are now processed in the space of a second. Low latency is usually associated with HFT, a type of algorithm trading strategy characterised by short portfolio holding periods.

In the light of this, exchanges have made significant investments in new technologies and systems upgrades to make their technological infrastructure increasingly efficient. Providing trading services and ensuring efficient execution of orders necessitates a complex network of different systems, each with its own specific function. All of them, including routing engines, matching engines and securities information processors (SIP)[15], are fundamental in guaranteeing the effective execution of a trade. A fault in any one of the systems may undermine the ability of an exchange to guarantee trading efficiency. Such developments are said to have brought significant benefits for investors, including lower fees, improvements in market liquidity, easier market access.

Increased competition, however, has also had important implications in terms of market complexity. On the one hand, the need to find new profit opportunities has fostered market and technological development enhancing the provision of newer and more diversified instruments and strategies. Trading venues have been using a variety of strategies, involving order-matching algorithms, order types, technology products and services, to attract firms who engage in LLT trading, including automated, algorithmic trading as well as HFT. Yet such new financial instruments and strategies, the vulnerabilities of which are still being discussed, and the need to keep trading technologies up-to-date have also required substantial investments and increased the scope for unforeseen technical occurrences. More recently, LLT has been under growing scrutiny by the media due to significant market events related to market breakdowns, such as the US flash crash in May 2010, or market manipulation due to the specific type or use of trading algorithms.

System faults and technical glitches

In recent years, trading venues have experienced recurrent technical issues of different kinds and magnitudes, and with differing impacts. In the last two years alone, at least thirty incidents of glitches – with a frequency of more than once a month – have been reported by financial news media[16] as being of some relevance for the market (see V.9).

More recent occurrences reveal the following:

System faults are a function of many varied underlying sources

In the past trading venues have been affected by various technical malfunctions, including the following:

- technical outages affecting one market segment or some specific symbols (i.e. specific securities such as cash markets or derivatives, as well as specific symbols within one security category);
- power outages;
- connectivity failures;
- market data dissemination problems;
- communication server failures;
- floor-based system issues;
- matching engines glitches;
- display device issues;
- issues affecting securities information processors;
- trading errors; human errors.

The multiplicity of the sources of system incidents complicates the analysis of the impact technical incidents have on operational risk and, ultimately, on financial system stability. The degree of complexity is heightened yet further when we consider the steady stream of innovations affecting market structure, trading instruments and strategies. Several are potential risks that may be associated with HFT strategies[17]:

- HFT increases the rate at which large unintended positions may accumulate;

[15] SIPs are systems engaged in collecting, processing and disseminating trade and quote data.

[16] News sources: Financial Times, Wall Street Journal, Bloomberg, Reuters, S&P, CNBC, LiquidMetrix, BBC, Forbes.

[17] Carol L. Clark, 2014, Market Structure, incentives, and fragility, Chicago Fed Letter.

— the interaction among algorithms can create feedback loops – one algorithm can trigger other algorithms with broad market consequences;

— trading models used by LLT firms may not accurately respond to changing market conditions;

— LLT relies on the use of many different technologies making the system more and more interconnected. Failure in one of its constituents may have unexpected significant effects on the rest of the system.

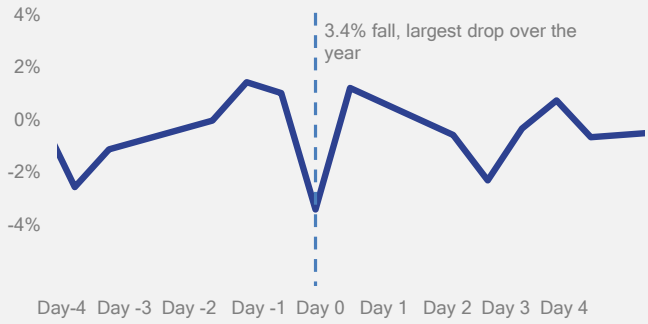
In view of this, it is essential to collect detailed and high-quality information, not only on the types of services provided by venues (market focus, volumes and order types, order execution information etc.) but also on the technological infrastructure (matching engines, routing engines, backup systems etc.) as well as on disorderly trading conditions and system disruptions. Essential tools concomitant to the build-up of data, moreover, are augmented corporate governance and improved risk management to ensure the orderly functioning of exchanges and, in consequence, of the market as a whole.

Stock exchanges are frequently affected by technical events with greater or lesser degrees of severity

A large proportion of technical issues reported (Table V.9)[18] appears mainly to affect exchanges trading in stocks. In several cases they are relatively short interruptions, like one of the latest glitches that occurred, in September 2013, at a large exchange in the US, when a six-minute outage affected the SIP[19], but without perceptible consequences for the market. According to the exchange disclosure, the system started to operate successfully after a backup server kicked in. Similarly, no consequences followed a glitch affecting another large stock trading platform in the US, again in September 2013.

There are several other instances, however, with more significant widespread market repercussions across both securities and exchanges. Among others, in 2011 technical problems led to the suspension of trading on a large European venue for almost an entire day at a period of higher than usual activity due to major political events. The fault caused considerable disappointment among traders active in that particular segment of the market, which had to forgo potentially substantial profits. In fact, volumes rose significantly once the system resumed.

Daily price change on the exchange affected by the glitch V.7



Note: Daily change in closing price of the stock index of the exchange on which the glitch occurred. Day 0 represents the day when the shock occurred.
Sources: Thomson Reuters Eikon, ESMA.

Another example is the glitch that affected the US stock market when in August 2013 one administrator's SIP had a fault. The event is considered here for two main reasons. The first is that the glitch is in fact similar to the September 2013 interruption mentioned above, but with different developments and more visible outcomes:

— as stated by the exchange on which the incident originated, the SIP malfunction was triggered by a faulty connection between that exchange and another large one operating on the market;

— the back-up system did not kick in;

— three-hour halt for all the securities listed on the exchange, including major securities traded on several markets;

— the other large exchange affected by the glitch began alerting investors to issues with routing orders in certain securities listed on the exchange where the fault originated. Trading in those securities was then halted for about two hours;

— the decision to halt trading in several stocks affected many other US markets;

— the shares on the exchange that triggered the event fell 3.4% on the previous day, the biggest single session drop in 2013;

— volumes in stock listed on the other large exchange affected by the glitch occurring at the source exchange also fell as liquidity dried up around the country.

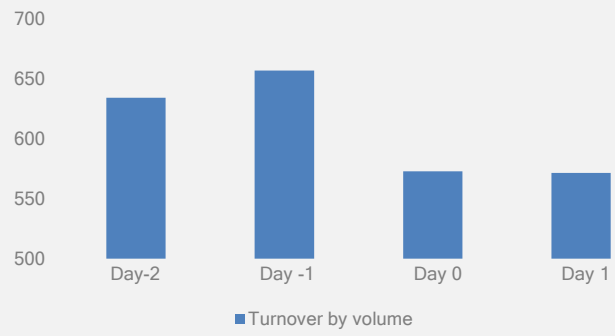
Secondly, the potential widespread consequences of malfunctions in network systems should be carefully evaluated within a system operating a comprehensive consolidated tape. The events affecting SIPs in the US have indeed raised concerns regarding technological systems deemed as antiquated. Criticism has been voiced that investments aimed at ensuring infrastructure resilience are inadequate. Some criticism by market participants was also directed at the lack of transparency in the processing and distribution of exchange-listed market data.[20]

[18] The sample comprises technical events from January 2009 to date. It is based on news reported by major financial newspapers and may therefore be subject to selection bias. Greater attention may in fact be paid to stock markets rather than other markets for several reasons, such as the size of these markets and the general public focus.

[19] The SIP data feeds, usually administered by one large exchange, consist of one network, which is a source of consolidated market data for specific listed securities.

[20] Market discontent was also directed at the Consolidated Tape Association, the policy-making and administrative body that oversees the collection, processing and distribution of exchange-listed market data, in particular with regard to the lack of transparency.

Turnover on the exchange indirectly affected by the glitch V.8



Note: Exchange turnover by volume of shares, thousands. Day 0 represents the day when the glitch occurred.
Sources: Thomson Reuters Datastream, ESMA.

At the EU level, the MiFID II proposal envisages having a consolidated tape system in operation, with the aim of creating a more integrated European market and increasing trade transparency. In order to achieve this, identifying and putting in place efficient solutions for its implementation is fundamental. Debate is in fact now focusing on how to introduce the consolidated tape and on how to ensure: "[...] highly sophisticated and innovative solutions, serving the market to the greatest extent possible and ensuring that consistent and accurate market data is made available".[21]

Several technical incidents have also affected trading in derivatives, the most recent of which occurred on two large platforms on two different occasions in August 2013. One shut down for about three-and-a-half hours, while the second was down for an hour. From a purely trading perspective, however, the impact was fairly limited. The situation was similar with the other reported interruptions, which did not have a widespread impact.

This is because, unlike equity markets which are highly fragmented, the degree of interconnectivity between exchanges on the derivatives side is relatively low. Liquidity tends to migrate to a single trading venue. Figure V.4 reports the share of trading in Euro Stoxx 50 by the type of trade and venue. The largest share is concentrated on Deutsche Börse (11%) followed by Paris Euronext (9.4%) and BATS Chi-X CXE (8.9%); the rest is divided among 17 venues including Milan (6.8%) and Madrid stock exchanges (5.4%).

A technical event occurring on an exchange may have a more or less widespread impact depending on the services provided

As previously mentioned, in the US an outage affecting the SIP on the exchange administering it had a knock-on effect on several other exchanges. In Europe, which does not operate through such a system, instances of this kind have not occurred. However, there have been cases with potentially significant ripple effects. In 2012, for example, a large exchange experienced a reference data glitch, with the result that erroneous information was sent to some member firms. At that time, however, trading was not affected. Nevertheless, reference data management and high-quality reference data are fundamental in ensuring transaction efficiency, especially in a low latency trading environment.

It should also be noted that in order to reduce the negative impact that technical events may have on price formation, appropriate trading curb mechanisms could be considered, such as the circuit-breakers already in place in the EU and introduced in the US after the "Flash Crash" in May 2010.

Impact on TV members

Two recent events affecting two large financial firms are worth mentioning. The first refers to an institution focusing on market making and electronic execution. In August 2012, it lost more than 400mn dollars due to a trading error. It accidentally positioned a test software code to a production environment[22], resulting in a large amount of shares being bought and sold immediately. This caused a massive disruption in the prices of about 150 companies listed on one of the main US stock exchanges as well as causing the stock price of the institution at which the incident originated to collapse.

On August 2013, a technical glitch in an internal computer system caused another large investment institution to issue incorrect equity option orders that led it to purchase at least hundreds of thousands of contracts linked to equities and ETFs, disrupting trading on various option exchanges. The exchanges subsequently cancelled the erroneous trades, causing no trading losses for the institution that had mistakenly triggered the trades but creating resentment among other investors over forgone profits.

The extent and frequency of such incidents in well established firms has raised increasing concerns over the adequacy of risk controls among trading firms, as well as over infrastructures, along the entire trading cycle. The complexity of trading strategies, especially in an LLT environment, requires adequate risk management toolkits at all agents involved, from trading firms to trading and clearing infrastructures. In several cases, however, firms do not have their own risk management tools in place, depending instead on other firms and often on trading venues.[23] Such arrangements may not be enough, especially given that exchanges often rely on measures that cannot stop erroneous orders before they are executed. Both trading venues and trading firms have low incentives to impose pre-trade checks as these increase latency, possibly implying significant losses in competitiveness, especially in an environment of LLT and HFT trading.

Reputational effects

Technical faults may entail significant reputational effects. The incident reported above, even if it did not have a

[21] Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU, Recital 117.

[22] The test code was designed to move stock prices higher and lower in order to verify the behaviour of trading algorithms in a controlled environment.

[23] Carol L. Clark, 2012, How to keep markets safe in the era of high-speed trading, Chicago Fed letter.

material cost for the institution causing the issue, nevertheless caused disappointment in the market. Trade cancellations and the forgone profits that such trades would have generated for several investors aroused discontent.

More obvious from a systemic perspective were the consequences that a large trading platform faced after the failing of an important IPO in 2012. The huge volume of orders on the first day of the IPO caused a glitch in the trading venue system. Timely order confirmations were prevented and many traders were left unsure about their exposures for hours and, in some cases, even days. Losses in the hundreds of millions of dollars were racked up. The exchange was fined by the competent regulator and voluntarily paid out additional amounts to compensate the firms affected. Episodes of this kind can have significant repercussions in a highly competitive environment such as the trading market. For the TV itself, faults may drive market participants to switch to other rival venues. More importantly, from a systemic perspective, such occurrences may undermine market confidence and market efficiency.

Moreover, rating agencies are placing growing emphasis on operational risk. According to a study by Standard & Poor's[24], rising operational risk may have increasing potential to affect the risk assessment profile of individual exchanges and the industry as a whole.

Measures and interventions

The previous section highlights a few instances of technical failures, demonstrating how operational risk is becoming an increasingly important source of vulnerability, requiring greater attention. The effects of such events can differ greatly in scope: some can have implications merely for the venue at which the glitch originated or for one or a few instruments traded on it, without rippling out to the wider market. Others, however, may have significant implications for other trading venues, as well as their member firms and other investors. In some of these cases, the impact of incidents on operational risk, and ultimately on market efficiency and market stability, raises significant concerns. Assessing the effects of system interruptions is, however, no easy task: several factors come into play here, including the different nature of faults and exchanges, different operating systems, business models and market focus (i.e. stock, futures, derivatives exchanges etc.) and the different degrees and nature of interconnectivity with other exchanges (i.e. to provide reference data, routing services, etc.).

The escalation in operational events seems to be linked both to changes in market structure and to technological and financial innovation. The competitive race among exchanges has increased the urgency to develop ever-new instruments and speedier systems handling larger and larger amounts of data with increasing complexity, giving rise to difficulties in guaranteeing reliable and sound systems. Trading venues have been using a variety of strategies and services to induce firms to engage in trading at LLT, including automated, algorithmic trading and HFT.

Such developments, besides increasing operational risks related to the need to invest in new technologies, have also increased the scope for market abuse and manipulation, which are often not easy to detect. In the light of this, attempts have been made on the regulatory side to revise existing rules.

In the US, the SEC has intensified its oversight on exchanges and proposed a new regulation, the Regulation System Compliance and Integrity (RegSCI). It would be applied to certain entities, including registered clearing agencies, other self-regulatory organisations and alternative trading systems, with respect to their automated systems supporting the performance of regulated activities.[25] The SCI entities identified would be required to develop and maintain systems fundamental to their operations. The regulation states that they should "[…] ensure their core technology meets certain standards, conduct business continuity testing, and provide certain notifications in the events of systems disruptions and other events." The aim is to ensure:

— systems' capacity, integrity, resilience and security;

— system compliance;

— effectiveness of actions in response to system failures or intrusions;

— efficiency in information disclosure to the SEC as well as to members or other participants.

In addition, following various major incidents, in 2013 some large exchanges agreed to propose, as required by regulators, new rules to protect information processors (SIP), critical infrastructures, halts and trading resumptions, trade breaks and kill switches.[26]

At the EU level, in December 2011 ESMA published its final report on the guidelines on systems and controls in an automated trading environment for trading platforms, investment firms and competent authorities.[27] The purpose of these guidelines is to ensure common, uniform and consistent application of MiFID and the Market Abuse Directive, as they apply to trading platforms' and investment firms' systems and controls.

These guidelines cover:

— the operation of an electronic trading system by a RM or a MTF;

— the use of an electronic trading system, including a trading algorithm, by an investment firm for dealing on

[24] Standard & Poors' RatingsDirect, September 2013, Exchanges' technical glitches reveal growing operational risk and could trigger downgrades.

[25] RegSCI requires entities to establish policies and procedures governing the function and integrity of their systems, report on the occurrence of certain adverse system events, and recurrently test their systems.

[26] These are tools used by exchanges to halt trading in case of an incident before it spins out of control, causing broad market disruption.

[27] http://www.esma.europa.eu/system/files/2011-456_0.pdf.

own account or for the execution of orders on behalf of clients; and

— the provision of direct market access or sponsored access by an investment firm as part of the order execution service on behalf of clients.

On 12 June 2014, MiFID II and MiFIR were published in the EU Official Journal. With respect to operational risk the focus is on the following areas:

— enhanced organisational requirements to safeguard the efficient functioning and integrity of markets, such requirements applying both to investment firms and regulated markets;[28]

— identification of specific measures to combat the potential risks arising from algorithmic and HFT, namely bringing all entities engaged in HFT into MiFID; requiring appropriate organisational safeguards from such firms; and requiring venues to adopt appropriate risk controls to mitigate disorderly trading and ensure the resilience of their platforms;

— oversight and monitoring of such activities by competent authorities;

— cooperation and exchange of information for RMs.[29] Under these provisions, an operator of a RM is required immediately to inform operators of other RMs, MTFs and OTFs of disorderly trading conditions and system disruptions.

Conclusion

Over the last decade the EU trading landscape has undergone substantial restructuring. New actors, other than RMs, have accessed the market, with a consequent increase in competitive pressures and encouraging trading operators to seek new profitable opportunities. These dynamics, compounded by the continuous development in trading technologies, have resulted in the growing development of electronic trading and the emergence of new trading strategies such as algorithm trading and HFT. In this environment, in order to be competitive it is considered essential for traditional exchanges to expand their services and improve infrastructure efficiency. Competition has become increasingly contingent on the ability to handle and process increasing amounts of data at ever shorter time intervals.

Heightened competitive pressure, continuous innovation in financial instruments and strategies, and the need constantly to keep infrastructures up-to-date has, however, necessitated substantial investment and broadened the scope for faults and other unforeseen occurrences affecting trading systems. In recent years, trading venues have experienced recurrent technical issues differing in terms of their nature and impacts. Some are confined to the exchange on which the incident originated or to one or a few traded instruments, while others may have widespread market effects. In such cases, the impact of these events on operational risk and ultimately on market efficiency may be significant. More recently, concerns have arisen with regard to the systemic effects that technical occurrences may involve. The systemic implications that these effects may have when spreading across different actors and instruments should not be disregarded. The sustained occurrence of incidents may, in fact, not only have an effect on the functioning of the single trading venue but indeed on overall market confidence and efficiency.

Analysing the impact of technical incidents on operational risk and, ultimately, on financial system stability is, however, a complex task. The different nature of faults and exchanges, their operating systems, business models, market focus, and the degree and nature of interconnectivity with other exchanges underscore how complex it can be to assess the ripples caused by system glitches and failures and their impact on operational risk and market efficiency. The degree of complexity is even greater when we consider the constant innovations affecting market structure, trading instruments and strategies. LLT, especially HFT activity, adds to the risks already highlighted with regard to misconduct and market abuse. HFT, for example, can make use of predatory algorithms, such as quote stuffers, quote danglers and pack hunters[30] that constitute abuse of the trading infrastructure and increase the potential for system faults and inefficiencies. While market abuse is illegal,[31] clearly identifying specific trading practices as predatory may not be so straightforward.

In view of this, it is essential to collect detailed and high-quality data including:

— information on the services provided by the trading venue (i.e., market focus, volumes and types of orders, order execution information etc.);

— information on the trading venue infrastructure (i.e. matching engines, routing engines, backup systems, etc.);

— information on the occurrence of disorderly trading conditions and system disruptions.

Concomitant to the build-up of data, moreover, are augmented corporate governance and improved risk management, as essential tools to ensure the orderly functioning of exchanges and, as a consequence, of the market as a whole.

[28] Articles 16 and 51 COM(2011) 656 final.

[29] Article 54.1 COM (2011) 656 final.

[30] Quote stuffing consists of overwhelming an exchange with messages intended to slow down competing algorithms. Quote danglers refers to the practice of instantaneously cancelling limit orders with the intention of obfuscating the quote process. Pack hunters are HFTs that, once they become aware of each other's activities, form a pack to maximise the chance of triggering a cascading effect.

[31] Market Abuse Directive, Level 3 – first set of CESR guidance and information on the common operation of the Directive, Chapter IV. http://www.esma.europa.eu/system/files/04_505b.pdf

Trading venues: technical glitches V.9

Date	Exchange	Operating Issue
Nov-09	London Stock Exchange	November 9, technical failure. 1/12th of its securities affected.
May-10	"US Flash Crash"	May 6, the Dow Jones Industrial Average (DJIA) plunged about 1000 points (9%), to recover those losses within minutes. Second largest point swing, 1,010 points; biggest one-day point decline, 998.5 points, on an intraday basis in DJIA history.
Oct-10	NYSE Euronext	October 13, NYSE Euronext stopped distributing market data, announcing at 15:45 that it had halted the market due to technical issues. Market resumed at 16:20.
Feb-11	Borsa Italiana	February 22, 6.5-hour opening delay.
Feb-11	London Stock Exchange	February 25, 4-hour opening delay. Trading started at 12:15 (UK time) due to a "market data issue", according to the exchange website. The outage occurred after the switch to a new electronic system.
Jun-11	Chi-X	June 13, 30-minute technical outage between 9:45 and 10:15 (UK time).
Jun-11	NYSE Euronext	June 20, outage between 8:00 and 9:00 (UK time). All cash markets affected.
Jun-11	NYSE Euronext	June 21, two-hour outage between 8:03 and 10:00 (UK time) affecting AEX and BEL cash markets.
Jun-11	NYSE Euronext	June 27, outages occurring between 10:57 and 11:45 (UK time) affecting CAC 40 instruments.
Mar-12	BATS Global Markets	BATS' own IPO halted due to a software bug.
May-12	NASDAQ OMX	Facebook IPO suffered opening delay due to a technical malfunction in software and infrastructure. More than $500 million in trading losses across major trading firms.
May-12	Deutsche Börse	1.5-hour trading outage on stocks and exchange traded funds due to Xetra system failure.
Jul-12	London Stock Exchange	Temporary reference data glitch, with one of its data feeds ending up giving erroneous information to some member firms. No effects on trading.
Aug-12	Bolsas y Mercados Españoles	Four-hour outage for two multilateral trading platforms operated by NYSE due to a communication server failure.
Aug-12	NASDAQ OMX	Opening delay for the PHLX due to issues with floor based systems.
Aug-12	Tokyo Stock Exchange	1.5-hour halt in derivatives trading due to a power outage related to an error that occurred on the Exchange's Tdex+ system used for options and futures trading.
Aug-12	Indonesia Stock Exchange	Trading delay due to a connectivity failure to the exchange for almost a third of the members.
Oct-12	All major US stock and option exchanges	Two-day shutdown due to hurricane Sandy.
Nov-12	NYSE Euronext	Matching engine outages halted trading in 216 symbols.
Jan-13	NYSE Euronext	Duplicate trade reports due to a trade and quote publishing outage.
Jan-13	London Stock Exchange	90-minute delay in many company announcements due to technical issues.
Jan-13	BATS Global	Announcement of discovery of a matching engine issue between BATS BYX, BZX and BATS Options launched in 2008.
Mar-13	NYSE Euronext	Routing issue for NASDAQ-listed symbols due to an outage.
Mar-13	NYSE Euronext	Display device issues.
Mar-13	NYSE Euronext	Engine queuing issues.
Mar-13	Osaka Securities Exchange	Osaka Securities Exchange outage on NASDAQ OMX Group technology platform.
Apr-13	Chicago Board Options Exchange	Trading shutdown for 3.5 hours due to a software malfunction.
Apr-13	Singapore Exchange	3-hour delay in dealing in derivatives contracts due to a technical outage.
Jun-13	NYSE Euronext	1-hour opening delay in Paris, Amsterdam, Brussels, and Lisbon.
Jul-13	New Zealand Exchange	2-hour halt in trading due to an unspecified connectivity issue.
Aug-13	BATS Global Markets	50-minute outage on BZX due to an internal network issue.
Aug-13	Deutsche Börse Eurex Exchange	1-hour trading halt in derivatives due to an incorrect time sync with the system clock.
Aug-13	Direct Edge	Trading and processing shut down for symbols SPYV and TNC and consequent trade cancellations.
Aug-13	NASDAQ OMX	Connectivity issue between an exchange participant and the UTP securities information processor (SIP). Trading and quote data dissemination suspended via the SIP and all trading in all NASDAQ listed securities halted market-wide.
Aug-13	Tel Aviv Stock Exchange	A typo sent Israel Corp. stock plummeting 99.9% and caused a halt in trading.
Aug-13	Shanghai Stock Exchange	August 16, a trading error at Everbright Securities Co. spurred a 53% surge in volumes and a swing of more than 6% in the Shanghai Composite Index within two minutes.
Aug-13	Eurex Exchange	August 26, a technical glitch in time synchronisation within its system caused halt in trading for about 60 minutes. No quotes on futures on major indices. Trade resumed at 9:20.
Sep-13	NASDAQ OMX	Six-minute outage: the Securities Information Processor (SIP), which receives all traffic on quotes and orders for Nasdaq stocks, was down between 11:35am and 11:41am. Hardware memory failure in a back-end server.
Sep-13	BATS Global Mkts	September 26, trading halted on one of its two electronic platforms, BATS BYX Exchanges, accounting for 2% of all stock trading in the US.
Jan-14	Nasdaq Options Market	February 16, dissemination issue with the Options Price Reporting Authority data that affected one of its three options markets at 11.42 for trading symbols A-M. An automated back-up system was triggered, normal trading resumed by midday.
Feb-14	Mt Gox BitCoin Exchange	Software glitch in trading technology enabled Bitcoin traders to defraud exchanges. Bitcoin price dived 16% after Mt Gox announced the presence of a "bug" in the Bitcoin software.
Feb-14	Mt Gox BitCoin Exchange	February 25, trading suspended on the BitCoin Exchange. The price of BitCoin slumped to less than half the rate on other exchanges.
Jun-14	NYSE Liffe	Trading in futures and options contracts in Euribor began nearly four hours late due to a technical issue at the exchange. The outage also hit trading in Eonia futures and options contracts. Another trading halt occurred not long after and lasted for three more hours. Trading resumed at 14.15 GMT.

Source: Bloomberg, Reuters, Financial Times, Standard & Poor's, ESMA.

The systemic relevance of securities financing markets in the EU

Contact: Julien Mazzacurati (julien.mazzacurati@esma.europa.eu)

This article looks into securities financing transactions in the EU: their significance, their objectives, their main users and their risks. Securities financing transactions are essential tools used by market participants for multiple purposes, including liquidity and risk management. They contribute to market efficiency and were at times one of the few liquidity sources available to market participants. However, they are also perceived to have contributed to financial instability during the financial crisis. This prompted global regulators to take a closer look into this area, in order to shed light on existing market practices liable to foster future systemic risk. Securities financing transactions have implications for financial stability by contributing to interconnectedness and increasing procyclicality, while features such as the facilitation of collateral re-use illustrate their ambivalent role in terms of market efficiency and financial stability. Risks from securities finance are compounded by a lack of transparency and insufficient data availability or granularity that would allow for a proper assessment of exposures and the degree of risk.

Securities financing transactions (SFTs) have come under greater regulatory scrutiny in recent years due to the increasing size of SFT markets, their central role in the system and also their potential for systemic disruption. The objective of this article is to provide an overview of EU securities financing markets with a particular focus on the two main types of SFTs, repos and securities lending, to improve the understanding and monitoring capacities of shadow banking risks associated with these activities.

Overview of SFT markets

Definition and users

Securities financing can be defined as an activity that consists in the temporary transfer of a security to a counterparty against collateral of equal or greater value, either in the form of cash or another security. There are different types of SFTs, each with specific characteristics (Table V.1). The main types are repurchase agreements (repos), and securities lending (or securities loans).

Overview of securities financing transactions V.1

Type of SFT	Main characteristics
Repurchase agreements (Repos) / Reverse repos	Sale of a security ("collateral") with an agreement to repurchase it at a later point in time at an agreed price. The difference between the sale and repurchase price is called the *repo rate*.
Securities lending / borrowing	Loan of a security against a fee and collateralised with cash or non-cash.
Commodities lending / borrowing	Similar to securities lending but with physical assets rather than securities. Also known as "carrying".
Sell-buy back / Buy-sell back	Similar to repos and reverse repos, based on two independent contracts (a spot contract and the opposite forward) rather than on an overarching agreement.

Note: Given their very similar features, sell-buy backs and buy-sell backs are often subsumed under repos.
Source: ESMA.

Typically, one of the counterparties is referred to as the "lender" of a security and the other as the "borrower", although some forms of securities finance involve the outright sale of a security (with an agreement to return it). SFTs involve a transfer-of-title agreement, even in the case of securities loans, which means that legal ownership of the security is transferred to the borrower for the duration of the transaction.

SFTs are versatile instruments and are employed for various uses by a wide variety of market participants. The FSB divides SFTs into four different market segments, each corresponding to certain types of borrowers and lenders[1] (Table V.2). In addition to these end-users, securities financing activities can involve other financial intermediaries, e.g. custodian banks serving as agent lenders, tri-party agents, and CCPs.

SFT market segments and users V.2

Market segment	Lender	Borrower
Repo financing	Banks, broker-dealers	Central banks, retail banks, MMFs, agent lenders, NFC
Inter-dealer repo	Banks, broker-dealers	Banks, broker-dealers
Securities lending	Insurances, pension funds, investment funds, banks, broker-dealers	Banks, broker-dealers
Leveraged investment fund financing and securities borrowing	Banks, broker-dealers, prime brokers	Leveraged funds, hedge funds

Note: Lenders and borrowers from the point of view of the securities transfer. For the repo financing segment, the FSB shows borrowers and lenders inversely as the purpose here is to raise cash (rather than borrow or lend a security).
Source: FSB, ESMA.

The presence of banks and broker-dealers in all four market segments underscores their role at the heart of SFT markets. Acting as both borrowers and lenders to multiple counterparties, they benefit from on-balance sheet-netting, which reduces capital requirements, and lower costs of funding, either by lending their own assets or by re-pledging the collateral received from other sources. Matched-book trading (i.e. repos financing reverse repos) is one of the techniques they use to deal in SFT markets: securities received in exchange for cash are re-pledged to other clients against cash, but do not appear on dealers' balance sheets as a result of the netting. The maturity or liquidity of SFT assets and liabilities rarely perfectly match, and matched-book trading is often associated with maturity and liquidity transformation[2].

Just as importantly, the extent to which collateral in the form of securities is re-used or re-hypothecated[3] creates a

[1] *Securities lending and repos: market overview and financial stability issues,* Financial Stability Board (2012). Some of the categories may overlap.

[2] *Matching collateral supply and financing demands in dealer banks*, A. Kirk, J. McAndrews, P. Sastry and P. Weed (2014), Economic Policy Review Volume 20 No.2, Federal Reserve Bank of New York.

[3] Re-use is defined as the *automatic* right for the borrower to dispose of the collateral arising from the property transfer of collateral, which is typically the case in a repo transaction. Re-hypothecation is defined as the right *granted* by the lender to the borrower to re-pledge the collateral, which is typically used by prime brokers in the

complex collateral nexus between financial market entities, also owing to high SFT turnover volumes, which makes it challenging for market participants to track their collateral assets. This is compounded by the relative opacity of SFT markets and the absence of reliable data suitable for monitoring by securities market regulators. Indeed, most securities financing trades are concluded OTC on a bilateral basis, partly explaining the scarcity of data and relative anonymity of SFTs to the wider public. However, the favourable capital treatment of these transactions in CRD IV[4] when cleared through CCPs has created an incentive for banks gradually to shift towards greater central clearing. Eventually, this may help bring SFT market segments other than interbank trading into the light.

Economic function and development of SFT markets

The various types of SFTs have similar economic effects. Typical uses include:

— as a source of funding, including from central banks;

— for liquidity and collateral management;

— as a yield-enhancement strategy;

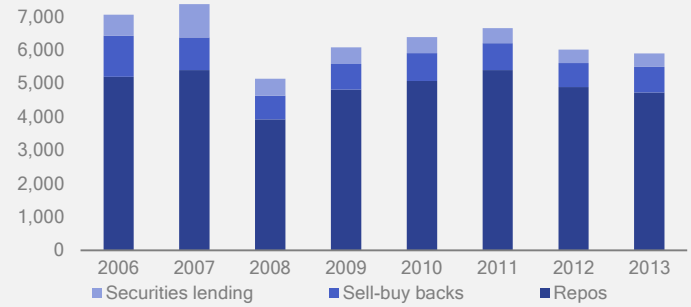
— to cover short sales;

— for dividend tax arbitrage.

They play a major role in EU money markets and are used extensively for secured funding transactions. In addition, the large turnover on SFT markets enhances overall market liquidity, and SFTs support price discovery by facilitating arbitrage. By allowing short-sellers to borrow securities at short notice, they can also help to reduce settlement fails. Finally, SFTs contribute to efficient collateral management by allowing market participants to temporarily mobilise assets based on collateral needs and availabilities. They play a very significant role in EU collateral markets, accounting for around 90% of EU bank collateral flows[5].

SFT markets are concentrated mainly in the US and the EU. There are various estimates of the size of repo and securities lending markets, but these are difficult to reconcile as they are based on different methodologies. We estimate the gross[6] size of EU SFT markets at around EUR 6tn end-2013, down from around EUR 7.4tn at the end of 2007 (Chart V.3).

Size of EU SFT markets V.3



Note: Gross amount of repos / reverse repos, sell-buy backs / buy-sell backs outstanding, and total value of EU securities on loan, as of December of each year, in EUR bn.
Sources: ICMA, Markit Securities Finance, ESMA.

SFTs first appeared in Europe in the early 1980s, although EU SFT markets only started to expand during the 1990s, spurred by central banks' refinancing operations with features mirroring the respective national legal and institutional frameworks[7]. The launch of the European single currency and development of the Single Market subsequently facilitated cross-border transactions. Nonetheless, it took several years for SFT market fragmentation to decrease significantly. As of end-2013, DE securities accounted for between 20% and 30% of EU SFTs, followed by UK (10% to 20%) and FR (10% to 15%) securities. Repos tend to dominate securities financing activities and accounted for around 90% of SFT markets in 2013, although this varied across countries.

Main characteristics of SFTs

SFTs are normally fully or over-collateralised, which means that the value of the collateral pledged should be at least equal to the value of the security lent or borrowed. In most transactions, the value of assets used as collateral comes at a discount on their market value in order to reflect risks from the collateral liquidation (e.g. price volatility or delay) in case of counterparty default. The difference between discounted value and market value is called "collateral haircut" (or "haircut")[8]. Haircuts are agreed bilaterally based on a variety of factors, including the type of asset used as collateral, the collateral liquidity and credit quality, and perceptions of overall market conditions (Table V.4). Revaluations take place on a daily basis, potentially triggering collateral calls if the market value of the collateral portfolio falls below the negotiated over-collateralisation level[9]. Changes to collateral valuation are dynamically reflected in the composition of collateral baskets rather than in the fees or haircuts agreed.

collateralisation of derivatives transactions with HFs; in this case, the title to the collateral is transferred to the third party to whom the collateral is rehypothecated and the collateral-giver receives in exchange a contractual right to the return of fungible collateral. (ICMA)

4 Banks must hold regulatory capital to protect themselves against:

i) Counterparty Credit Risk (CCR) that arises for example from SFT bilateral exposures; ii) Credit Valuation Adjustment (CVA) risks, to cover potential mark-to-market losses due to deterioration in the creditworthiness of counterparties.

However, SFTs are exempted from both CCR and CVA capital requirements when cleared through a CCP authorised under EMIR, unless the CVA risk exposure is deemed to be "material" by the NCA.

5 *Report on SFTs and cash and securities collateral usage*, ESRB Occasional Paper (forthcoming).

6 The ICMA survey on European repo markets includes outstanding repos and reverse repos, i.e. not netted between same counterparties. The estimate likely includes some double counting.

7 *Collateral: Securities lending, Repo, OTC derivatives and the Future of Finance*, D. Corrigan and N. de Teran (2007), Global Custodian.

8 Haircuts are calculated as a percentage of the market value of the security, i.e. a security worth 200 but pledged at 201 is equivalent to a 0.5% haircut. Initial margins are conceptually similar to haircuts but use a different formula.

9 *The role of margin requirements and haircuts in procyclicality*, Committee on the Global Financial System (2010), Bank for International Settlements.

Typical haircut on term SFTs V.4

Type of asset	June 2007			June 2009		
	Prime CP	Non-prime CP	Unrated CP	Prime CP	Non-prime CP	Unrated CP
G7 gov't bonds:						
Short term	0	0	0.5	0.5	1	2
Medium term	0	0	0.5	1	2	3
IG bonds						
AAA and AA	1	2	5	8	12	15
A and BBB	4	7	10	10	15	20
High-yield bonds	8	12	20	15	20	40
Equities						
G7	10	12	20	15	20	25
EM	15	20	35	20	25	40
ABS	10	20	20	25	50	100
MBS						
AAA	4	6	10	10	20	30-100
AA and A	8	12	25	25	100	100
Structured products (AAA)	10	15	20	100	100	100

Note: Haircuts in per cent of collateral market value. CP = counterparty; unrated includes hedge funds. IG = investment grade. EM = emerging markets. This table is reproduced from page 2 of the CGFS study mentioned in footnote 14, not showing US agency assets.
Source: BIS, ESMA.

The table above shows typical haircuts on term SFTs at two different points in time. It also illustrates how haircuts may contribute to reinforcing system procyclicality due to changes in collateral valuation and thus in the maximum leverage available to a borrower. Non-price credit terms such as borrowing limits or maximum maturity requirements[10] may further add to procyclicality.

Although the table contains term transactions only, SFTs can alternatively have open maturity structures in which either counterparty can terminate the transaction at any point in time. SFTs are short-term instruments by nature, with maturity typically less than six months; this depends on both the counterparties' business model and the type of transaction. For example, in 2013 the average maturity of EU bank repos outstanding was around 200 days and closer to 130 days for securities loans; the maturity of SFTs at investment banks was on average 50% shorter, whereas for diversified banks it was around 50% longer[11]. This suggests that investment banks may use repos for short-term financing purposes to a greater extent than other banks and may therefore be more vulnerable to a liquidity dry-up on SFT markets.

Financial stability issues

This section summarises the findings by the ESRB working group on shadow banking regarding the specific risks to financial stability from SFTs[12].

- *Facilitation of credit growth:* SFTs may contribute to credit growth when the cash borrowed is reinvested into debt instruments;
- *Procyclicality of system leverage:* Changes to margins and haircuts tend to increase cyclicality in the system;
- *Maturity and liquidity transformation:* Financing long-term (or illiquid) assets through short-term (or liquid) SFTs results in maturity (or liquidity) transformation;
- *Interconnectedness and contagion channels:* Linkages between banks and the shadow banking system may give rise to contagion channels through which shocks can be transmitted;
- *Collateral fire-sales:* Collateral sales under distressed market conditions may depress asset prices and contribute to a downward spiral;
- *Currency mismatches:* Exposure to volatile currencies may result in stability risks[13].

In addition to these financial stability risks, other shadow banking risks from existing market practices include the reinvestment of cash collateral; the re-use of collateral and re-hypothecation of clients' assets; and collateral valuation practices. Lastly, given the size and complexity of SFT markets, operational risks cannot be disregarded as they could become another source of instability or contribute to existing financial stability issues. These risks can materialise at various stages of back-office administration, which essentially comprises asset delivery, collateral valuation, margin calls and substitution, together with custody when conducted through a tri-party agent.

Many of these risks are reinforced by a lack of transparency. In particular, the re-use of collateral creates complex "collateral chains", i.e. chains of transactions using the same security as collateral, that make it challenging for financial entities to locate their assets, given the absence of data and information sharing on collateral re-use. Aside from increasing procyclicality, since collateral valuation changes can impact counterparties to several transactions at once, collateral chains would be especially problematic during episodes of market stress if market participants sought to recall their collateral swiftly.

In this regard, the European Commission proposal for a Regulation on SFT transparency[14] is a crucial step forward to address some of these transparency issues (V.5).

[10] See *Survey on credit terms and conditions in EUR-denominated securities financing and OTC derivatives market* (ECB) for additional information on SFT credit terms.

[11] ESRB *Report on SFTs and cash and securities collateral usage* (forthcoming).

[12] *Towards a monitoring framework for securities financing transactions*, ESRB Occasional Paper no.2 (2013).

[13] These would appear to be somewhat limited as the vast majority of SFTs involve the use of a major international currency. In European repo markets EUR dominates (about two-thirds of transactions), followed by USD (15%) and GBP (10%). In contrast, around 50% of securities on loan from EU agent lenders are denominated in USD, and 35% in EUR (ESRB). This also broadly reflects the currency composition of the cash collateral received and that of the cash collateral reinvested, suggesting limited scope for potential currency mismatches across the major currencies.

[14] Proposal for a Regulation on reporting and transparency of securities financing transactions (2014/0017/EC(COD)).

The European Commission's SFT regulation proposal V.5

On January 1, 2014, the European Commission released a proposal to address transparency issues in SFT markets. The proposal focuses on three main issues:

- Monitoring the build-up of systemic risks related to SFTs;
- Disclosure requirements to investors;
- Contractual transparency of rehypothecation activities.

The key components of this proposal, which follows several of the recommendations produced by the FSB on SFT transparency, are:

- The registration and supervision of trade repositories (TRs) to which SFT counterparties will report details of the transactions;
- Disclosure by fund managers of recourse to SFTs in their regular reporting;
- Contractual agreement with the providing counterparty on, and disclosure of, the risks associated with asset rehypothecation;
- The identification of competent authorities for the enforcement of these measures.

The proposal provides for ESMA to have charge of TR registration and supervision, as well as drafting rules specifying:

- SFT details to be reported;
- Details and format of the application for TR registration;
- Frequency and details of aggregate SFT positions;

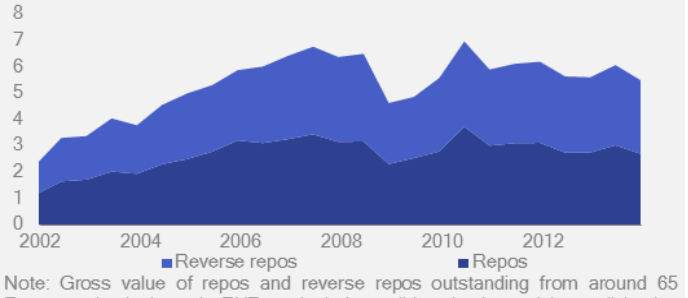
Operational standards to aggregate and compare data across TRs.

Repos and securities lending

Main features and structure of repo markets

Repos and reverse repos account for around 90% of EU SFTs. As of December 2013, the gross amount of repos outstanding in Europe was EUR 5.5tn, down from a peak of nearly EUR 7tn mid-2010 (Chart V.6). This compares for example to EUR 23tn in EU debt securities outstanding (from all sectors), illustrating the systemic relevance of repo markets. Repos use fixed income instruments almost exclusively as collateral, mostly in the form of sovereign bonds (around 80%)[15].

Gross repos outstanding in Europe V.6



Note: Gross value of repos and reverse repos outstanding from around 65 European institutions, in EUR tn. Includes sell-buy backs and buy-sell backs. Given that transactions between counterparties are not netted out, some double counting is likely.
Sources: ICMA, ESMA.

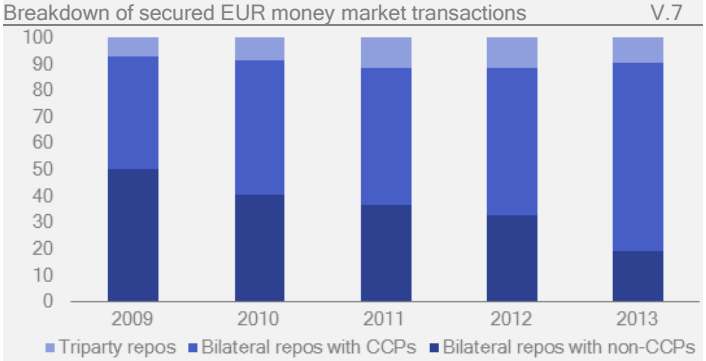
The primary purpose of a repo is funding. When extra liquidity is needed at short notice, financing desks turn to money markets to borrow externally. For short-term secured funding, a repo is usually the instrument of choice. Banks and dealers *repo out* assets in order to offset their overall position or generate additional funding. Similarly, asset-liability mismatches often require trading desks within banks to swap assets amongst themselves; however, if collateral cannot be sourced in-house, banks can *reverse in* the securities they need to fulfil collateral requirements, or earn extra money by lending surplus cash.

[15] See ICMA surveys (2013). The Global Master Repurchase Agreement (GMRA) serves as a contractual basis for repo transactions.

Repo market activity is driven mainly by interbank deals[16], which account for a large share of banks' overall money market funding. For example, the quarterly turnover on secured money markets (repos) totalled around EUR 30tn for EA banks in 2013, roughly 40% of overall EUR money market activity. Given the short-term nature of bank liquidity provision and demand on money markets, repos tend to have short maturities: around 75% of transactions have one-day maturities and less than 3% last longer than a month[17].

There are three main EU repo market segments: bilateral repos, bilateral repos cleared through CCPs, and tri-party repos. A tri-party repo uses a third party agent for post-trade services e.g. trade settlement and asset custody. Unlike in the US, tri-party repos constitute only a minor part of overall EU repo markets, and this has remained relatively stable over the past few years. On the other hand, as illustrated in Chart V.7, the relative share of CCP-cleared repos increased sharply between 2009 and 2013 to 70%, as the share of non-CCP bilateral repos receded from 50% to 20%.

Breakdown of secured EUR money market transactions V.7



Note: Share in EUR secured money market turnover of 104 EA credit institutions, in %.
Sources: ECB, ESMA.

There are two types of repos: General Collateral (GC) transactions and Specific Collateral (SC) transactions (or "Specials"). GC assets are liquid securities considered as being homogeneous and used indiscriminately by market participants for a certain rate (the GC rate) driven by the usual supply and demand dynamics. In GC repos, the choice of bond to be delivered as collateral is made after the trade. "Specials", on the other hand, are repos in which the collateral is known before the trade is executed and has specific characteristics that are in high demand. Buyers thus bid competitively for collateral of this kind. "Specials" are therefore security-driven transactions in which the collateral is specifically sought after, while GC deals are mainly cash-driven, implying different incentives for market participants. As a result, repo trading is based on different GC and SC rates (V.8). The large majority of

[16] *Shadow banking in the euro area: An overview*, K. Bakk-Simon, S. Borgioli, C. Giron, H. Hempell, A. Maddaloni, F. Recine and S. Rosati, ECB Occasional Paper no.133 (2012).

[17] In its *Euro money market study 2012* the ECB highlighted discrepancies between its Euro money market survey and the ICMA repo market survey, probably because the ECB survey is based on flows and initial maturities while ICMA focuses on outstanding volumes and residual maturities. This also explains some of the discrepancy between the numbers quoted here and the ESRB figures on the maturity of SFTs mentioned earlier in the article.

centrally cleared repo transactions using government bonds as collateral are based on SC rather than GC rates: in 2013 the share of SC transactions in EUR sovereign repo markets was around 80% of total bilateral repos executed through CCPs[18].

GC/SC repo trading strategies V.8

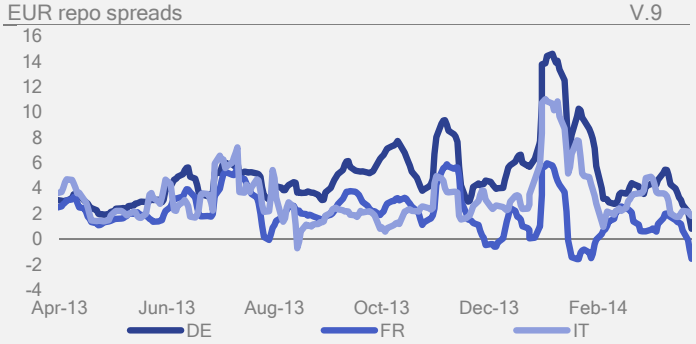
There are various trading strategies involving repo markets, such as cash-and-carry arbitrage ("reversing in" a bond and selling the future or "repo-ing out" a bond and buying the future) or arbitrages between cash markets and repo markets. However, some strategies specifically involve the difference between GC and SC rates, called the "repo spread":

Repo dividends: A dealer holding bonds "on special" can repo them out against cash for a special (SC) rate, i.e. lower than the GC rate due to greater demand for these bonds. The dealer uses the cash to reverse in securities at a higher GC rate, thereby generating a "repo dividend"[19].

Repo squeeze: A dealer holding a large amount of bonds "on special" can create scarcity on repo markets artificially by holding on to a portion of these bonds to repo out the rest at lower SC rates. This strategy may result in increased settlement fails, as the cost of borrowing "specials" increases for the securities borrower and can even turn negative.

While repo rates tend to track money market rates and short-term yields, repo spreads reflect specific demand for a type of security (Chart V.9).

EUR repo spreads V.9



Note: Spreads between SC and GC repo rates using EUR sovereign bonds from DE, FR and IT as collateral and cleared through CCPs, in basis points.
Sources: RepoFunds Rate (BrokerTec, MTS, ICAP), ESMA.

GC trades sometimes make use of GC baskets. These baskets consist of pools of securities that repo counterparties will accept regardless of the specific security delivered[20]. GC baskets are traded on anonymous electronic trading platforms, sometimes run by CCPs. During the crisis, trading on such CCP-based GC platforms proved very resilient, especially for the safest collateral baskets[21], which possibly explains some of the shift towards greater central clearing of repo transactions.

Repo market risks

From a financial stability perspective, repos may specifically contribute to systemic risk in several ways.

- First, since repos are predominantly short-term, the size of repo markets reflects heavy reliance on short-term funding. Short-term liquidity can quickly dry up, which would create destabilising effects for banks and broker-dealers used to financing themselves on repo markets. In 2007-2008, record-high repo haircuts and strict collateral requirements hampered repo market activity, leading to a "repo run" and effective insolvency of the US banking system[22]. To mitigate this risk, some repo users tend to follow prudent liquidity management practices, which are reflected in the longer average maturity of bank repos compared to reverse repos[23]. This allows them to keep a cash surplus as a liquidity buffer. However, it is unclear whether such practices would suffice to weather a system-wide repo market dry-out without intervention by public authorities.
- Secondly, although most repos are interbank, non-bank entities constitute a substantial share of repo counterparties, resulting in significant interconnectedness between banks and non-banks. Specifically, repos between banks and "Other Financial Institutions" (OFIs), which amounted to EUR 85bn end-2013, could prove problematic, given that many "shadow banks" are included in the latter category[24].
- Lastly, the collateral used in repo transactions is fungible, which means that the borrower has an obligation to return equivalent securities to the lender when the transaction expires. Given the turnover in repo markets and the fact that collateral securities are managed together with securities held outright on the balance sheet in a large pool of assets, collateral fungibility makes it all the more challenging for participants to track their re-use of collateral received from counterparties. Collateral velocity in the EU is estimated at around 2, which means that collateral is on average re-used once[25].

Features and specificities of securities lending markets

Securities lending markets are smaller than repo markets. As at the end of 2013, there was around EUR 400bn in EU securities on loan, with market activity broadly stable since the middle of 2012[26]. Unlike in repo markets, equities constitute a sizeable share of the securities borrowed (Chart V.10).

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18 Based on ICAP, BrokerTec and MTS data. No data were available for non-CCP cleared bilateral repos or tri-party repos (i.e. around 30% of the market).

19 *Special repo rates: an introduction*, M. Fisher, Economic Review (2002), Federal Reserve Bank of Atlanta.

20 For example, the 7,500 securities in the Eurex GC Pooling basket are eligible for ECB refinancing. This GC basket is therefore used for funding purposes rather than to source a specific security. Narrower GC baskets used for alternative purposes also exist.

21 *The euro interbank repo market*, L. Mancini, A. Ranaldo and J. Wrampelmeyer (2013), Working Papers on Finance no.2013/16, Swiss Institute of Banking and Finance.

22 *Securitized banking and the run on repo*, G. Gorton and A. Metrick (2010).

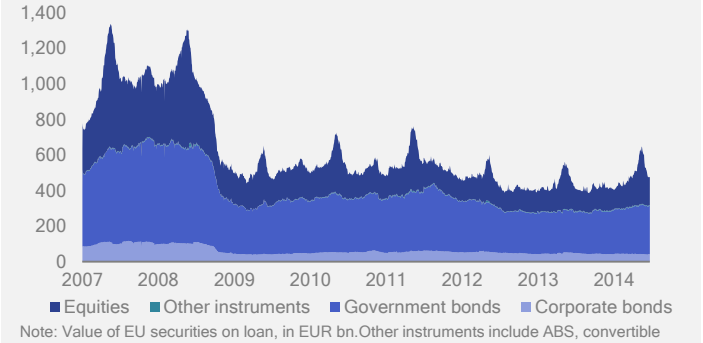
23 ESRB (forthcoming)

24 The FSB uses the OFI category for its broad measure of the shadow banking system. In the FSB definition, OFIs comprise all financial institutions not classified as banks, insurance companies, pension funds, public financial institutions or central banks.

25 Based on *Velocity of Pledged collateral: analysis and implications*, M. Singh, IMF Working Paper WP/11/256 (2011). Compared with Singh, this estimate uses a wider definition of primary sources of collateral, collateral posted rather than received, and takes banks' own-assets into account (ESRB (forthcoming)).

26 The data on securities lending is from Markit Securities Finance, unless specified, using a EUR/USD exchange rate of 1.379 (31/12/2013).

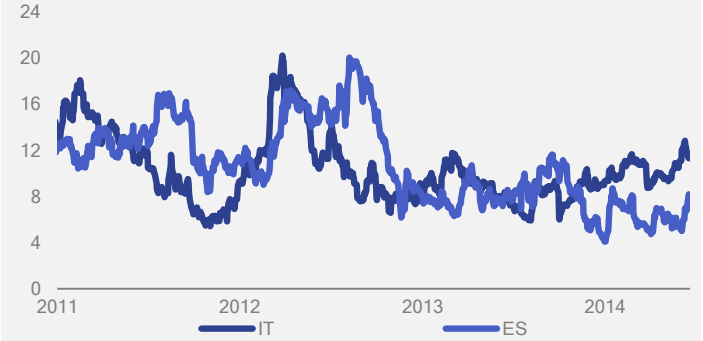
EU securities on loan V.10



Note: Value of EU securities on loan, in EUR bn.Other instruments include ABS, convertible bonds and ETFs.
Sources: Markit Securities Finance, ESMA.

Securities borrowing transactions are used to source specific assets, rather than raise funds, for example to cover short-selling positions or prevent settlement fails. At the other end, securities are loaned to enhance portfolio returns and offset the costs of custody. As a result of specific demand needs, only part of the assets in securities lending programmes are actually loaned, against a fee paid by the borrower. The share of securities loaned out of the overall pool of assets available is called the utilisation rate. While average utilisation rates greatly depend on the security itself (DE bonds are typically in high demand), they can be used in various ways, including to track short-selling activity. Stocks or debt securities that experience sharp falls in their market value see their utilisation rate soar during sell-offs (Chart V.11).

ES and IT government securities: Utilisation rates V.11



Note: ES and IT government securities on loan over securities available, in %.
Sources: Markit Securities Finance, ESMA.

A large majority of assets available for lending belong to asset managers and institutional investors[27]. Investors can lend assets directly (principal lending) or alternatively hold assets in custody, with custodian banks acting in practice as agent lenders on behalf of their clients (agency lending), then known as "beneficial owners" of the assets.

In addition to fees, lending agents also obtain cash or non-cash collateral against securities loans[28]. Compared with repos the average maturity of securities lending transactions tends to be longer, possibly because they serve different purposes. As they are frequently used by borrowers to source specific assets, securities loans can also be used for:

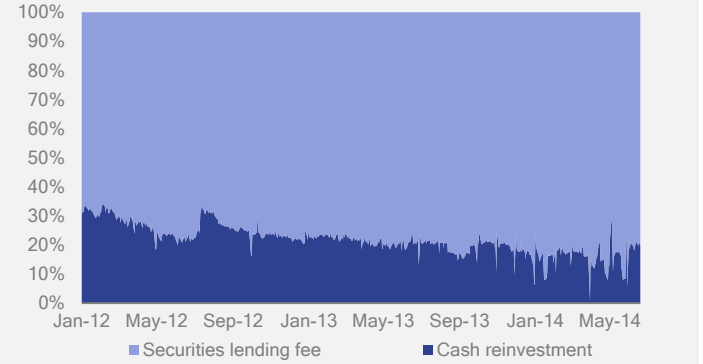
— Collateral transformation, where an entity seeks to upgrade assets by lending them against higher-quality non-cash collateral, for example to satisfy CCP eligibility requirements;

— Regulatory requirements, e.g. by borrowing low risk assets to manage capital ratios or liquid assets to manage liquidity-coverage ratios.

Equity loans entail a number of additional aspects. Since legal ownership of the asset is transferred, the borrower becomes legally entitled to receive dividends and exercise voting rights. However, the borrower must transfer *post-tax* dividends back to the lender, a practice known as "manufacturing dividends".[29]

From a financial stability perspective, a key focus of securities lending markets is the collateral received in exchange for the securities loaned. Non-cash collateral is usually held by a tri-party agent, or re-used. Cash collateral, on the other hand, is systematically reinvested. Agent lenders manage the cash collateral they receive either through comingled accounts (which can take the form of UCITS) or, for their larger clients, segregated accounts. In both cases the cash collateral is reinvested in full, the majority being used in short-term reverse repos and the rest invested directly into other liquid assets (such as high-grade debt securities or MMF shares)[30].

Securities lending returns V.12



Note: Share of revenues from EU government bond loans, in %.
Sources: Markit Securities Finance, ESMA.

Part of the proceeds from the reinvestment of cash collateral must be "rebated" to the collateral provider, with the extra returns going to the beneficial owner of the security. To a large extent, the reinvestment of cash collateral therefore reflects yield-enhancement strategies by beneficial owners. EU government bond loans tend to have a larger share of returns coming from reinvestments

[27] Globally, investment funds own 43% of lendable securities, compared to 28% for insurance and pension funds.

[28] Securities lending/borrowing transactions are concluded on the basis of the Global Master Securities Lending Agreement (GMSLA). There is contrasting evidence on the relative importance of cash versus non-cash collateral in the EU. Generally speaking, cash collateral plays a greater role in the US, where regulatory requirements limit mutual funds' ability to hold non-cash collateral.

[29] This allows for tax arbitrage across EU countries, as reflected in the seasonal pattern of EU equities on loan around the time of EU dividend payments—usually around April.

[30] ESRB (forthcoming).

(around 20% on average for the last two years), illustrating how they can be used for such strategies (Chart V.12)[31].

In contrast, revenues from lending EU corporate bonds and equities rely almost entirely on fees, reflecting, for example, the fact that they may be used for collateral upgrades or that the fees received mostly outweigh returns from cash reinvestments. The risk incentives may thus vary according to the type of assets loaned. Anecdotal evidence suggests that the cost of clearing beneficial owners' yield-enhancement strategies and the obligation to rebate some of the reinvestment returns create disincentives to clear securities loans. This makes a shift towards greater central clearing unlikely, in contrast to repos, with potential implications for systemic risk.

Securities lending market risks

Complex intermediation chains as described above contribute to interconnectedness between banking and shadow banking entities. A typical securities loan collateralised with cash involves up to four different entities: a beneficial owner, a lending agent, a borrowing counterparty and a reverse-repo counterparty. This, in addition to possible re-use of the security by the borrower, helps increase complexity and opacity in the system, as well as strengthening interdependency between financial sector entities.

Securities lending transactions also tend to facilitate maturity and liquidity transformation by market intermediaries. First, EU banks' securities borrowing transactions are on average shorter than securities lending transactions[32]. Second, maturity transformation also takes place when the maturity of cash collateral reinvestments exceeds that of the securities loan against which the cash was obtained. Third, a large portion of the cash collateral received comes from open maturity transactions, while the cash may be reinvested at term maturity or into instruments that could potentially take time to liquidate (or that would otherwise be liquidated at a discounted price), thus creating redemption risks.

The absence of data on these issues clearly suggests a need for transparency on the quality, liquidity and maturity of instruments in which cash collateral is reinvested. Once again, the opacity of some of these markets heightens run-risk, as counterparties may not be able to track their collateral, or retrieve it quickly. This is specifically true in the case of comingled accounts, where agent lenders manage funds from securities loaned on behalf of multiple clients and reinvest them in various instruments. Run-risk on such accounts would logically be greater than in the case of segregated accounts, where clients have greater control over their assets.

As in repo markets, some securities lending market practices may help to mitigate risks. Agent lenders typically offer indemnifications to their clients to cover for counterparty risk, for example when the collateral proves insufficient or assets difficult to liquidate. A sizeable portion of cash collateral, estimated at around 20 to 30%, is also reinvested into overnight instruments (e.g. short-term reverse repos) by lending agents to ensure that they are able to face unexpected collateral recalls from borrowers or securities recalls from beneficial owners. While such practices are useful under normal market conditions to ensure that the system runs smoothly, their resilience has yet to be tested at a system-wide level in the event of a shock similar to the Lehman bankruptcy.

Conclusion

SFTs play a significant role in the plumbing of financial markets. The financial crisis thrust a large segment of SFT markets into the spotlight, with repo markets becoming one of the few available sources of short-term funding. Nevertheless, several aspects and areas remain heavily characterised by opacity. Global regulators have begun to address transparency issues, but a response calibrated to the degree of risk will require additional analysis and the development of SFT monitoring capabilities.

In particular, risks from the re-use of collateral, asset rehypothecation and the formation of collateral chains, where opacity is greatest, will need to be assessed from a financial stability perspective and addressed where necessary. In this context, the ESMA Guidelines on ETFs and other UCITS issues already provide some standards. According to the Guidelines, UCITS should be able to recall on demand the cash used in reverse repos and securities repoed out or loaned. They also provide standards in terms of the quality, maturity and diversification of the collateral portfolio, which are relevant in this context when UCITS are used by agent lenders to reinvest the cash collateral they receive. In addition, the Guidelines limit the reinvestment of cash collateral received by UCITS through SFTs to cash deposits with credit institutions, short-term MMFs, reverse repos, and high-quality government bonds, and prevent the re-use of non-cash collateral. However, the Guidelines only cover one area of SFTs when these involve multiple entities across sectors and markets.

The European Commission's proposal marks a key step towards improving EU monitoring capacities. In addition, ESMA will continue to work with other ESFS bodies to develop our understanding of EU SFT markets, the role they play in the broader financial system and the potential systemic risks they entail.

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[31] *Securities loans collateralised by cash: reinvestment risk, run risk, and incentive issues,* F. Keane (2013), Current issues in economics and finance, Volume 19 no.3, Federal Reserve Bank of New York.

[32] ESRB (forthcoming).

Performance and risks of Exchange-Traded Funds[1]

Contact: Jean-Baptiste Haquin (jean-baptiste.haquin@esma.europa.eu)

ETFs are currently one of the fastest growing financial investment vehicles, their total NAV having tripled since 2007. They combine elements of index-tracking funds with properties commonly associated with exchange-traded shares, making them simple and versatile. They also provide investors with innovations in replication techniques (physical or synthetic), underlying asset classes and new indices (e.g. "alternative" or "Smart Beta" indices). Consequently, ETFs have become increasingly complex. This complexity, combined with the growing size of the market, could raise issues in respect of systemic risk, as noted by ESMA in its 2012 guidelines on ETFs and other UCITS issues[2].

We compare the returns and risks of ETFs and index-tracking funds, both at the aggregate level and for funds that track the same indices. Two main characteristics of the ETF industry are revealed. First, at the aggregate level, the performance of ETFs and index-tracking funds is comparable and absolute risks are on average similar, with minor differences across funds and benchmarks. This applies in particular to risk-adjusted returns, which are slightly lower for ETFs at the global level but higher when comparing ETFs and funds tracking benchmarks with the same level of liquidity. A thorough comparison of the risk-performance profile of two products is nevertheless difficult due to major differences in their cost structures and a lack of representative data on costs.

Second, from a financial stability perspective ETFs are intrinsically exposed to the same risks as other funds. Whereas ETFs track changes in the performance of their respective benchmark more accurately than other index trackers, in some instances considerable gaps are observed between returns on the benchmarks and their respective tracker funds, in particular for less liquid benchmarks. Similarly, ETFs are frequently considered more liquid than mutual funds, but this advantage seems to be forfeited when their underlying assets become less liquid or in times of financial stress. Nevertheless, ETFs generally seem to reflect investors' preferences correctly in terms of risk in relation to the characteristics of the fund itself or the replicated benchmark.

Introduction

Exchange-Traded Funds (ETFs) are a particular type of fund, shares in which are traded on stock exchanges, similarly to regular shares. ETFs have become increasingly popular in recent years as they combine elements of typical investment funds (opportunity for risk diversification and rapid access to most market segments) with properties commonly associated with exchange-traded shares (flexibility, continuous pricing, ease of access and continuous dealing during market hours), making them simple and versatile investment products.

The majority of ETFs track indices and are therefore passive investment products comparable to other index trackers (UCITS and non-UCITS). As such, ETFs aim to obtain a return equal to that of the reference index by replicating its composition and weights. By purchasing an ETF the investor gains exposure to the reference index, potentially obtaining some diversification since reference indices frequently consist of large baskets of securities. However, as ETFs are tradable like shares, their secondary market prices tend to react instantaneously to changes in the value of the underlying assets, forcing primary market prices to follow closely via arbitrage. ETFs therefore bundle properties of sophisticatedly managed financial portfolios into tradable investment units, which additionally provide transparency by tracking predefined benchmarks.

This article provides a representative description of the EU universe of ETFs, comparing it to two fund industries with similar characteristics: index-tracking UCITS and index-tracking non-UCITS. The choice of an aggregate perspective is driven by ESMA's financial stability mandate and the attempt to provide snap-shots of the entire information set to which investors interested in investing in ETFs and similar funds are exposed. We complement this analysis with a comparison of funds of the three types tracking the same benchmarks, as far as this is possible with the available data[3]. This delivers increased comparability, insofar as the three sectors mentioned are quite heterogeneous and do not have the same composition in terms of investment strategies.

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1 This article was authored by Jean-Baptiste Haquin, Frank Hespeler and Giuseppe Loiacono.

2 http://www.esma.europa.eu/system/files/2012-832en_guidelines_on_etfs_and_other_ucits_issues.pdf

3 All quantitative data in this article is based on an extract from the LIPPER mutual fund database. This extract comprises more than 1,700 EU ETFs, which are exclusively UCITS, and 2,500 non-listed index-tracking mutual funds (alternative investments to ETFs), of which around 1,500 are UCITS. Unless otherwise specified, the results in terms of performance, risks and tracking error are the weighted average of all the underlying funds, for each fund category (UCITS ETFs, index-tracking UCITS and index-tracking non-UCITS). This high-level aggregation allows broad coverage of the EU index-tracking fund universe. We have deliberately used asset-weighted averages to ensure that the results are representative for the asset universe and not influenced by outliers.

Given the potential differences in the benchmarks and underlying assets tracked by the three groups of funds, where possible we have complemented this analysis with an analysis restricted to funds tracking the Eurostoxx 50 and the FTSE 100, which are among the main indices tracked for each fund category. This "like to like" analysis is used to confirm or nuance the main findings.

Finally, we have analysed peer groups of funds based on the liquidity of their benchmark. The analysis is based on the assumption that in each fund category funds with low tracking errors track liquid benchmarks.

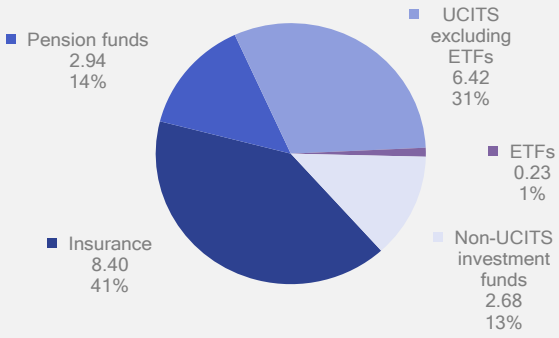
Market overview

A small but rapidly growing market

In the EU, the ETF industry's AuM stood at EUR 220bn in late 2012, subsequently experiencing further growth to EUR 294bn in April 2014 (cf. T.22). This adds a mere 1% to total EU funds' AuM (EUR 20tn), by far the greater part of EU fund assets being held in insurance products (41%) and UCITS non-ETFs (31%). Other index trackers represent a similar amount of AuM (1%).

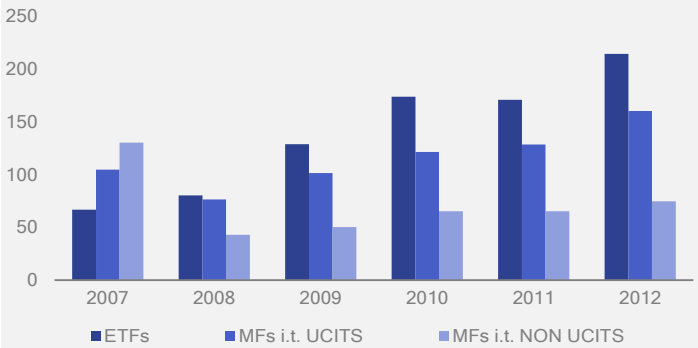
The EU ETF sector's NAV has risen steadily since 2007, tripling in six years (cf. V.2)[4]. By comparison, EU index-tracking UCITS and non-UCITS suffered losses and outflows during the acute episode of the financial crisis in 2007-2008: in the space of just one year, the NAV of UCITS and non-UCITS trackers shrank by about 27% and 66% respectively. Non-UCITS trackers have still not fully recovered from this. As an aggregate ETFs and index-tracking mutual funds grew from 4% of the total EU investment fund universe in 2007 to 5.2% as at the end of 2012 (cf. V.3).

EU total fund AuM V.1



Note: AuM of EU funds. EUR tn and % of total. Some double counting likely. Data mixed from 2012 and 2013.
Sources: ECB, EIOPA, EFAMA, Insurance Europe, Thomson Reuters Lipper, ESMA.

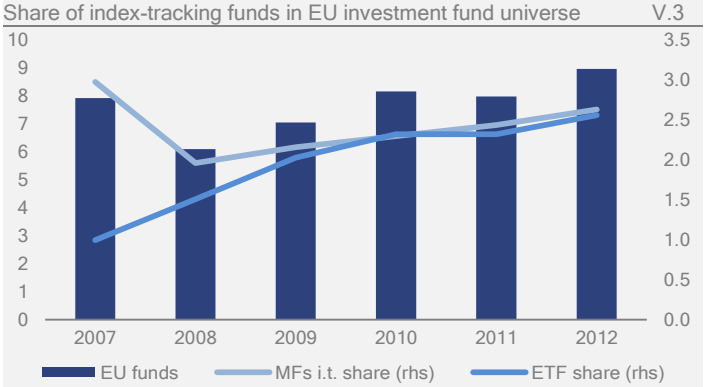
EU ETF assets rising fast V.2



Note: MF = Mutual Funds, i.t. = index tracking. NAV of EU funds, EUR bn.
Sources: Thomson Reuters Lipper,ESMA

At the individual fund level, the EU ETF industry does not provide evidence of oligopolistic frictions: for 2013 the modified Herfindahl index[5] of 96.97 reveals modest concentration within the sector. At the provider level, however, market concentration is considerable: the Herfindahl index stands at 3163 and the three biggest providers hold a total market share of almost 80%.

Share of index-tracking funds in EU investment fund universe V.3

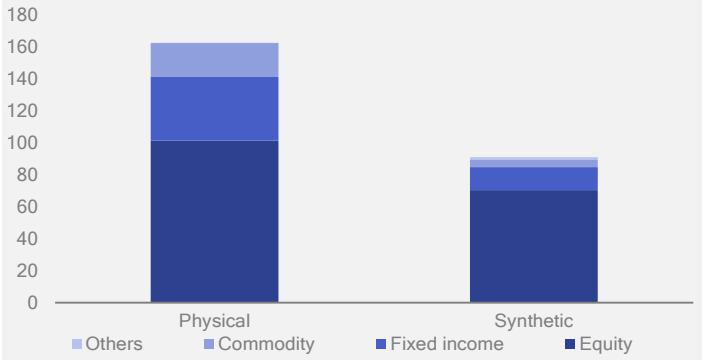


Note: AuM of EU investment funds, EUR tn. Share of ETF and index-tracking mutual funds, %.
Sources: EFAMA, Thomson Reuters Lipper, ESMA.

EU market characterized by institutional investors investing in equity

Unlike the US, EU ETFs are sold mostly to institutional investors with a percentage of retail AuM ranging from 15% to 20%.[6] Another specificity of the EU market is the relative importance of ETFs using synthetic replication techniques (36% of total AuM) (Cf. V.4).

EU ETFs use mostly physical replication techniques V.4



Note: European ETF's AuM split by replication technique, EUR bn, end-2012.
Sources: Deutsche Bank Europe Monthly ETF Market review, ESMA.

[4] Reporting is uneven across categories, with 83.5% of ETFs reporting total NAV, compared with 74.1% for UCITS index-tracking mutual funds and 51.6% for non-UCITS.

[5] Our modified Herfindahl index has been computed across the whole EU ETF industry (the standard Herfindahl index is computed across the 50 largest entities). The Herfindahl index measures market power on a scale of 0 to 10000, with levels ranging between 1500 and 2500 generally considered as moderate levels of concentration.

[6] Based on Deutsche Bank, Lipper and Lyxor estimates of 20%, 15%, and 20% respectively as reported by the Financial Times, http://www.ft.com/ms/s/0/dbb87eea-e539-11e1-b758-00144feab49a. html#axzz2JGpD3MAx.

Synthetic versus physical replication V.5

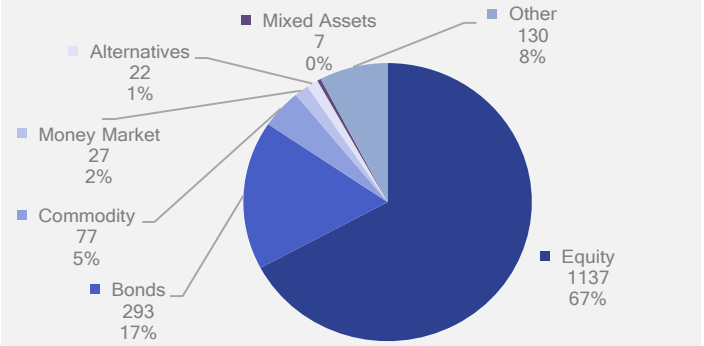
Broadly speaking, there are two types of ETF replication technique: i) physical replication and ii) synthetic replication. ETFs using the physical replication method hold the constituent stocks of the indices that they track. With synthetic replication the ETFs do not hold the securities in the underlying index, but instead enter into a swap agreement to obtain the index performance. The swap counterparty must collateralize the ETF, for which there are two methods: the fully funded structure or the unfunded structure.

Under an unfunded swap agreement, the ETF uses the proceeds from sale of the units to purchase and hold a pool of collateral placed with a third party custodian. The returns generated by the collateral held by the ETF are exchanged with the swap counterparty in return for the performance by the index.

Like the unfunded swap, the fully funded swap ETF is also required to deliver the return on the collateral it holds to the swap counterparty in exchange for the performance by the index. However, in this structure, the ETF transfers its sale proceeds to the swap counterparty, which then purchases a pool of collateral to be placed with a third party custodian.

Most EU ETFs follow equity benchmarks (67%), although ETFs also offer access to indices focused on other asset classes, including bonds (17%) and commodities (5%).

Equity-focused ETFs dominant V.6



Note: Number of EU ETFs.
Sources: Thomson Reuters Lipper, ESMA.

The vast majority of investors use ETFs to obtain long-term exposure to broad equity market indices. In addition, around 50% of investors also occasionally use ETFs for short-term exposure and exposure to specific market sub-segments. Other uses of ETFs include the management of cash flows and the hedging of exposures.[7]

Risk-performance profile of index-tracking funds

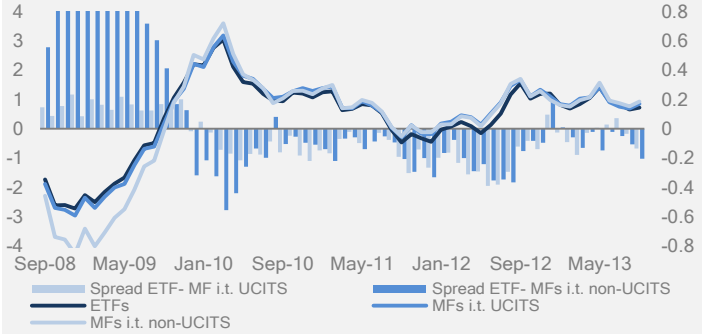
Fund returns weakly correlated to risk: a conundrum?

Since 2008, the average returns of EU ETFs and index-tracking funds (UCITS and non-UCITS), net of total fund operation fees, have been highly correlated. All three fund types experienced average annual returns as low as -2 to -4% in economic downswings but saw their performance recover up to 3% in periods of economic growth (cf. V.7). In terms of relative performance, pronounced differences are apparent: the ETF industry outperformed the two other fund industries during the acute phase of the financial crisis until 3Q09. However, in subsequent years ETFs consistently yielded lower average returns than the two other index trackers, with the differences reaching 30 bps.[8]

Obvious drivers of those differences include dissimilar exposures of the three index tracker types to various asset classes. For example, co-movements between the performance of equities and ETFs suggest that equities were among the drivers of returns for ETFs: during the downswing of 2009 the strong performance of the ETF industry coincided with a strong rally in equity markets, while both markets subsequently experienced flatter performances.

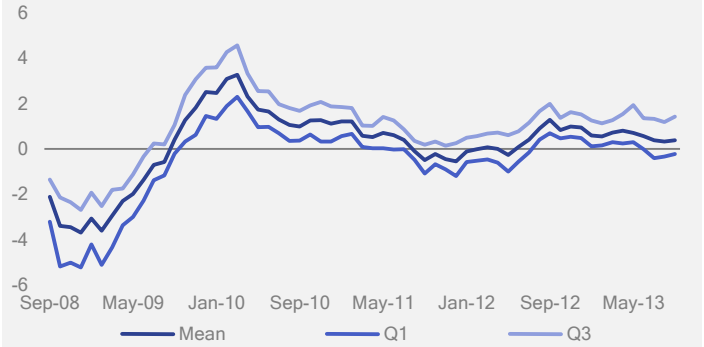
Aggregate trends across the three tracker products, however, mask substantial heterogeneities between individual funds. In particular, ETFs display very mixed annualized returns, with differences between the best and worst performing ETFs within the core 50% of the distribution ranging from 1 to 2 percentage points (V.8). This diversity may be due mostly to differences between the benchmarks tracked by individual funds. As the heterogeneity observed for ETFs far exceeds that observed for the other two types of index trackers, relative performance differences between the three sectors may also be driven by differing benchmark universes.

Average annual return of trackers V.7



Note: Annual average return asset weighted, % pa, 1M-rolling. Spread measuring return differential between ETFs and MFs on the secondary axis. MFs i.t.= Mutual funds index tracking.
Sources: Thomson Reuters Lipper, ESMA.

ETF sector displays high heterogeneity in returns V.8



Note: Dispersion of yearly average returns of EU ETFs: mean, first quartile (Q1), third quartile (Q3). 1M-rolling, %.
Sources: Thomson Reuters Lipper, ESMA.

The low level of risk premia[9] paid by ETFs suggests that risk spreads did not contribute to the ETF industry's superior returns in the 2009 downswing. The Sharpe and

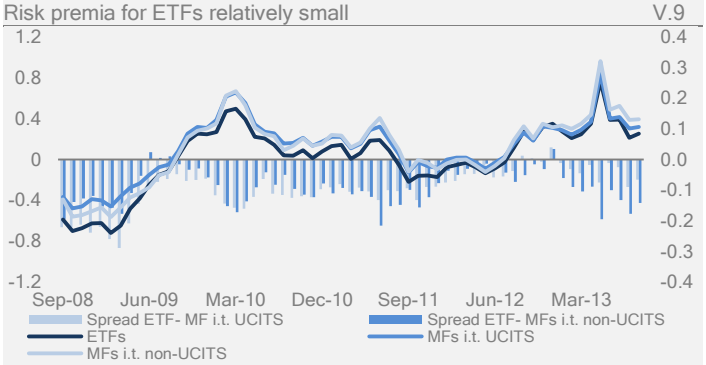
[7] EDHEC European ETF Survey 2013, March 2014, EDHEC-Risk Institute.

[8] This description is based on one-year rolling average, asset-weighted returns. Average, non-weighted returns deliver the same result for the period after March 2010 but are less clear-cut before then. This evidence emphasizes that continuing changes in the structure of the industry influence current profitability. Significance analysis is based on non-weighted returns in order to use the more conservative proxy characterised by a higher variation.

[9] In the rest of the article we consider that risk-adjusted indicators (Sharpe and Sortino ratios) measure risk premia.

Sortino ratios both display persistently lower risk compensations for ETFs than for the two other types of index-tracking funds (cf. V.9)[10]. However, the Value-at-Risk (VaR) measure demonstrates that on average ETFs were exposed to higher tail risks than mutual fund and alternative trackers during this period (cf. V.11)[11]. Higher volatility in returns for the ETF industry than for the other two index-tracking fund segments reconfirms ETFs' relatively higher risk exposure, also for general risk measures (cf. V.10). During the downswing of 2009, risks apparently impacted the values of ETFs and other index-tracking funds asymmetrically, as ETFs display higher risk measures and higher net returns but were nevertheless subject to lower risk premia. Subsequently, differences in VaR and general risk measures between the three fund types lessened, leaving ETFs with a VaR of 1.05 at the end of 3Q13.

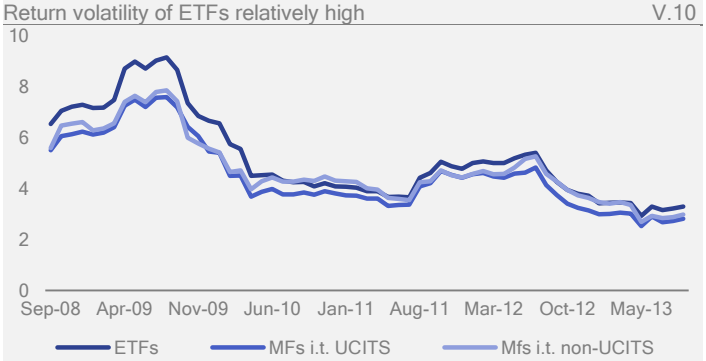
Risk premia for ETFs relatively small V.9



Note: Average annual Sharpe ratio, asset weighted, 1M-rolling. Spreads mesuring Sharpe ratios differential beteween ETFs and MFs on the secondary axis. MFs i.t.= Mutual funds index tracking.
Sources: Thomson Reuters Lipper, ESMA.

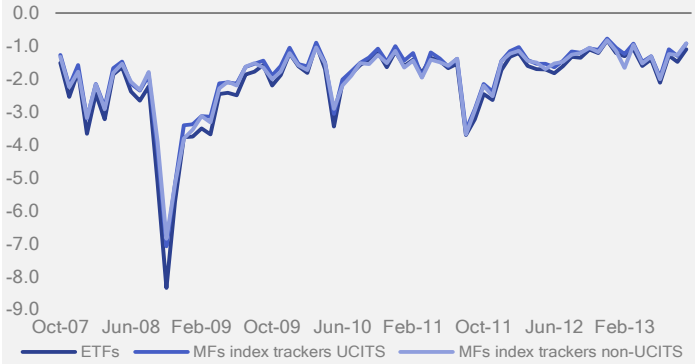
To conclude, the aggregates of the three fund sectors comprising ETFs, index-tracking UCITS and index-tracking non-UCITS are characterised by cyclical patterns of relative performance, which can neither be explained by risk premia, as these remain lower for ETFs, nor by risk measures, which are in general higher for ETFs. Hence, structural reasons are the most likely explanation for this evidence. Such structural reasons might very well include differences in the benchmark universe of the three tracker sectors, as also evidenced by results obtained from comparing funds following the same benchmarks (cf. V.13, next section).

Return volatility of ETFs relatively high V.10



Note: Annual standard deviation of returns, monthly frequency, %. MFs i.t.= Mutual funds index tracking.
Sources: Thomson Reuters Lipper, ESMA.

ETFs exhibited higher VaR in 2009 V.11



Note: Value-at-risk measured in rate of returns, %. MF = Mutual Funds.
Sources: Thomson Reuters Lipper, ESMA.

Costs add to risk-return conundrum reducing transparency

Available cost data suggests that ETFs' lower net returns persisted despite lower fund operating expenses, with average ETF operating costs of around 35bps as much as 2/3 lower than those of the other two fund types. However, in addition to a fund's operating expenses, clients also incur additional costs such as (1) sales, or deferred sales, charges and other charges imposed by the fund, and (2) brokerage or commission fees and the bid-ask spread implied by the trading on a trading venue. As bid-ask spreads are frequently used to gauge liquidity risk, they form an additional risk premium not comprised in the total return data discussed so far. Estimates available place bid-ask spreads at around 15bps[12]. Taking into account these additional illiquidity costs, i.e. assuming the sale of investors' ETF portfolios once a year on average, would render the difference in returns and risk premia between the ETF sector and the two other industries even more pronounced, as the returns and risk premia received by ETF investors are further reduced by this cost component.

Due to a lack of transparency and the complex structure of costs incurred as sales charges, brokerage fees and commission fees, hardly any estimates of these costs are available. While the evidence we do have suggests that these cost components are substantial in the case of ETFs

[10] Risk-adjusted metrics include the Sharpe ratio and the Sortino ratio, both computed as the difference between the funds' return and the risk-free rate over functions of the standard deviation of this measure. The alternative indicator, asset-weighted average returns over their standard deviation, does not replicate this evidence, suggesting that ETFs' lower performance is generated by higher inter-temporal return variances within the group of ETFs.

[11] The VaR measures the maximal potential loss that an investor can suffer based on the past history of the fund and at a predefined confidence level, encompassing all risks experienced in the meantime. The VaR measure used above follows the usual standard of employing a 95% confidence level and assuming an asymmetric normal distribution for past losses, which are used to compute the tail losses.

[12] These estimates are based on information provided by NCAs.

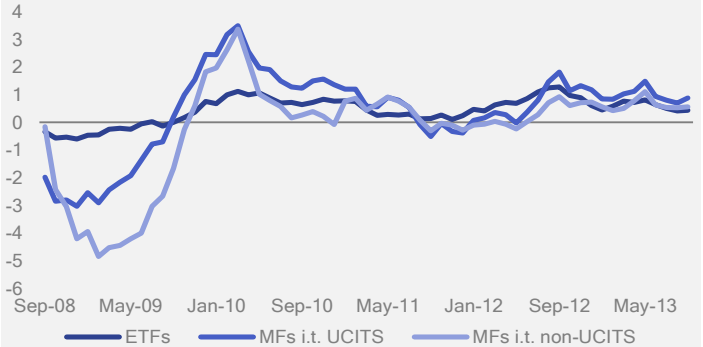
and index trackers[13], discernible cost differences between the three fund industries are small and not really reliable, as data quality remains low. More interestingly, the general lack of transparency around total costs of ownership implies that investors and analysts may have difficulty assessing the full costs of ETFs and alternative tracker products. While this issue is not necessarily caused by funds themselves, at the present juncture they remain an inherent characteristic of the marketing channels of the fund products discussed. However, this effect is not unique to ETFs. In addition, it is potentially counterbalanced by complex fund operation costs for actively managed funds. In general, some of the cost structures are not therefore quite transparent, exposing investors to structural risks when choosing appropriate fund investment strategies, and potentially leading to a sub-optimal allocation of assets.

For the same benchmarks ETFs often display higher risk-adjusted returns

ETFs and index-tracking funds give access to a wide range of asset classes that can be more or less liquid. In this regard, ETFs tracking liquid benchmarks outperformed their peers in the other index-tracking fund types during economic downturns, while under more recent market conditions their performance was clearly weaker (cf. V.12).[14]

Since 2008, ETFs tracking less liquid benchmarks have outperformed those tracking liquid benchmarks in periods of rising markets but have underperformed at times of falling markets. Other index trackers do not exhibit such differences across their benchmarks' liquidity. Both liquidity and the performance patterns of benchmarks thus emerge as rather strong determinants of the relative performance by an ETF.

ETFs tracking liquid benchmarks have underperformed since 3Q12 V.12



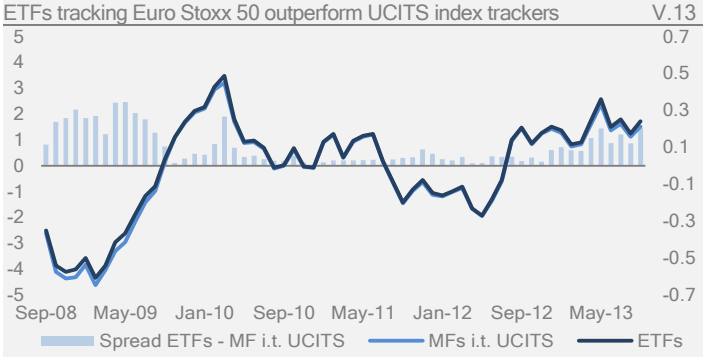
Note: Average annual return of funds tracking benchmarks with tracking errors in the highest quartile, %. MFs i.t.= Mutual funds index tracking.
Sources: Thomson Reuter Lipper, ESMA.

At a more granular level, funds focusing on exactly the same benchmarks provide mixed evidence. On the one hand, ETFs tracking the Euro Stoxx 50 consistently outperformed other index-tracking funds tracking the same benchmark throughout our entire observation horizon, both on a weighted and a non-weighted-average basis (cf. V.13). Similarly, for the FTSE 100 ETFs consistently yielded higher returns than index-tracking funds (both UCITS and non-UCITS) on a non-weighted-average basis[15] after 2Q09.

On the other hand, adjusting for risks qualifies this consistent outperformance by ETFs: the risk-adjusted performance of ETFs and non-ETF UCITS that track the Euro Stoxx 50[16] are inconclusive, indicating - if at all - higher risk-adjusted returns for ETFs in downswings and lower returns in more stable periods[17].

The differences observed in cross-sectoral patterns between total and risk-adjusted returns may be due to ETFs being less able to hedge against risk, as they mostly replicate their benchmarks physically in the EU and do not hold any other assets. Other index trackers, however, seem to hedge actively against benchmark risk, thereby accepting higher tracking errors. ETFs therefore incur higher risks and their returns need to be adjusted accordingly, even if these additional risks might sometimes willingly be accepted by investors, e.g. for hedging purposes.

ETFs tracking Euro Stoxx 50 outperform UCITS index trackers V.13



Note: Average annual returns of funds tracking the EuroStoxx 50 NR, weighted by fund AuM, %. Spread measuring return differential between ETFs and MFs UCITS on secondary axes. MFs i.t.= Mutual funds index tracking.
Sources: Thomson Reuters Lipper, ESMA.

In terms of risk level measures, however, ETFs following two particular liquid benchmarks for which data is available did not display substantially higher return volatilities than their peers in the other two fund industries, particularly the UCITS funds, except for the period between 2Q11 and 3Q12 (cf. V.14). Indeed, the evidence obtained from funds following the FTSE 100 would even suggest the contrary. The conclusion drawn from the aggregate sector analysis that risks are higher in ETFs cannot be upheld in the case of these individual benchmarks.

[13] Thomson Reuter Lipper puts the first cost component at 85bps for UCITs index trackers, 100bps for non-UCITs trackers and 532pbs for ETFs and the second at 90bps for UCITs index trackers, 102 bps for non-UCITS trackers and 107bps for ETFs. Other sources report even larger differences.

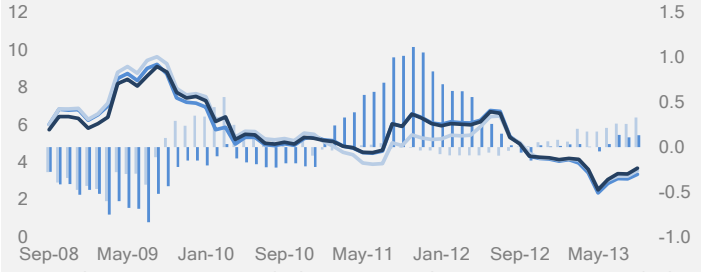
[14] Presumably, differences in the benchmark composition of the three groups of fund types are major to this difference.

[15] The sample of ETFs tracking the FTSE 100 was too small to draw any significant conclusions based on weighted average returns.

[16] The Euro Stoxx 50 is the only benchmark for which we have sub-sample sizes of more than 20 funds in both categories, ETF and index-tracking UCITS. In all other cases sub-samples are too small to permit a meaningful analysis.

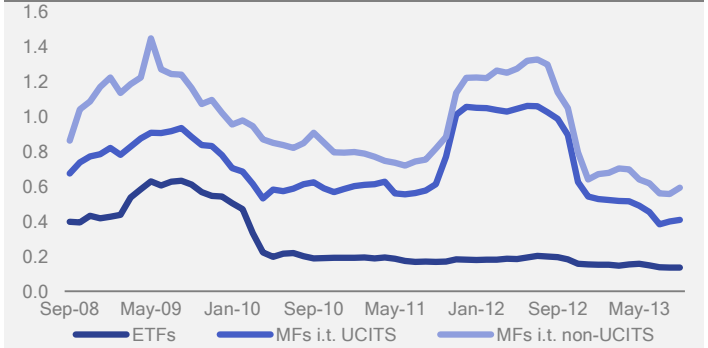
[17] Sortino ratios report negligible risk premia, while Sharpe ratios are substantial, indicating that the higher downside risk observed in downswings weighs on the risk premia.

Comparable volatility for ETFs and UCITs tracking Euro Stoxx 50 V.14



Note: Average volatility of total net returns of funds tracking EuroStoxx 50 NR by fund type, asset weighted, %. Spreads measuring volatility differential between ETFs and MFs on secondary axes. MFs i.t.= Mutual funds index tracking.
Sources: Thomson Reuters Lipper, ESMA.

Tracking error is lower for ETFs V.15



Note: Yearly tracking error (asset weighted; 1M-rolling), %. MFs i.t.= Mutual funds index tracking.
Sources: Thomson Reuters Lipper, ESMA.

The inconsistency of total returns, risk premia and risk levels observed for ETFs and other fund types tracking the same benchmarks indicates that the low risk premium conundrum is replicated for liquid benchmarks, albeit in a slightly different way. Apparently, the dominance of downside risks observed in our sample pushes risk-adjusted returns and total returns for ETFs upward, more so than for non-ETF funds tracking the same benchmarks. As observed, risk measures for the different UCITS fund types do not seem to differ, which could imply that ETFs incorporate their risks more transparently into investor returns, trading tracking accuracy against higher funding costs. However, ETFs' outperformance versus other trackers appears quite stable, at below 10bps. The price effects of this difference across fund types thus seem limited, as long as funds follow the same reference indices, at least for the two benchmarks for which respective data is available.

Structural risks in the ETF sector

ETFs seem to reflect investors' preferences correctly in terms of risk and tend to provide high tracking accuracy.

The capacity to deliver the same performance as a benchmark is the rationale for index-tracking funds. Investors expect a performance, net of fees, equal to the index. The most common measure of the accuracy of this replication is the tracking error, which measures the volatility of the return difference between the fund and the benchmark.

Chart V.15 indicates that the tracking error is significantly lower and less volatile for ETFs than for index-tracking UCITS at the aggregate level. This result also holds when we compare funds tracking the same benchmark. Within the ETF sample, the lowest quartile provides even close-to-perfect replication (index-tracking error equals zero) in the long run. This result is also due to the use of synthetic replication methods by a substantial proportion of EU ETFs, which contributes to their lower tracking error. Similarly, different proportions of funds tracking international benchmarks exposed to forex volatilities may increase the divergence in tracking errors for the three fund types.

Based on the data analysed, we also observe a tendency for tracking errors to increase in times of economic downswing, both for ETFs and index-tracking mutual funds. There are two possible explanations for this:

— First, lower market liquidity during periods of market stress can make it more difficult to liquidate assets quickly without incurring significant losses due to potential price discounts from illiquid market conditions when confronted with redemptions.

— Second, with regard to portfolio management, heightened volatility at times of turmoil poses challenges to index-tracking funds in terms of portfolio rebalancing, as substantial swings in asset valuations or forex volatilities may make it more difficult and costly for fund managers to reproduce exactly the benchmark they track. This is especially true of international benchmarks or benchmarks that rebalance frequently, e.g. bond rather than equity benchmarks, given the potential need to change portfolio composition as frequently as the benchmark provider.

However, the traditional measure of the tracking error gauges the volatility of the error and not the error itself. This implies that a fund can have a low tracking error but still underperform its benchmark consistently, impinging on the accuracy of the measurement. Indeed some funds that have a low tracking error can deviate from their benchmark in the long run (tracking difference), especially for less liquid assets. A recent study on ETFs tracking the MCSI EM documented that some funds exhibiting an apparently negligible tracking error (0.005%) underperformed their index by up to 1.02% annually.[18]

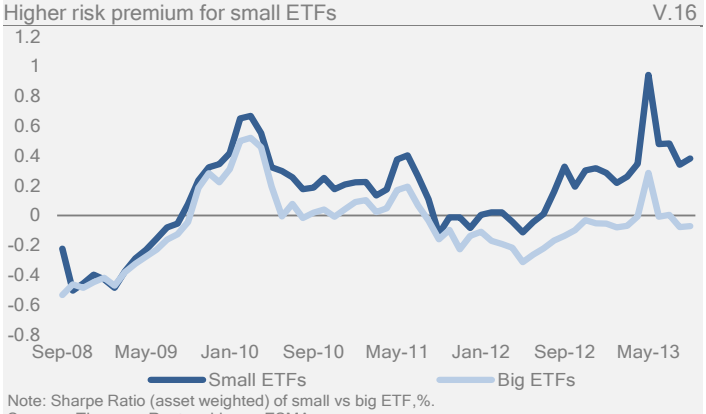
Regardless of their tracking quality, ETFs seem to reflect investors' preferences correctly in terms of risk in relation to the size of the ETFs and the characteristics of the benchmark replicated.

Thus our findings show that investors ask for a higher risk-adjusted return premium to invest in small rather than large ETFs (in terms of AuM). This can be explained by more liquid secondary markets for bigger ETFs and the greater likelihood of ETFs following liquid benchmarks. At any rate this risk premium difference, having hardly

[18] ETF inside-out, March 2014, Koris international.

existed at all during the financial crisis 2008-2009, has been increasing since early 2010[19].

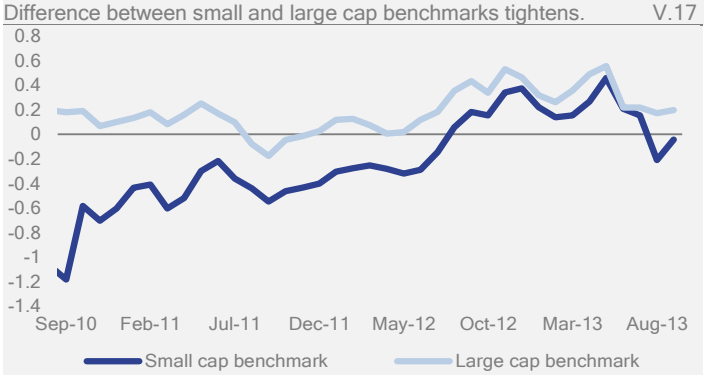
Higher risk premium for small ETFs V.16



Note: Sharpe Ratio (asset weighted) of small vs big ETF,%.
Sources: Thomson Reuters Lipper, ESMA.

However, similar evidence does not hold when we consider the benchmark in which they invest: we also find that ETFs tracking large cap benchmarks had higher risk-adjusted returns over the period analysed. Although there is no single explanation, the performance of large cap indices is generally driven by large companies (potential value effect), while small cap benchmarks may benefit from the size effect. Nevertheless, the gap between the two Sharpe ratios has been decreasing over time.

Difference between small and large cap benchmarks tightens. V.17

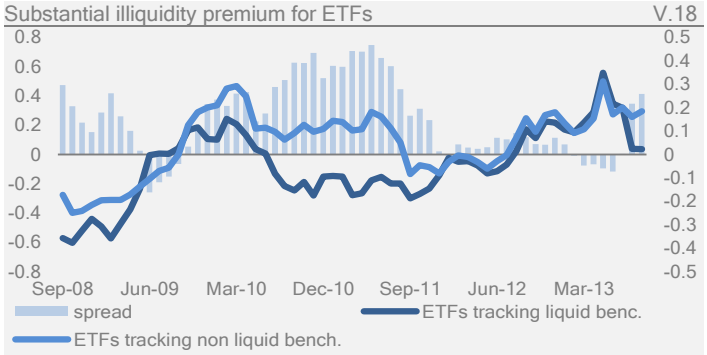


Note: Sharpe ratio (asset weighted) of ETFs tracking large vs small cap benchmarks. Data availability restricts time horizon available for sample.
Sources: Thomson Reuters Lipper, ESMA.

Finally, the liquidity of the benchmark is one of the key factors in assessing risks. In the case of a physically replicating ETF, tracking an illiquid benchmark would require the fund manager to tolerate higher tracking error and require ETF investors to carry more risks of inaccurate replication. Our findings show that for most of the period observed investors demanded a substantial "illiquidity premium"

[19] A similar result was first presented by Fama and French in 1996 with respect to the difference in stock returns of small and large companies. E. Fama and K. French, "Multifactor Explanations of Asset Pricing Anomalies", Journal of Finance, 1996, p. 55

Substantial illiquidity premium for ETFs V.18



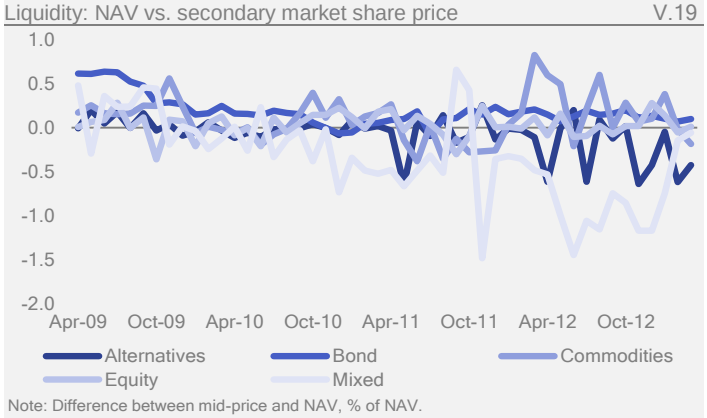
Note: Sharpe Ratio (asset weighted) of ETF tracking liquid/non liquid benchmarks,%.The analysis is based on the assuption that ETFs whose tracking error is low track liquid benchmarks. Spread between non liquid vs liquid on secondary axis.
Sources: Thomson Reuters Lipper, ESMA.

ETFs may be exposed to the liquidity risk of their underlying assets

Contrary to other index-tracking mutual funds, ETF shares are traded like stocks. On secondary markets, ETF shares can be bought continuously during the day by any market participant, including retail investors. On primary markets, only "Authorized Participants" (AP) are allowed to create or redeem shares. The AP also ensure that the value of the share traded on secondary markets does not significantly vary from its net asset value, by arbitraging ETF share prices between the primary and secondary markets. Like equities, ETFs are thus frequently considered more liquid than mutual funds, even when the underlying assets are less liquid (e.g. some EM indices, high-yield indices or commodities indices).

The arbitrage mechanism allows ETF shares to be traded close to their NAV price. But ultimately the liquidity of ETFs still depends on the liquidity of their underlying assets, which can evaporate during market stress. In the US, some ETFs have already experienced periods exhibiting noticeable spreads between primary and secondary market prices. This was notably the case for some ETFs investing in commodities which experienced discounts in the secondary market vis-à-vis their NAV price in 2013. For other reasons, we can also observe some discounted prices for mixed funds. This category in particular includes funds with a target retirement date (e.g. for investors retiring in a given year), implying long term investments that may be less suitable for investors wishing to be able to withdraw their money at any time.

Liquidity: NAV vs. secondary market share price V.19



Note: Difference between mid-price and NAV, % of NAV.
Sources: Thomson Reuters Lipper,ESMA.

Although at normal times ETFs may be considered more liquid than other funds tracking the same benchmarks,

they do not increase liquidity in the underlying market, especially not when their underlying assets become less liquid or at times of financial stress. Investing in illiquid assets thus always exposes investors to a liquidity risk, regardless of the type of vehicle they invest in (ETFs or other mutual funds). Given that we use evidence from US data, it must be noted that this risk has not yet similarly materialised in the EU market. It is also worth noting that investors in UCITS-based funds benefit from safeguards regarding liquidity issues (cf. V.20).

UCITS regime and ESMA guidelines V.20

In the EU, most ETFs and index-tracking mutual funds are UCITS. As such, they are subject to more stringent rules aimed at protecting investors. Under the UCITS Directive, funds may only invest in eligible assets, which include securities listed on a regulated market, money market instruments, deposits, selected plain vanilla derivatives or other investment funds. In addition, ESMA has issued guidelines on index-tracking UCITS and UCITS ETFs. The aim of this guidance is to improve both the risk management policies pursued by funds and the information provided to investors, including:

- Funds should be able to demonstrate that the index tracked satisfies the UCITS eligibility criteria, including that of being a benchmark for the market to which it refers.
- Counterparty collateral should be sufficiently diversified in terms of countries, markets and issuers.
- Where a UCITS enters into a total return swap or invests in other financial derivative instruments with similar characteristics, the assets held by the UCITS are subject to the same eligibility rules and investment limits.
- The prospectus of an index-tracking UCITS should include a clear description of the indices (composition, underlying assets) and information on how the index is to be tracked (physical replication, synthetic replication, tracking error, leverage, etc.), as well as the associated risks (liquidity, counterparty, etc.).

Specifically for ETFs, if the stock exchange value of the units or shares in a UCITS ETF significantly varies from its NAV, investors who have acquired these units or shares on secondary markets should be allowed to sell them back directly to the UCITS ETF. This may, for example, apply in the case of market disruption such as the absence of a market maker.

Financial innovation in ETFs could potentially be beneficial to financial stability, although there is not yet any evidence to support this

The use of ETFs employing innovative index construction methodologies is rapidly developing and has attracted growing interest among investors[20]. So-called "Smart Beta" or "alternative index" ETFs aim to allow investors more choice with respect to the risk and reward profile of their fund investments. They feature exactly the same characteristics as the other ETFs except that they track, for example, alternative versions of the usual indices, developed by index providers. These alternative indices are usually built with the same constituents (e.g. Euro Stoxx 50 stocks) but, unlike the original index, the weight of each constituent may not be based on market capitalization. In this respect Smart Beta strategies vary: a Smart Beta index can weight each component equally to reduce exposures to large companies or rebalance the portfolio according to fundamentals such as earnings, dividends and cash flow, low volatility or any other characteristic.

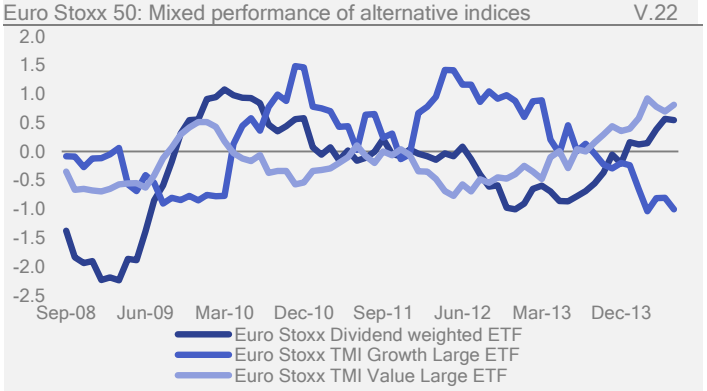
In terms of financial stability, the development of products like these could have positive implications. The possibility they offer investors to choose the risk factors they want to be exposed to could potentially lead to better global asset allocation, assuming that investors price risks adequately. Moreover, by mixing weighting schemes with different factor exposures, Smart Beta strategies could diversify risk factors and potentially smooth the performance and risks compared to the usual cap-weighted benchmarks, thus potentially also reducing risks at the aggregate level.

FTSE 100 TR: Mixed evidence on risk adjusted returns V.21

Note: Sharpe ratio (asset weighted) of one ETF tracking an index weighted by fundamental factors vs ETFs tracking the Euro Stoxx 50; %. Spread on secondary axis.
Sources: Thomson Reuters Lipper, ESMA.

In this regard, our data shows mixed results. First we compared ETFs following the FTSE 100 TR with an ETF tracking the same companies weighted by fundamental factors[21]. We found that the latter has outperformed other ETFs since 4Q12 but underperformed over the previous period (since 2Q10). Evidence during the downslide in 2009 is also mixed, although on average the Smart Beta fund exhibited a higher Sharpe ratio.

Euro Stoxx 50: Mixed performance of alternative indices V.22



Note: Sharpe ratio. Spread between Smart ETF and Euro Stoxx 50 ETF, %.
Sources: Thomson Reuters Lipper, ESMA.

Then we compared the risk-adjusted performance of funds tracking the Euro Stoxx 50 with 3 ETFs using alternative Euro Stoxx portfolio composition: one index that weights components by their indicated annual net dividend yield and two indices that select stocks according to fundamental factors[22]. However, none of these strategies consistently outperformed Euro Stoxx 50 ETFs over the period. They

[20] According to an EDHEC survey sent to institutional investors, 39% of respondents want to see further development of ETFs based on smart beta indices. EDHEC European ETF Survey 2013, March 2014, EDHEC-Risk Institute.

[21] FTSE RAFI Index Series. Index constituents are weighted using a composite of fundamental factors, including total cash dividends, free cash flow, total sales and book equity value. Prices and market values are not determinants of the index weights.

[22] Euro Stoxx TMI Style indices are designed accurately to monitor the performance of Eurozone companies with similar growth and similar value characteristics. Stocks remain weighted by market capitalisation.

performed lower during the most acute phase of the 2008-2009 crises in particular.

Although ETFs tracking non-market-cap-weighted indices and other alternative indices are promising and could have positive effects in terms of financial stability, we found no evidence in this preliminary analysis for their superiority over traditional indices. They are more complex than other index trackers, implying that only well informed investors may really be able to benefit from the possibility of accurately choosing the right risk profile for their investment and thereby contributing to better global asset allocation.

Conclusions

The EU ETF industry continues to enjoy a period of buoyant growth, with its assets expanding faster than for any other fund type, including other index trackers. The majority of EU ETFs invest in equity indices and replicate the respective benchmarks physically, by holding equivalent portfolios. With the notable exception of periods of economic downswing, ETFs yield slightly lower returns than other index trackers on a sector average while featuring higher risk measures, including VaR and return dispersions, which are not reflected by higher risk premia. Factoring in estimates for costs not occurring at the fund level reconfirms this result, while the scarcity of the cost data available highlights the fact that investments in all kinds of index trackers are exposed to uncertainty. However, the direct comparison of ETFs and other index trackers following the same benchmarks indicates that ETFs are more transparent in this respect, as higher risks are reflected in higher risk premia. With respect to uncertainties around the risk assessment of index trackers, three potential vulnerabilities are worth pointing out: 1) While ETFs tend to display risks more transparently, some caution should be exercised with regard to the higher accuracy indicated, as accuracy measures are imperfect. 2) ETF shares are generally considered more liquid than fund shares, but in economic downswings ETFs can be exposed to liquidity risks just like other funds. 3) Recent innovations in the ETF industry could potentially bring benefits in terms of financial stability, provided investors are able to price and monitor the associated risks.

Crowdfunding – Opportunities and challenges ahead

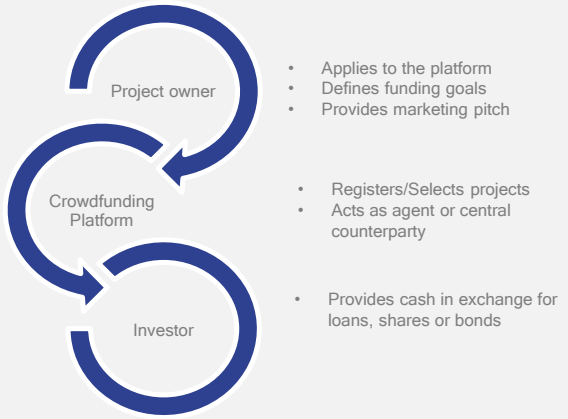
Contact: Anne Chone (anne.chone@esma.europa.eu)

Crowdfunding – commonly defined as an open call to the public to raise funds for a specific project, usually through the Internet – has received a lot of attention recently, including from policy makers, as a potential complementary source of funding for SMEs and the economy in general. Crowdfunding volumes are growing fast, albeit from a tiny base. Yet, crowdfunding is not exempt from risks and challenges, especially with regard to investor protection. While a number of countries in the EU have already adopted, or envision adopting, regulatory initiatives directed at crowdfunding, regulators recognise the need for greater regulatory and supervisory convergence, not least because use of the Internet gives crowdfunding the capacity to straddle geographical borders easily. The right balance has to be struck between the need to protect investors and the need to support a nascent funding tool, for fear of nipping in the bud a financial innovation likely to bring benefits to both project owners and investors.

Background

The novelty of crowdfunding relative to traditional forms of funding lies in two key features: (i) drawing on (relatively) small contributions from a (relatively) large number of individuals and (ii) using the Internet and social media to address the public.

How crowdfunding works V.1



Note: General description of the crowdfunding process.
Source: ESMA.

Crowdfunding can take many forms. Table V.2 provides an overview of the different types. Since donation and reward-based crowdfunding are considered to be outside the scope of financial services regulation, our analysis focuses on lending and investment crowdfunding only.[2]

Crowdfunding business models V.2

Community crowdfunding		Financial crowdfunding	
Donation	Reward (or pre-sale)	Lending - Peer-to-peer - Peer-to-business	Investment - Equity - Debt
Donor contract without material reward	Purchase contract with (often small) non-financial reward	Credit contract, credit being repaid with interest	Ownership contract, equity- or bond-like investment

Note: terms used may vary and business models may exhibit some hybrid features; as such it is difficult to establish a single classification.
Source: ESMA.

In Europe, crowdfunding is spurring growing interest from governments and policy makers as a potential alternative and complementary source of funding for SMEs and the real economy, at a time when capital has become a scarce resource in the aftermath of the financial markets crisis. In October 2013, the European Commission consulted market participants to explore how EU action could promote crowdfunding in Europe. It adopted a package of measures to stimulate long-term financing and support sustainable economic growth in the EU in March 2014.[3] Crowdfunding is part of this work plan.[4] The European Banking Authority and the European Securities and Markets Authority are working jointly to better understand how the current regulatory framework applies to crowdfunding and to foster greater convergence in the EU. In the US, the JOBS Act of April 2012 and subsequent rules, albeit still under proposal status, set an important milestone for the development of investment crowdfunding by making it easier for small businesses to raise capital while providing significant investor protection.

State of the market

Data on the state of the market remains patchy, the main reason being that crowdfunding is fairly new and largely unregulated. Crowdfunding appears to have emerged in 2006 in the UK, subsequently spreading across the US and CHN spurred by technological innovation, which basically made it viable. According to Massolution, a research and advisory firm, funds raised via crowdfunding platforms - all business models taken together, including donations and rewards - exploded in recent years, from USD 0.5bn in 2009 to USD 2.7bn in 2012.[5] Excluding donations and rewards, which together represent 51% of the total volumes raised in 2012, lending-based crowdfunding dominates at USD 1.2bn. Meanwhile, investment-based crowdfunding, represented almost exclusively by equity-based crowdfunding, remains marginal with USD 116mn raised in 2012. More recent estimates by IOSCO quote USD 6.4bn of global funding volumes since the inception of crowdfunding in 2006, for both lending and investment-

1 This article was authored by Anne Chone (ESMA).

2 Except when stated otherwise. In addition, please note the generic use of investors for both lending and investment-based models for ease of reading.

3 See http://ec.europa.eu/internal_market/finances/docs/financing-growth/long-term/140327-communication_en.pdf

4 See http://ec.europa.eu/internal_market/finances/docs/crowdfunding/140327-communication_en.pdf

5 See Massolution report '2013CF The crowdfunding industry report'

based crowdfunding.[6] The US alone accounts for about half of these volumes. CHN comes second on around 28%. In Europe, the UK takes the lion's share with around 17% of global volumes. Overall, estimates indicate that global funding volumes have been almost doubling every year since 2010. Growth in Europe, although very strong, remains subdued when compared to the pace in the US and Asia.[7]

The number of platforms offering crowdfunding services is booming as well[8], yet most of the flows are concentrated on a handful of platforms. Table V.3 lists the major players in lending and equity-based crowdfunding. Unsurprisingly, volumes raised by the largest lending-based platforms are significantly higher than for the top equity-based platforms (volumes raised through lending are around ten times higher than through equity-based crowdfunding, see above). This may be attributable to the fact that investors have become more acquainted with the former (historical reasons, as crowdfunding started with donations, rewards and loans; less complexity), and also to some extent to a lighter regulatory framework, at least in a number of countries.

Assessing the true potential of crowdfunding is a challenge. Current crowdfunding volumes remain small, if not marginal compared to other sources of funding: for example, stocks of loans to businesses from EU banks totalled EUR 5.3tn at the end of 2012;[9] the amount of venture capital invested in European private equity totalled EUR 3.4bn in 2013.[10] Yet crowdfunding volumes are growing fast. The World Bank estimates that the number of households which could participate in crowdfunding in developing economies ranges from about 240 to 344mn. Based on this assumption, the World Bank believes that by 2025 the total market could rise to USD 90-96bn of volumes raised per year.[11] Experience also suggests that crowdfunding may work for sizeable projects and not only small ones.[12]

The major players in lending and equity crowdfunding globally V.3

Company	Inception date	Volumes raised (USD mn)	Business model	Country
Lending Club	2007	2,563	Lending	USA
CreditEase	2006	1,600	Lending	CHN
Zopa	2006	618	Lending	UK
Prosper	2006	612	Lending	USA
Funding Circle	2010	251	Lending	UK
RateSetter	2010	183	Lending	UK
Auxmoney	2007	87	Lending	DE
Pret d'Union	2009	57	Lending	FR
AngelCrunch	2011	40	Equity	CHN
Crowdcube	2010	23	Equity	UK
Seedrs	2013	1	Equity	UK
Banktothefuture.com	2011	1	Equity	UK

Note: Data sourced and compiled from individual platforms, volumes are since inception.
Source: IOSCO Research Department, ESMA.

High expectations from participants

The primary benefit of crowdfunding is to provide financing to individual projects, small businesses and start-up companies that may not otherwise be able to access capital through traditional funding sources, including bank financing, financial markets and venture capital, typically because of their small size, elevated default risk and the high associated funding costs. Small businesses and companies being key engines of economic growth, crowdfunding may ultimately contribute to economic recovery and job creation. Because it entails a shorter intermediation chain (investors and project owners are directly connected through the Internet), crowdfunding may offer a cheaper source of financing to small businesses and companies (although the administrative costs associated with small contributions from a large investor base would need to be considered). In addition, it may prove a more flexible and quicker way to raise money.

On the investor front, crowdfunding is likely to broaden the opportunity set. Investors may gain access to higher yielding investments that would not otherwise be available to them or, indeed, not even exist. Higher yielding assets may prove particularly appealing at the moment, in the light of the current low yield environment. These assets may also offer diversification benefits for investors' asset portfolios.

Crowdfunding may also bring a number of non-pecuniary benefits to both project owners and investors. For example, a number of project owners are known to have received feedback on their products from the crowd, which helped them to assess demand and craft products more closely tailored to customers' needs. This potentially increases the number of successful projects.

Not risk-free

For all the benefits that it may bring to both project owners and investors, crowdfunding is not without risks and challenges. While it is unlikely to contribute to market instability or pose systemic risk issues due to the current

6 See IOSCO staff working paper SWP3/2014 'Crowd-funding: an infant industry growing fast'.

7 See Massolution report '2013CF The crowdfunding industry report'. European crowdfunding volumes for all types of crowdfunding (including donation and reward) grew by 65% in 2012, in comparison to 105% and 125% in North America and other markets respectively.

8 See Massolution report '2013CF The crowdfunding industry report'. The number of platforms jumped from 283 in 2010 to 536 in 2012 and more than 800 in 2013, all types of business models taken together.

9 See http://www.ebf-fbe.eu/publications/statistics/2013

10 See http://www.evca.eu/media/142790/2013-European-Private-Equity-Activity.pdf

11 See World Bank report 2013 'Crowdfunding's Potential for the Developing World'.

12 A sample study by Massolution shows that 6% of the funds raised on equity-based platforms were for projects that drew less than USD 10,000 of funding in total. Meanwhile, 21% of the funds raised by the same platforms were for projects that attracted USD 250,000 or more in funding. According to Agrawal, Catalini and Godfarb 2013, Eric Migicocovsky managed to raise USD 10 million from around 70,000 people in 37 days using Kickstarter in the US and a reward-based model.

low volumes at stake, it may raise investor protection concerns.

First, crowdfunding is about raising money to fund projects or companies that typically have little access to more traditional sources of financing, e.g. individual projects or start-up companies in their very early stages. These projects or companies run a high risk of failure[13], implying high credit and counterparty risks for investors. In addition, the risk may be exacerbated by the fact that investors have weak incentives to perform project due diligence because investments are small, even though some platforms may undertake some forms of due diligence themselves. It is worth noting that studies find crowdfunding participants, both fund seekers and potential investors, tend to be over-optimistic about outcomes.[14] Equally important is that the absence of a secondary market may render investments highly illiquid, not to mention the difficulty of establishing their fair value.

Second, the anonymity attached to use of the Internet may act as a powerful incentive to project owners and platforms to communicate misleading information to investors, all the more so as they are exempt from any fiduciary duty. Information asymmetry and lack of transparency are therefore key concerns. Crowdfunding could create a fertile breeding ground for fraud and money laundering, even though there is little evidence to suggest that this has been the case so far.[15]

Finally, operational risks relating to crowdfunding activities may be elevated for a number of reasons. Current data suggests that platforms tend to be operated by small entrepreneurial firms with limited resources, which may imply a looser governance framework and weaker controls. Their management may have limited financial experience or little awareness of banking and securities regulations. In addition, given their current booming volumes crowdfunding platforms will need to demonstrate that they can cope with sudden and rapid growth in their activities and that they can protect themselves from cyber-attacks as well as technical glitches.

Current regulatory framework

Different pieces of EU regulation may be relevant to crowdfunding activities. As far as investment crowdfunding is concerned, three key EU directives are likely to apply: the Markets in Financial Instruments Directive (MiFID), Prospectus Directive and possibly the Alternative Investment Funds Managers Directive (AIFMD).[16] Regulators in MS appear to be considering their approach to the regulation and supervision of crowdfunding activities carefully, for a number of reasons:

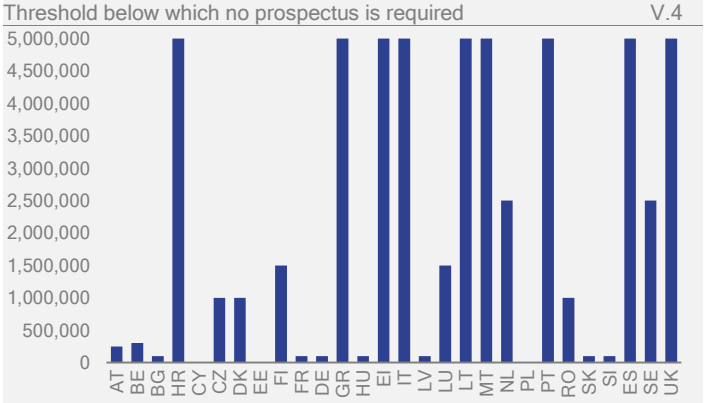
— The current regulatory framework was not designed to address crowdfunding activities, which makes it hard for regulators to qualify unequivocally and thus control crowdfunding activities. Significantly, there is no single EU-wide definition of crowdfunding activities and no consensus on the type of services that crowdfunding platforms should aim to provide.

— A number of business models, and very diverse ones at that, have seemingly been developed by crowdfunding platforms to fall outside or on the fringes of the scope of financial services regulation (e.g. through the use of instruments not deemed transferable securities).

— Exemption and national regimes may apply, for instance because the volumes involved are low or because harmonised regulation at the EU level is minimal or non-existent.

So far, regulators have dealt with crowdfunding mainly on a case by case basis, using existing EU or national regulatory frameworks, with a number of differences across the EU. By way of example, graph V.4 gives an overview of the different thresholds in place for application of the Prospectus Directive, depending on the amount on public offer. Although not exclusively applicable to crowdfunding, the graph provides an interesting illustration of the differences that may exist across the EU in terms of disclosure requirements relating to crowdfunding.

Threshold below which no prospectus is required V.4



Note: As a result of the provisions set up in the Prospectus Directive, each Member State is free to implement a national regime for offers falling between EUR100,000 and EUR5,000,000. As detailed in this table (data shown in euros), some countries apply the prospectus regime to any offer above EUR100,000 while others do not require any prospectus, unless the offer exceeds EUR5,000,000. No data for Cyprus, Estonia and Poland.
Sources: ESMA

Three regulators in the EU have taken regulatory initiatives aimed directly at crowdfunding. Although limited in number and building on the same core objectives, namely to promote more clarity, enhance investor protection and provide for a more proportionate regulatory framework for

[13] See http://www.sba.gov/sites/default/files/sbfaq.pdf. According to the Small Business Administration in the US, 30% of start-ups fail within 2 years, and 50% fail within 5 years.

[14] According to CNNMoney, 84% of Kickstarter's 50 top-funded projects missed their estimated delivery dates.

[15] See World Bank report 2013 'Crowdfunding's Potential for the Developing World'. As of June 2013, only four of the 43,193 projects funded through Kickstarter were potentially fraudulent. Another example comes from Crowdcube, the largest equity-based crowdfunding platform in the UK, operating since February 2011, with no reported fraud.

[16] Lending crowdfunding falls under the remit of the European Banking Authority (EBA) and not ESMA. As to investment crowdfunding, we realize that the Banking directive and the Payment Service directive may apply, depending on whether platforms collect client money or process payments. Again, these directives fall under EBA's remit.

crowdfunding to thrive in, their approaches vary significantly.

— IT was the first country in the EU, in 2012-2013, to implement a regulation aimed directly at crowdfunding. The regulation is limited to equity-based platforms and targets innovative start-up companies only with the aim of facilitating their financing by retail investors in a safe and reliable environment.

— Following consultation with market participants in late 2013, the UK published a new set of rules covering lending and investment crowdfunding, which took effect in April 2014. Importantly, under the new rules equity-based crowdfunding will be made available not only to sophisticated investors but also to retail backers, provided the latter are given appropriate advice or, failing that, complete an appropriateness test and confirm that they will not invest more than 10% of their net investible assets.

— FR proposes to introduce lighter prudential regimes for lending and investment-based crowdfunding under a set of pre-defined conditions. As far as investment-based crowdfunding is concerned, a new status 'Crowdfunding Investment Advisor', very similar to the existing Financial Advisor status, will basically enable crowdfunding platforms to be exempted from MiFID, provided they offer investment advisory services only and investors complete a suitability test.

As illustrated above, a number of differences do indeed become apparent upon examination of how each regulator in the EU is responding to crowdfunding. This fragmented regulatory framework does not provide an optimal environment for crowdfunding to thrive in across the EU. It is also likely to raise specific investor protection issues, not to mention cross-border aspects.

Conclusion

In many respects crowdfunding's potential and its possible contribution to helping fill the current funding gap remain a matter of speculation. By its very nature and considering the current low volumes involved, crowdfunding may well remain a niche industry. Yet it may bring significant benefits to some categories of entrepreneurs as well as to investors. Meanwhile however, it is not free from risks and challenges. Crowdfunding is one of the many illustrations of the changes that new technology and innovation can bring to financial services. Consumers and market participants expect regulators to accompany these new developments. EU regulators recognize these expectations and the need to be both protective towards investors and supportive of the crowdfunding market. Similarly, project owners and firms operating crowdfunding platforms will have to demonstrate their capability to implement sound business practices. Here again, regulators and market participants share a common interest, since crowdfunding will not flourish unless potential investors feel they are in a trusted environment. Investor education and transparency will be paramount.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