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COMMISSION STAFF WORKING DOCUMENT

European Financial Stability and Integration Report 2013

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CHAPTER 2: POLICY DEVELOPMENTS

2.1 INTRODUCTION

The interplay between the persisting fragilities of the financial sector and the pressures on governments' public finances and sovereign debt markets had become a mounting source of concern in 2011 and 2012. In order to resolve the crisis effectively and to restore the EU economy to sustainable long-term growth, the EU and Member States aimed for a coordinated approach to address both dimensions in parallel, i.e. the structural fragilities of the financial sector and the volatility of sovereign debt markets on one side, as well as underlying macroeconomic imbalances on the other side.

Concerning the former dimension, after 2012 was marked by the uncompromising commitment of the Union to the irreversibility of EMU, 2013 has further proven the capacity of the Union to act. The financial assistance programme for Cyprus has made clear that financial solidarity in the Union is effective. At the same time, moral hazard attached to such assistance needed to be addressed. Section 2.2 provides further detail on continued financial support measures in 2013 and early 2014.

Concerning the latter dimension, on 5 March 2014, the Commission published the results of its in-depth-reviews (IDRs).⁷⁸ The Commission identified excessive macro-imbalances in three Member States (Croatia, Italy and Slovenia). A need for decisive policy action was identified for another group of Member States (Ireland, Spain and France). In the case of Ireland and Spain monitoring will rely on post-programme surveillance. In the case of Greece, Cyprus, Portugal and Romania the enhanced monitoring of their imbalances and policies will continue in the context of their macroeconomic adjustment programmes. Finally, the so-called two-pack regulations had entered into force on 30 May 2013 completing the reform of economic and fiscal governance.⁷⁹

With respect to the integration and stability of the EU's financial system and its capacity to channel funds from savers to their most productive uses, the Commission in its Alert Mechanism Report 2014⁸⁰ identified the following priorities:

- (1) A (continued) restructuring and repair of banks, the swift adoption and implementation of Banking Union, an increased capacity of banks to manage risks in line with new capital requirements, with the upcoming asset quality reviews and stress tests in 2014 being important milestones on the way.

⁷⁸ COM(2014) 150 final, 5.3.2014, available at

http://ec.europa.eu/economy_finance/economic_governance/documents/2014-03-05_in-depth_reviews_communication_en.pdf

⁷⁹ Regulation (EU) No 473/2013 of the European Parliament and of the Council of 21 May 2013 on common provisions for monitoring and assessing draft budgetary plans and ensuring the correction of excessive deficit of the Member States in the euro area; Regulation (EU) No 472/2013 of the European Parliament and of the Council of 21 May 2013 on the strengthening of economic and budgetary surveillance of Member States in the euro area experiencing or threatened with serious difficulties with respect to their financial stability.

⁸⁰ COM(2013) 790 final, 13.11.2013, available at http://ec.europa.eu/europe2020/pdf/2014/amr2014_en.pdf

- (2) A need to continue to strengthen alternatives to bank financing (venture capital, SME bonds and alternative stock markets).
- (3) Close monitoring of private debt levels and associated financial risks, such as real estate bubbles, and the impact of corporate and personal insolvency regimes, where necessary. This also includes schemes creating a tax bias towards debt financing.

On the third priority, the Commission has adopted a Recommendation on a new approach to business failure, calling for more effective institutional settings for debt restructuring of viable going concerns ahead of formal insolvency proceeding as well as for a limitation of the discharge period for smaller non-financial undertakings.⁸¹

The evolution in 2013 and early 2014 of the wider financial sector reform legislative agenda, also addressing the first two priorities, is presented in section 2.3.

2.2 FINANCIAL ASSISTANCE PROGRAMMES AND FINANCIAL SUPPORT MEASURES

2.2.1 Financial assistance programmes

This subsection updates on developments with available financial assistance instruments, the evolution of programmes and the Vienna Initiative.

Available financial assistance instruments

Under the permanent **European Stability Mechanism (ESM)** (with a total authorized capital of €700bn⁸² the largest international financial institution in the world) members can access the following instruments:⁸³ ESM loans, a precautionary conditioned credit line (PCCL), an enhanced conditions credit line (ECCL), a primary market support facility, a secondary market support facility, and financial assistance for the recapitalisation of financial institutions. A direct recapitalisation of financial institutions will become available when the Single Supervisory Mechanism (SSM) is operational.⁸⁴ Furthermore, as of 1 March 2013, any granting of financial assistance under the **European Stability Mechanism** is conditional on ratification of the Treaty on Stability, Coordination and Governance (TSCG) in the Economic and Monetary Union⁸⁵ and transposition of the balanced budget rule into national legislation in due time.

Evolution of financial assistance programmes

As reflected in decisions taken in Greece in 2012 and in Cyprus in 2013, financial assistance has witnessed a shift in philosophy with private sector involvement, i.e. the bailing in of

⁸¹ C(2014) 1500 final, 12.3.2014, available at http://ec.europa.eu/justice/civil/files/c_2014_1500_en.pdf

⁸² See ESM website at <http://www.esm.europa.eu/>

⁸³ After 1 July 2013 no additional uses of instruments were foreseen under the European Financial Stability Facility (EFSF).

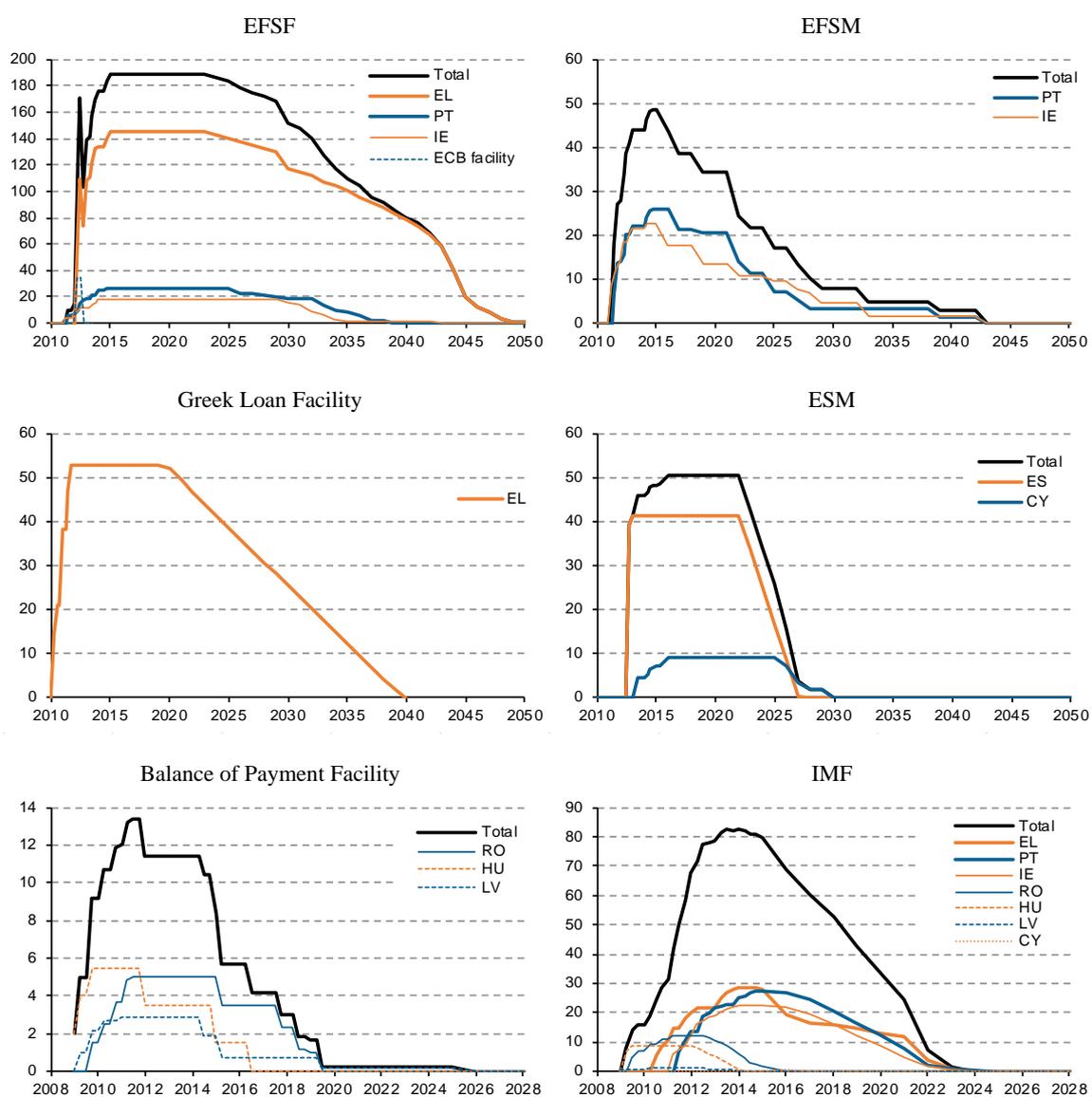
⁸⁴ 4 November 2014; see Article 34 of the SSM Regulation, COUNCIL REGULATION (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions, Official Journal of the European Union L 287/63 , 29.10.2013

⁸⁵ <http://www.eurozone.europa.eu/newsroom/news/2012/12/fiscal-compact-enters-into-force-on-1-january-2013/>

private creditors, becoming part of the restructuring of the sovereign's balance sheet. As with the bail-in rules for the resolution of financial institutions this was considered a necessary element to address moral hazard.

The programmes differed with respect to the provided loan amounts, the source of funds, the institutional set up for monitoring and the specific national problems covered in the programme conditionality. In each country, the programme addressed particular financial sector problems, in addition to fiscal and structural issues. Ireland's, Spain's and Cyprus's problems were mainly rooted in the banking sector. Accordingly, Spain and Ireland reorganised the sector, recapitalised viable banks and wound down nonviable banks, and is doing rigorous stress testing to properly value asset portfolios. Restructuring and resolution of banks has also been done in Cyprus, as well as quick and upfront deleveraging.

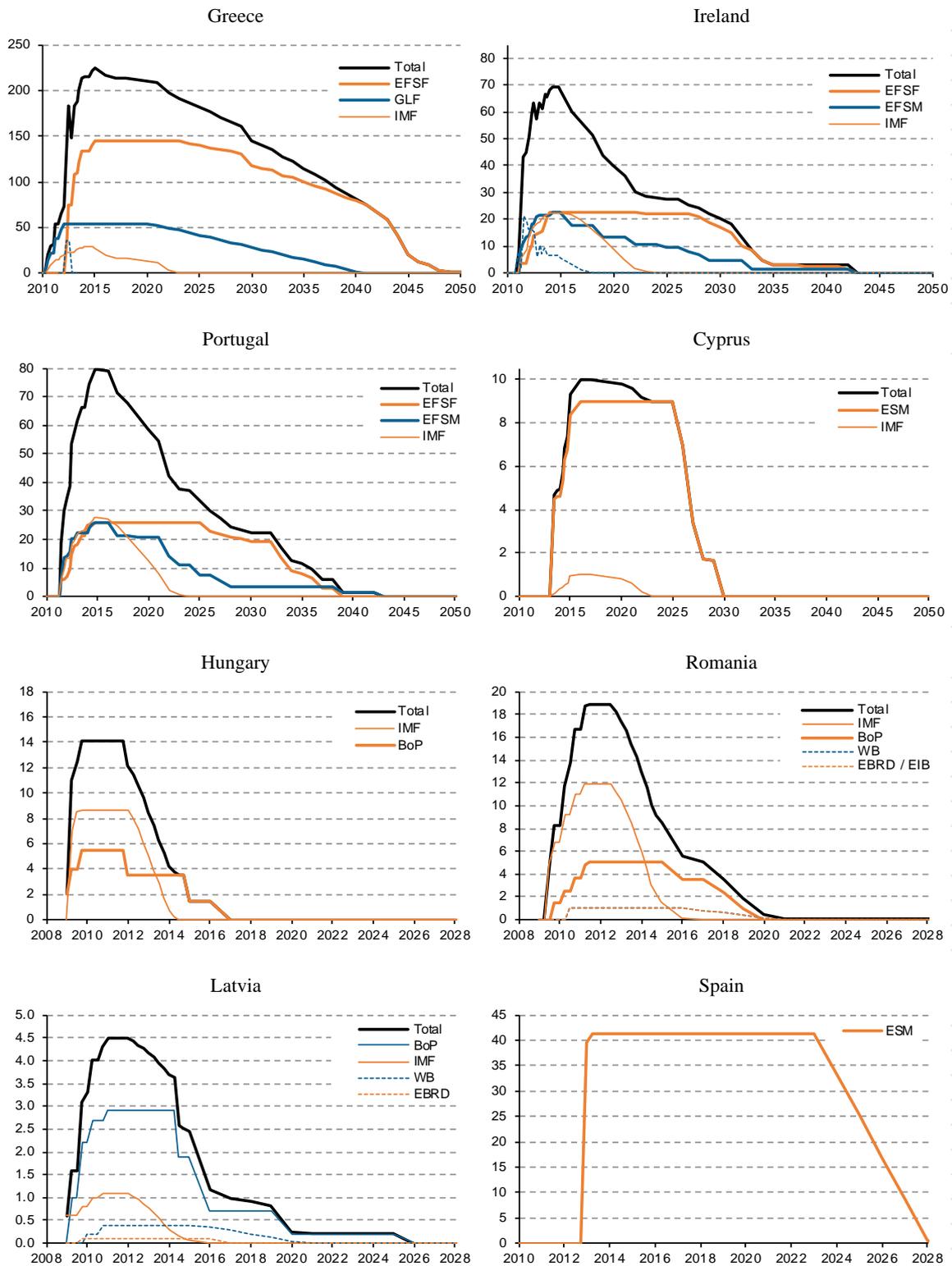
Chart 2.2.1: Net outstanding support by instrument (disbursements minus repayments), €billion



Notes: The amounts disbursed and their maturities are decided on a case by case basis following the quarterly review. As a consequence, future disbursements and their maturities are estimates based on available info in April 2014.

Source: IMF, European Commission, EFSF, ESM and own calculations.

Chart 2.2.2: Net outstanding support by beneficiary country (disbursements minus repayments), €billion



Notes: The amounts disbursed and their maturities are decided on a case by case basis following the quarterly review. As a consequence, future disbursements and their maturities are estimates based on available info in April 2014. EFSF for IE includes the bilateral contributions by UK, SE and DK.

Source: IMF, European Commission, EFSF, ESM and own calculations.

In 2013, four Member States⁸⁶ continued to benefit from financial assistance linked to a macroeconomic adjustment programme: Greece, Ireland, Portugal and Cyprus. Ireland has completed the programme in December.⁸⁷ This means Ireland has fully returned to market-based funding. Spain had received financial assistance for the recapitalisation of financial institutions between July 2012 and January 2014 (18 months).⁸⁸

Ireland and Spain remain under post-programme surveillance until at least 75% of the assistance received has been paid back.⁸⁹ The latest reviews of ongoing financial assistance programmes are published shortly after the completion of each review.⁹⁰ Portugal is expected to conclude its adjustment programme by mid-2014.

Among Member States that have not adopted the euro, only Romania continued to benefit from a financial safety net under the balance of payments (BoP) instrument until 2015.⁹¹ Hungary, having benefitted from BoP assistance between 2008 and 2010, and Latvia, having received assistance between 2009 and 2012, continued to be subject to post-programme surveillance in 2013.⁹²

Charts 2.2.1 and 2.2.2 show how the current level of financial assistance plays out across beneficiary Member States. Chart 2.2.1 shows net outstanding amounts of financial support *per instrument*, and Chart 2.2.2 displays support *per country*.

The Vienna Initiative 2.0

The European Bank Coordination Vienna Initiative,⁹³ which was created in January 2009 and renewed in March 2012, continued to bring together private and public sector stakeholders of EU cross-border banks present in the CEE region in 2013 and early 2014. Entering its sixth year, the initiative remained an important instrument for policy coordination to stabilize and manage the credit exposure to the region.

⁸⁶ Since 2008 a total of eight EU Member States have benefitted from financial assistance programmes (Hungary (BoP, 2008-2010), Latvia (BoP, 2009-2012), Romania (BoP, since 2009 with a precautionary use since 2011), Greece (GLF, EFSF, since 2010), Ireland (EFSM, EFSF, 2011-2013), Portugal (EFSM, EFSF, since 2011), Spain (July 2012 - January 2014), Cyprus (ESM, since 2013); see also

http://ec.europa.eu/economy_finance/assistance_eu_ms/index_en.htm

⁸⁷ See the press release at http://europa.eu/rapid/press-release_MEX-13-1213_en.htm

⁸⁸ See statement of Commission VP Rehn at http://europa.eu/rapid/press-release_MEMO-14-51_en.htm

⁸⁹ See Article 14 of REGULATION (EU) No 472/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2013 on the strengthening of economic and budgetary surveillance of Member States in the euro area experiencing or threatened with serious difficulties with respect to their financial stability.

⁹⁰ http://ec.europa.eu/economy_finance/assistance_eu_ms/index_en.htm

⁹¹ The latest review can be found at

http://ec.europa.eu/economy_finance/publications/occasional_paper/2013/pdf/ocp165_en.pdf

⁹² The respective post-programme surveillance reports can be found at

http://ec.europa.eu/economy_finance/eu_borrower/balance_of_payments/pdf/lv_efc_note_4th_pps_mission_en.pdf (Latvia) and http://europa.eu/rapid/press-release_MEMO-13-1136_en.htm (Hungary)

⁹³ <http://vienna-initiative.com/>

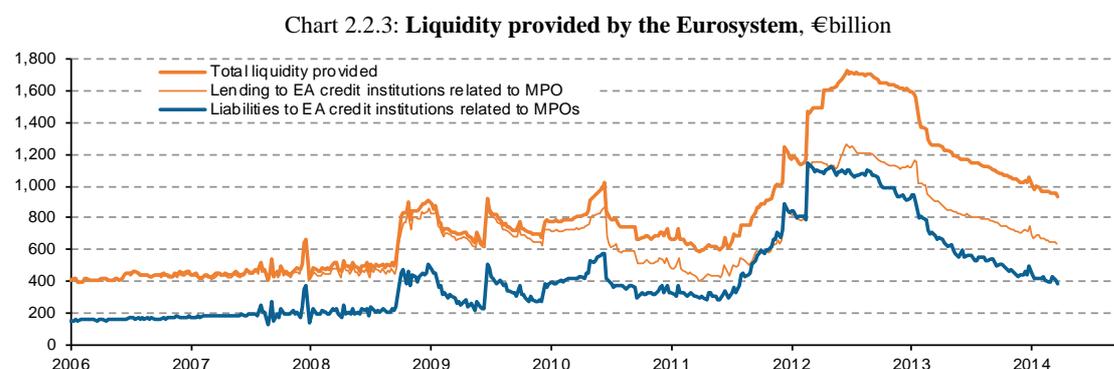
Analysing the implications of the crisis for cross-border provision of credit through branches and subsidiaries in the CEE region and mitigating its potential negative effects is the main goal of the Vienna Initiative. Market integration in the retail segment takes usually the form of cross-border ownership of banking assets. However, the loans provided by subsidiaries and branches of foreign groups to local households and non-financial corporations are computed as domestic in monetary statistics. Therefore, the series of domestic/cross-border loans fail to capture all the cross-border implications of these loans.

2.2.2 ECB financial support

This Section reviews the role the ECB continued to play over the recent period with a particular focus on how it has ensured the continuity of interbank markets.

ECB measures

With traditional bank assets having long maturities (e.g. mortgage loans), the well-functioning of the financial sector depends on the ability of banks to obtain liquidity through money markets. With the outbreak of the crisis, money markets dried up and the central bank had to step in as a lender of last resort to avoid liquidity constraints from evolving into solvency problems and, ultimately, into the collapse of the financial system. Since the outbreak of the crisis, the ECB reduced the policy rate from 4.25 percent to 0.25 percent (see Chart 1.A.2 in Chapter 1) and implemented a series of non-conventional measures, including providing as much liquidity as the banks asked for (against eligible collateral), extending the maturities of LTROs from 3 months to up to 3 years (see Chart 2.A.1 in the Annex) and purchasing bank and sovereign bonds (Chart 2.A.5 in the Annex). At its peak, total liquidity injected in the economy by the central bank reached €1,700 bn⁹⁴ (almost 20 percent of Euro area GDP) (Chart 2.2.3).



Notes: Total liquidity provided includes total lending to credit institutions related to MPOs, other claims on MFIs (this include, inter alia, ELA provided by national central banks) and securities held for monetary policy purposes (see right-hand panel); Source: ECB: Monthly bulletin and own calculations.

Source: ECB: Monthly bulletin and own calculations.

2013 was marked by early repayments of the 3-year LTROs. Banks were allowed to repay

⁹⁴ On top of open market operations, the central bank also provided liquidity to the Euro area economy through Emergency Liquidity Assistance (ELA) (see Charts 2.A.2 and 2.A.4 in the Annex) and the purchase of securities for monetary purposes (see Chart 2.A.5 in the Annex). Chapter 1, Section 1.4.4 discusses what the banks have used the liquidity for and the consequences in terms of assets encumbrance.

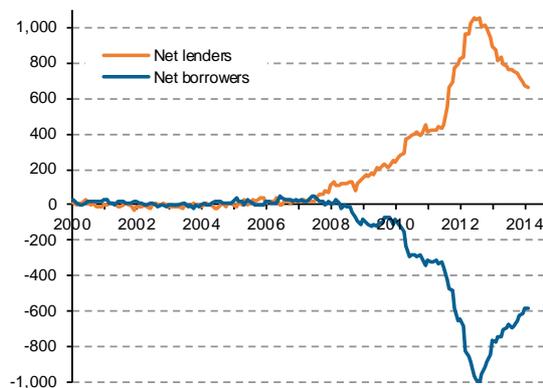
the LTROs at any time after one year had elapsed, which corresponded to January and February 2013. At that moment, banks repaid over €200 bn after which repayments continued at an average pace of €5 bn per week. While by March 2014 significant amounts had already been repaid, winding down central bank support might remain a challenge for some banks.⁹⁵

The ECB implemented two additional measures in mid-2012. First, it reduced the remuneration of the deposit facility from 0.25 percent to zero and, second, it announced the Outright Monetary Transactions (OMTs) which substituted the Securities Markets Programme (SMP). Market tensions phased out and the OMT has not yet been activated⁹⁶. However, since February 2014, the OMT is on hold waiting for a decision by the ECJ on its compliance with the Treaty⁹⁷.

The intermediation role of the ECB

This massive liquidity provided by the ECB temporarily substituted for dysfunctional interbank markets. The ECB acknowledged its intermediation role already in 2009, but insisted that it would be a temporary one⁹⁸. Indeed, the ECB became a sort of clearing house among banks as the ones that deposited excess liquidity at the central bank were different from those that were borrowing from the Eurosystem⁹⁹. The evolution of TARGET2 balances (Chart 2.2.4) indicates that the intermediation role of the ECB has declined further in 2013 since the peak in 2012¹⁰⁰.

Chart 2.2.4: **Net balance with the Eurosystem (TARGET2), lenders vs. borrowers, €billion**



Note: Net lenders: Germany, Netherlands, Luxembourg, Finland. Net borrowers: Portugal, Ireland, Greece, Italy and Spain
Source: Institute of Empirical Economic Research – Osnabrück University (www.eurocrisismonitor.com) and own calculations.

Two factors helping the reactivation of interbank markets and the reduction in the

⁹⁵ See Joint Committee of ESAs (2014), p. 10.

⁹⁶ Besides ECB measures, other significant events occurred in the second half of 2012, particularly the ESM entered into force and European financial assistance for the Spanish financial institutions. At the same time, redemptions of bank guaranteed bonds declined substantially. See Section 1.3.3.

⁹⁷ The OMT was challenged on the German Constitutional Court who referred the case to the ECJ. See for instance, Wagstyl and Jones (2014).

⁹⁸ See ECB (2009).

⁹⁹ See ECB (2012b), pp. 31-32.

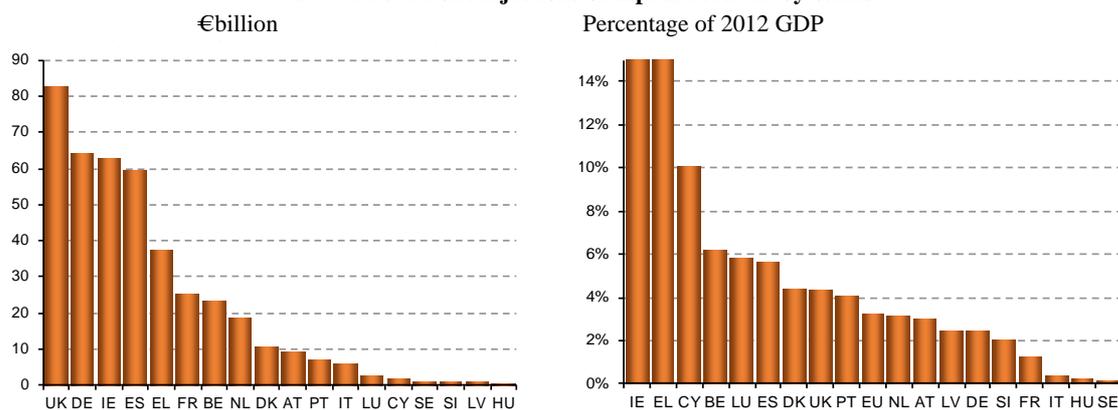
¹⁰⁰ Several authors have indicated that the TARGET2 can be used to track the intermediation role of the ECB. See, for instance Cecchetti et al. (2012), p.2.

intermediation role of the ECB were the decrease on the remuneration of the deposit facility to zero in June 2012¹⁰¹ and the repayments of the LTROs. By early 2014, the situation had significantly improved, but it had not normalised yet.

2.2.3 Public support to the financial sector

Section 1.4.1 discusses how banks increased their capital positions throughout the crisis. But this was not only obtained from private funding; governments, both in peripheral and core countries, had to bail out banks across the EU to avoid a systemic crisis and the collapse of the financial system.

Chart 2.2.5: Public injections of capital received by banks



Notes: IE: 38.4%; EL: 19.3%. The banking systems of the countries not listed have not received any public injections of capital.
Source: European Commission: State aid scoreboard 2013

Throughout the period 2008-2012, public capital injections in EU banks amounted to €13.2 bn¹⁰². Banks from the UK, Germany, Ireland and Spain received the largest injections with €60 or more each (Chart 2.2.5). In relative terms, total injections represent 3.2 per cent of the EU GDP in 2012, but they represent more than 10 per cent of the country's GDP in Ireland, Greece and Cyprus. Problems in the banking systems eroded public finance in those countries and ultimately led governments to ask for support to their partners¹⁰³. One of the goals of the Banking Union is to break the links between sovereign and banks. Once the SSM is fully operational¹⁰⁴, the European Stability Mechanism (ESM) will be able to directly capitalise problematic banks without impacting national debt and reducing the likelihood of a similar phenomenon in the future. Public capital injections were also significant (over 4 per cent of GDP) in Belgium, Luxembourg, Spain, Denmark, the UK and Portugal.

Some of the banks which received support in the early stages of the crisis have started to pay back the capital injected (notably in the Netherlands, Denmark, Germany or Italy); however, in other Member States, new injections were needed still in 2012 or 2013 (Spain, Greece,

¹⁰¹ This interpretation is consistent with Feldstein (2013).

¹⁰² Some of the public injections were implemented in the form of shares, so that there are some overlaps between the €300 bn of capital issued in the markets and the €13.2 bn of capital provided by public authorities. Available data do not allow a consolidated figure to be calculated. Latest available figures from the State aid score board correspond to 2012.

¹⁰³ See Section 2.2.1.

¹⁰⁴ See Section 2.3.

Portugal, Belgium or France, among others).

From a national accounting perspective, public capital injections are recorded as an asset when they can be considered as an investment with a value that is expected to be recovered and as public deficit when the capital injection is considered a loss. According to Eurostat data (Table 2.2.1), as of 2013, up to €53 bn were considered deficit increasing capital injections and additional €82 bn were considered an investment¹⁰⁵. Deficit-increasing capital injections concentrate in Spain (€49 bn), Ireland (€43 bn) and the UK (€16 bn). Capital injections accounted as investments were recorded mainly in the UK (€48 bn average for the period 2008-2013), the Netherlands (€31 bn), Germany (€27 bn) and Belgium (€18 bn). While some countries have recovered part of their investments, government participation remains significant in a number of Member States.

Table 2.2.1: **Effect of public interventions on public accounts, €million**
Capital injections recorded as deficit-increasing (capital transfer)

Country	2007	2008	2009	2010	2011	2012	2013	Total
Germany	0	1,100	3,817	1,400	500	0	0	6,817
France	0	0	0	0	x	2,585	0	2,585
Spain	0	0	0	0	5,137	39,068	4,661	48,866
Italy	0	x	x	x	x	x	x	0
Greece	0	0	0	0	395	265	14,383	15,043
Ireland	0	M	4,000	31,575	7,121	280	280	43,256
Netherlands	0	0	2,160	928	0	0	0	3,088
Belgium	0	0	0	0	121	2,915	0	3,036
Total EA8	0	1,100	9,977	33,903	13,274	45,113	19,324	122,691
Other EA countries	0	0	120	1,706	1,543	3,732	6,485	13,586
Total EA17	0	1,100	10,097	35,609	14,817	48,845	25,809	136,277
UK	0	3,099	12,727	0	0	0	0	15,826
Other non-EA countries	0	0	203	206	377	100	36	922
Total EU28	0	4,199	23,027	35,815	15,194	48,945	25,845	153,025

Assets: shares and other equity in financial institutions

Country	2007	2008	2009	2010	2011	2012	2013	Average
Germany	0	11,200	37,883	40,033	26,866	25,243	23,617	27,474
France	0	323	3,451	1,463	0	0	0	873
Spain	0	0	0	8,697	9,294	8,552	5,933	5,413
Italy	0	0	4,050	4,050	2,600	2,600	4,071	2,895
Greece	0	0	214	142	485	6,693	29,503	6,173
Ireland	0	M	-2,357	-243	-1,747	63	-187	-894
Netherlands	0	37,090	31,815	31,845	28,345	27,579	29,029	30,951
Belgium	0	16,400	20,064	18,656	19,539	17,552	15,079	17,882
Total EA8	0	65,013	95,120	104,643	85,382	88,282	107,045	90,914
Other EA countries	0	4,236	10,268	11,984	11,960	13,014	10,721	10,364
Total EA17	0	69,249	105,388	116,627	97,342	101,295	117,765	101,278
UK	0	13,069	51,357	67,028	35,421	57,329	63,798	48,000
Other non-EA countries	150	211	2,127	2,424	1,824	2,244	240	1,512
Total EU28	150	82,529	158,872	186,079	134,587	160,868	181,803	150,790

Source: Eurostat: supplementary tables for the financial crisis and own calculations.

Besides capital injections, governments also supported the financial system by guaranteeing their bond issuance. Government guarantees provided by EU Member States to bank liabilities peaked at €35 bn (7.1 percent of EU GDP) in 2009 and it has since then declined by half (€92 bn by December 2012) due to bonds reaching maturity and not being rolled over with a new guarantee. However, countries like Belgium, Spain, Italy and Portugal still issued new guarantees in 2012¹⁰⁶.

¹⁰⁵ The investment figure increases due to new capital injections and decreased upon reimbursements by banks or upon divestments by public authorities.

¹⁰⁶ See European Commission (2014).

2.3 REFORM OF THE FINANCIAL SECTOR

The structural sources of vulnerability of the financial sector leading to the outbreak of the financial crisis in 2008 are well known. The general environment of ample liquidity and the related low interest conditions which prevailed globally encouraged excessive risk-taking. This excessive risk-taking was possible because, in turn: to put risk-taking off balance-sheets therefore also increasing leverage was possible; there was an inadequate management of maturity transformation and thus of the understanding of liquidity risks; there was financial innovation; and, remuneration and incentive schemes within financial institutions rewarded short-term expansion of the volume of trades rather than the long-term profitability of investments.

Risk became mispriced, and who ultimately held the risk unknown, creating uncertainty on the credit quality of counterparties. And these pressures were not managed from the regulatory and supervisory side.

These sources of vulnerability have been consistently identified¹⁰⁷ and, five years along the way, the EU has either proposed or approved all the building blocks in order to achieve resilient, efficient and integrated financial markets with a high level of consumer and investor protection, in line with the commitments taken by the G20, and with a view to improve the Single Market in financial services.

Between the publication of last year's EFSIR and today, the legislative agenda has advanced significantly¹⁰⁸ as follows:

2.3.1 Creating a banking union to strengthen the euro

The Banking Union is a vital part of a deep and genuine Economic and Monetary Union (EMU). It is instrumental for the EU and, in particular, the euro area, where the banking sector plays a central role in financing the real economy. In September 2012 The Commission adopted a communication laying down the roadmap to a fully-fledged Banking Union¹⁰⁹ which accompanied the proposal for a **Single Supervisory Mechanism (SSM)**¹¹⁰:

The objectives of the Banking Union are: to increase financial stability while minimizing costs to taxpayers, complete the EMU, restore confidence in the financial sector and reduce market fragmentation, and ultimately contributing to economic recovery. The Banking Union will achieve these objectives by (i) generating a higher quality of financial integration and thereby reverse the fragmentation of the internal market; (ii) ensuring the impartial application of high and common standards of prudential supervision and for the resolution of banks, and (iii) help ensuring the smooth transmission of monetary policy and breaking the

¹⁰⁷ COM(2009) 114 and COM(2010) 301.

¹⁰⁸ A regularly updated leaflet on the state of play of the Commission's financial regulatory agenda can be found at: http://ec.europa.eu/internal_market/publications/docs/financial-reform-for-growth_en.pdf

¹⁰⁹ COM(2012) 510.

¹¹⁰ Regulations (EU) No 1024/2013 and No 1022/2013.

link between sovereign and bank debt, sparing bail outs with public money; reinforcing financial stability and restoring confidence in the sector, fostering recovery.

The SSM Regulation¹¹¹, which entered into force in November 2013, applies to all euro-area Member States and is open to the participation of other Member States who wish to embark on a path of deeper integration for supervision.

While the ECB will be responsible for the supervision of the whole banking system, i.e. around 6000 banks in the euro area, a division of tasks between the ECB and the national supervisory authorities will ensure practicable and efficient day-to-day supervision. The ECB will directly supervise around 128 significant banks and national supervisory authorities will remain in charge, under the guidance of the ECB to ensure the coherent and consistent application of the Single rulebook in participating Member States, of the supervision of non-significant banks.

To date, the other main building blocks of the Banking Union are in place: the **proposal for a framework for the recovery and resolution of credit institutions and investment firms**¹¹² (BRRD) was agreed by the co-legislators in December 2013 and the final vote took place in Parliament in April 2014, and the single rulebook in the form of Capital Requirements, the so called "**CRD IV package**"¹¹³, as explained earlier, applies as of 1 January 2014.

The **Single Resolution Mechanism** (SRM) complements the SSM. It was proposed by the Commission in July 2013¹¹⁴ and a political agreement between co-legislators was reached in March¹¹⁵ with the final vote in Parliament held in April 2014. The SRM will ensure that resolution decisions in the participating Member States are taken in a coherent and centralised manner. A **Single Resolution Board** will be set up, as an EU agency. Upon information from the ECB, in its capacity as a Single Supervisor, or on its own initiative after having previously consulted the ECB, the Board will propose a resolution scheme to restructure or liquidate in an orderly fashion failing or likely to fail banks.

The SRM will ensure that – notwithstanding stronger supervision - if a bank subject to the Single Supervisory Mechanism faces serious difficulties, its resolution, in particular in cross-border cases, can be managed efficiently with minimal costs to taxpayers and the real economy. The agreement reflects the division of tasks under the SSM. The Board will be directly responsible for the resolution planning and the resolution of banks directly supervised by the ECB and cross-border groups, while the national resolution authorities will be responsible for all other entities except where the resolution scheme foresees the use of the Single Resolution Fund.

¹¹¹ Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions, OJ L 287/63

¹¹² COM(2012) 280.

¹¹³ Directive 2013/36/EU and Regulation (EU) No 575/2013.

¹¹⁴ http://ec.europa.eu/internal_market/finances/banking-union/index_en.htm

¹¹⁵ <http://www.europarl.europa.eu/news/en/news-room/content/20140319IPR39310/html/Parliament-negotiators-rescue-seriously-damaged-bank-resolution-system>

Under the SRM, a failing bank would first be required to raise resources privately, including in capital markets. As a second step, it would be required to participate in resolution by converting or writing down its debt or equity. Only in case burden sharing by shareholders and creditors were insufficient, would a bank be able to take recourse to funding from the **Single Resolution Fund**. This Single Resolution Fund will be funded through bank contributions, including through those collected ex-post when the resources in the Fund are insufficient. In such a manner, it will be ensured that EU taxpayers do no longer pay the bill for the resolution of banks.

The core functioning of the SRM will be governed by the SRM Regulation. An accompanying intergovernmental agreement will govern certain elements of the Single Resolution Fund, such as the transfer of bank contributions to the fund and progressive mutualisation of national compartments into the single Fund. Member States outside the euro zone which join the SSM will also join the SRM.

2.3.2 Building new rules for the global financial system

The G-20 has been instrumental in establishing the core elements of a new global financial regulatory framework, and the European Union has delivered on its G-20 commitments by having proposed or adopted the legislation linked to those commitments:

Legislation entered into force

The EU Regulation on **Credit Rating Agencies (CRAs)** is in force since 20 June 2013¹¹⁶. The Regulation ensures that the deficiencies that became evident during the crisis regarding CRAs and which related to failures in their integrity (mainly in relation to conflicts of interest), unsatisfactory quality of methodologies and ratings and the lack of transparency of the CRAs are tackled. The lack of effective supervision and enforcement which accentuated these deficiencies is also addressed.

The CRD IV package, which implements – via a Regulation and a Directive – the new global standards on bank capital (commonly known as the Basel III agreement) into the existing Union law applies since 1 January 2014, and tackles some of the vulnerabilities shown by the European banking institutions during the crisis:

a) Management of liquidity risk: existing bank liquidity risk management approaches, including liquidity stress tests, and supervisory regimes were shown to be inadequate in fully grasping risks inherent to the underlying market practices, such as originate-to-distribute securitization, use of complex derivative instruments and reliance on wholesale funding with short-term maturity instruments;

b) Eligibility of capital instruments and application of regulatory adjustments: The EU banking system entered the crisis with capital of insufficient amount and quality. Mounting losses forced banks to rebuild their capital bases at the time when it was most difficult to do so, in turn, necessitating governments to provide support to the banking sector in many

¹¹⁶ Regulation (EU) No 462/2013

countries and on a massive scale and contributing to the onset of economic downturn. The crisis has shown that certain capital instruments did not meet the expectations of markets and regulators with regard to their loss absorption, permanence and flexibility of payments capacity on a going-concern basis. This in particular pertains to hybrid capital instruments and certain types of non-hybrid instruments that make part of banks' Tier 1 capital;

c) Counterparty credit risk: The crisis revealed a number of shortcomings in the current regulatory treatment of counterparty credit risk (CCR) exposures arising from derivatives, repos and securities financing activities;

d) Pro-cyclicality of lending: pro-cyclical effects can be defined as those which tend to follow the direction of and amplify an economic cycle. In this regard, bank lending also can contribute to amplification of business fluctuations, which in turn may exacerbate financial instability;

e) Options, discretions and minimum harmonisation: a diverging application of the CRD would undermine the reform of the EU supervisory architecture and, therefore, may impair effectiveness and efficiency of supervision. Different application of legislation in different MS is in addition particularly burdensome for firms operating cross-border.

The Single Rulebook in banking regulation also comprises the binding technical standards (BTS) which are developed by the European Banking Authority, adopted by the European Commission and applied directly in all Member States.

Political agreement found but no formal adoption

In January 2014 political agreement between co-legislators was reached on the revision of the **Markets in Financial Instruments Directive (MiFID II)**¹¹⁷, and the final vote took place in Parliament in April 2014. The problems it aims to solve are: a) lack of a level playing field between markets and market participants as new players and new trading techniques developed; b) difficulties for SMEs to access financial markets; c) lack of sufficient transparency of the financial markets for market participants; d) lack of sufficient information and powers for national regulators regarding financial markets and intermediaries and inconsistent supervisory practice; e) existence of areas in which investor protection revealed deficiencies; and f) weaknesses in some areas of the organisation, processes, risk control and assessment of some market participants.

The MiFID II reform means that organised trading of financial instruments must shift to multilateral and well-regulated trading platforms. Strict transparency rules will ensure that dark trading of shares and other equity instruments which undermine efficient and fair price formation will no longer be allowed. MiFID II represents an important step in the right direction towards greater transparency in this area.

¹¹⁷ COM(2011) 656, COM(2011) 652

In addition, and in fulfilment of Europe's G-20 commitments, the introduction of a trading obligation for derivatives will complement the compulsory clearing requirements under the European Markets Infrastructure Regulation¹¹⁸.

By introducing a harmonised EU system setting limits on the positions held in commodity derivatives, MIFID II will additionally contribute to orderly pricing and the prevention of market abuse, thus curbing speculation on commodities.

The establishment of a harmonised EU framework for non-discriminatory access to trading venues and central counterparties, as well as to benchmarks for trading and clearing purposes will lead to improved competition. Investment firms will have to meet stricter standards to ensure that investors can trust that they are being offered products which are suitable to them and that their assets are well protected.

The new rules ensure safe and orderly markets and financial stability through the introduction of trading controls, an appropriate liquidity provision obligation for high-frequency traders pursuing market-making strategies and by regulating the provision of direct electronic market access. MiFID will, finally, allow keeping pace with technological developments.

MiFID II has an explicit link to several key elements of the **Market Abuse Regulation (MAR)**¹¹⁹ and the **Criminal Sanctions Market Abuse Directive (CSMAD)**¹²⁰, the revision of which was agreed politically between co-legislators in early 2014¹²¹. After publication of the Directive in the Official Journal Member States will have two years to transpose the Directive in national law.

Adopted in early 2003, the first Market Abuse Directive (MAD) introduced a comprehensive framework to tackle insider dealing and market manipulation practices, jointly referred to as "market abuse". The Directive aimed at increasing investor confidence and market integrity by prohibiting those who possess inside information from trading in related financial instruments, and by prohibiting the manipulation of markets through practices such as spreading false information or rumours and conducting trades which secure prices at abnormal levels.

The MAD introduced therefore a framework to harmonise core concepts and rules on market abuse and strengthen cooperation between regulators. However, a number of problems remaining were identified by the Commission services: a) gaps in regulation of new markets, platforms and over the counter trading in financial instruments, b) gaps in regulation of commodities and commodity derivatives, c) impossibility of regulators to effectively enforce the legislation, d) lack of legal certainty, and e) administrative burdens, especially for SMEs.

¹¹⁸ Regulation (EU) No 648/2012

¹¹⁹ COM (2011) 651

¹²⁰ COM(2011) 654

¹²¹ http://europa.eu/rapid/press-release_MEMO-13-773_en.htm?locale=en and http://europa.eu/rapid/press-release_MEMO-14-77_en.htm?locale=en

With the revision there will be common EU definitions of market abuse offences and a common set of criminal sanctions; legal persons will be held liable for market abuses. In addition, the rules are extended to capture abuse on the electronic trading platforms that have proliferated in recent years. Abusive strategies through high frequency trading will be clearly prohibited. Those who manipulate benchmarks such as LIBOR will have committed market abuse and face fines or imprisonment. Market abuse occurring across both commodity and related derivative markets will be prohibited, and cooperation between financial and commodity regulators will be reinforced. Regulators generally will have reinforced investigative and sanctioning powers. The disclosure requirements for issuers on SME markets will however be adapted to their needs, and issuers on such markets will be subject to tailored rules for the requirement to draw up lists of insiders.

In December 2013 there was political agreement between co-legislators with the final vote in Parliament held in April 2014 on the revised Directive on **deposit guarantee schemes**¹²². The Directive tackles: a) differences in the level and scope of coverage of DGS, b) inadequate payout procedures (delays and modalities and set-off arrangements), c) insufficient depositor information, d) inappropriate financing of DGS, e) limited mandates of DGS and, f) fragmentation and limited cross-border cooperation between DGS.

The existing systems of national DGS are therefore reinforced: savings will be better and more uniformly protected across the EU; depositors will continue to benefit from a guaranteed coverage of €100 000 if a bank cannot honour its obligations towards depositors, but access to the guaranteed amount will be easier and faster. Repayment deadlines will be gradually reduced from the current 4 weeks to 7 working days in 2024.

Political agreement between co-legislators was found in December 2013 and the final vote in Parliament took place in April 2014 on the new Directive establishing a framework for the **recovery and resolution of credit institutions and investment firms (BRRD)** – a fundamental step towards the completion of the Banking Union:

The financial crisis revealed that neither banks nor supervisors and other authorities had the sufficient tools to handle the failure of banks. Contingency planning for de-risking banking operations and resolving failing banks were not in place. Supervisors discovered problems within banks at too late a stage. Highly complex operations and business structures, a high level of interconnectedness between banks, and the size of banks impeded resolution or liquidation. There was no legislation at EU level governing the entire process of bank resolution and setting out how and under which conditions authorities should act in the event of a crisis arising in a bank. Moreover, financial supervisors and other (resolution) authorities concentrated only on the operations within their respective territories. .

During the financial crisis the lack of bank-specific resolution tools left authorities with no choice other than to intervene with public funds. This cost significant amount of taxpayers' money and in some cases even put the whole country at the risk of default.

¹²² COM(2010)368

With the BRRD banks in all Member States will be subject to harmonised provisions governing how resolution is carried out and how it is financed. The new rules provide authorities with the means to intervene decisively both before problems occur and early on in the process if they do. If, despite these preventive measures, the financial situation of a bank deteriorates beyond repair, the new law ensures that private stakeholders of banks have to pay their share – starting with bank shareholders and creditors, and backed by financial support from resolution funds financed by the banking sector itself and not taxpayers. Deposits under EUR 100.000 will be entirely exempt from any loss, and deposits of natural persons and SMEs above EUR100.000 will benefit from a preferential treatment.

The Directive should in principle enter into force on 1 January 2015 and the bail-in system is to take effect on 1 January 2016. The Single Resolution Mechanism¹²³, once in place, will be the authority applying these new rules in the context of the Banking Union.

Finally, subsequent to the consultation launched by the Green Paper on shadow banking published in March 2012¹²⁴, the Commission presented in September 2013 a Communication setting out the issues at stake in relation to the **shadow banking** system and the measures already taken to deal with the risks related to it such as the rules governing hedge fund activity and reinforcing the relationship between banks and unregulated actors (the provisions related to securitisation exposures in the revised Capital Requirements legislation). The Commission will continue to closely follow any future Financial Stability Board's and G-20 recommendations to address the risks stemming from shadow banking.

The Communication was accompanied by a proposal for a **framework for money market funds** (MMFs)¹²⁵ that are domiciled or sold in Europe, and aims at improving their liquidity profile and stability:

MMFs are used by investors to place their cash for short periods of time. They represent a convenient tool for investors because they offer features analogous to bank deposits: instantaneous access to liquidity and stability of value. However, when investors perceive that there is a risk that the MMFs may fail to live up to these promises, they will start to redeem, possibly leading to a so-called "run" which can lead to financial stability risks and raise investor protection concerns.

With the proposal, liquidity shock absorbers are out in place by introducing daily and weekly thresholds of maturing assets (10% daily, 20% weekly).in order to allow the MMFs to repay investors who want to withdraw funds at short notice. Diversification standards will cap exposures to a single issuer. In addition, the proposal proposes a solvency shock buffer to remedy the dependence of constant NAV MMFs, that is investment funds where each share invested can be redeemed at a stable price, on discretionary sponsor support. This buffer will serve to absorb differences between the stable NAV per share and the real NAV per share.

¹²³ Please see the subsection on creating a banking union to strengthen the euro.

¹²⁴ COM (2012) 102

¹²⁵ COM/2013/615

The last measure in the area of shadow banking, and with the objective of preventing banks from attempting to circumvent these rules by shifting parts of their activities to the less-regulated shadow banking sector, the Commission adopted in January 2014 a proposal for a **Regulation on reporting and transparency of securities financing transactions**¹²⁶.

The proposal provides a set of measures aiming to enhance regulators' and investors' understanding of securities financing transactions (SFTs). These transactions have been a source of contagion, leverage and pro cyclical behaviour during the financial crisis and they have been identified in the Commission's Communication on Shadow Banking as needing better monitoring.

The proposal requires, in particular, that all transactions are reported to a central database, and the proposal introduces detailed reporting requirements to investors on the practices of investment funds engaged in SFTs and other equivalent financing structures on those operations. In order to improve the transparency of the re-hypothecation of financial instruments, the proposal foresees the setting of minimum conditions to be met by the parties involved, including written agreement and prior consent.

2.3.3 Establishing a safe, responsible and growth-enhancing financial sector in Europe

Legislation entered into force

The revised **transparency and accounting Directives** are in force since November 2013 and July 2013, respectively.

With the revised **Transparency Directive**¹²⁷ listed companies, including small and medium-sized issuers, will no longer be obliged to publish quarterly financial information, which will contribute to less administrative burden and should help discouraging short-termism on financial markets.

The revised Transparency Directive will prevent investors from building up hidden ownership; investors will now need to notify all financial instruments that have the same economic effect as holdings of shares.

The Directive equally ensures that the disclosure requirements for the extractive and forestry industries agreed in the Accounting Directive apply to all companies of those sectors that are listed in the EU.

As for the **Accounting Directive**¹²⁸ it simplifies the preparation of financial statements for small companies. It also introduces the obligation for each Member State to distinguish small companies from larger ones and limits the amount of information to be provided by small companies in the notes to the financial statements, even though they remain entitled to provide more information or statements on a voluntary basis.

¹²⁶ COM(2014) 40

¹²⁷ Directive 2013/50/EU OJ L 294, 06/11/2013, p. 13–27

¹²⁸ Directive 2013/34/EU, OJ L 182, 29/06/2013, p. 19–76

Finally, the Directive requires that in cases where there is a single filing system, the information be similar to the tax returns, and provides no EU requirement for small companies to have an audit.

The new framework on **Venture Capital Funds**¹²⁹ and **Social Entrepreneurship Funds**¹³⁰ applies since July 2013.

The proposal for a Regulation on European Venture Capital Funds makes it easier for venture capitalists to raise funds across Europe for the benefit of start-ups. The approach is the following: once a set of requirements is met, all qualifying fund managers can raise capital under the designation "European Venture Capital Fund" across the EU. By introducing a single rulebook, venture capital funds will have the potential to attract more capital commitments and become bigger.

The proposal for a Regulation on European Social Entrepreneurship Funds lays the foundations for a European market for social investment funds. It introduces a new "European Social Entrepreneurship Funds" label so investors can easily identify funds that focus on investing in European social businesses. The approach is similar to the Venture Capital proposal: once the requirements defined in the proposal are met, managers of social investment funds will be able to market their funds across the whole of Europe. Uniform rules on disclosure will ensure that investors get clear and effective information on these investments.

The **Directive on credit agreements relating to residential property** (also known as **Mortgage Credit Directive – MCD**)¹³¹, entered into force in March 2014. Once transposed into national legislation after 24 months it will increase consumer protection and foster responsible lending.

With the entry into force of the new MCD lenders will have to provide consumers with a standardised information sheet (ESIS), allowing them to shop around to identify the right product for them. Borrowers will also benefit from a guaranteed period of time before being bound by an agreement for a mortgage and will enjoy a general right to repay their loans early.

To ensure that borrowers can meet their credit obligations, the MCD will introduce Europe-wide standards for assessing the credit worthiness of mortgage applicants and will encourage lenders through high-level principles to apply reasonable forbearance when being confronted with consumers in serious payment difficulties.

The Directive will improve business conduct rules: lenders and credit intermediaries will be obliged to respect high-level principles in their direct contacts with clients: staff will have to have the appropriate knowledge and will be obliged to provide adequate explanation at the pre-contractual stage. There will also be standards for advisory services.

¹²⁹ Regulation (EU) No 345/2013

¹³⁰ Regulation (EU) No 346/2013

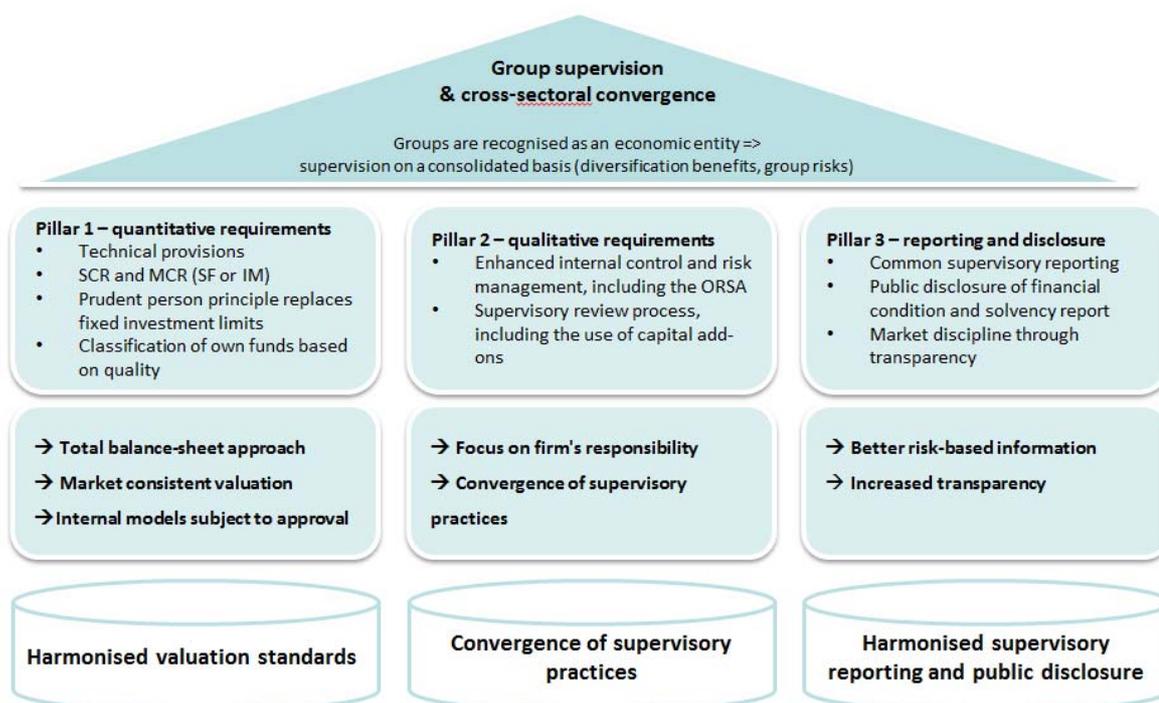
¹³¹ Directive 2014/17/EU

Lastly, the Directive establishes principles for the authorisation and registration of credit intermediaries and establishes a passport regime for those intermediaries.

Political agreement found but no formal adoption

Political agreement between co-legislators was found in November 2013 regarding **Omnibus II** (which will amend Solvency II), and the final Parliament vote took place in March, thus adopting a modern and risk-based solvency regime for the insurance industry in Europe to be in place as of 1 January 2016.

Chart 2.3.1 **The new EU regulatory framework for insurance undertakings**



Source: Commission services

The previous regime was not risk sensitive; it did not ensure the removal of all restrictions preventing the proper functioning of the single market; it did not properly deal with group supervision; and it has been superseded by industry, international and cross-sectoral developments.

Omnibus II¹³² contains important provisions that should allow the insurance industry to continue offering long term guaranteed products (typically life insurance policies being paid out in a lump sum when the policy holder reaches a certain age or in the form of annuities). This policy is an essential part of retirement planning for citizens in many Member States.

¹³² Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directives 2003/71/EC and 2009/138/EC in respect of the powers of the European Insurance and Occupational Pensions Authority and the European Securities and Markets Authority, COM (2011) 0008

Moreover, it will ensure that insurance companies in general and life assurance companies in particular can match these long-term liabilities with investments in long-term assets such as infrastructure projects.

The agreement also contains measures to alleviate the burden for small and medium-sized insurers in the area of reporting.

Finally, it confirms the powers of the European Insurance and Occupational Pensions Authority (EIOPA) which will now be able to ensure coherence of national supervisory practices and contribute to a single rule book on insurance supervision.

In February 2014 political agreement was achieved between co-legislators and the final vote in Parliament took place in April for the **revision of the Directive on undertakings for collective investment in transferable securities (UCITS)**¹³³, the so called "UCITS V", which modifies the 2009 Directive as regards depositary functions, remuneration policies and sanctions.

The revision strengthens the rules on eligible entities that can act as a depositary: only national central banks, credit institutions and regulated firms with sufficient capital and adequate infrastructure will be eligible as UCITS depositaries and will hold for safe-keeping all UCITS assets. It ensures that UCITS assets will be protected in the event of insolvency of the depositary through clear segregation rules and safeguards provided by the insolvency law of the Member States. It strengthens the liability of depositaries who will be liable for any loss of UCITS assets held in custody. Additionally, UCITS investors will always have the right of redress directly against the depositary and will not have to rely on the management company's ability to accomplish this task. Remuneration policies for all risk takers involved in managing UCITS funds, in line with those in the Alternative Investment Fund Managers Directive, have been introduced so that remuneration practices do not encourage excessive risk-taking but promote sound and effective risk management. The transparency of the remuneration practices has also been enhanced. Finally, the regime to ensure effective and harmonised administrative sanctions has been harmonised and strengthened. The use of criminal sanctions is framed so as to ensure the cooperation between authorities and the transparency of sanctions.

Political agreement on the Regulation on central securities depositories (CSD)¹³⁴ with the final vote in Parliament held in April 2014 completes the regulatory framework for securities market infrastructures by increasing safety in the financial system, opening the market for CSD services and improving the efficiency of securities settlement.

The Regulation aims to eliminate differences between domestic and cross-border securities settlements, enhance the safety and efficiency of the cross-border settlement and facilitate easier access to the depositories for the issuers, investors and depositories themselves.

¹³³ COM(2012) 350

¹³⁴ COM(2012) 73

The Regulation also ensures equal level playing field across the EU which should increase the overall market transparency and facilitate the movement of capital. It creates a common authorization, supervision and regulatory framework for CSDs and improves the securities settlement process by introducing the dematerialization requirement, harmonizing the settlement period and determining the settlement discipline measures.

Following a Commission proposal in April 2013 of a revision of the Directive on the **disclosure of non-financial and diversity information** by certain large companies and groups¹³⁵ agreement has been reached between the co-legislators with the final vote in Parliament held in April 2014 on the proposal.

Large companies with more than 500 employees will be required to disclose relevant environmental and social information in their annual reports. The approach taken ensures administrative burdens are kept to a minimum. Concise information which is necessary for understanding a company's development, performance or position would be made available rather than a fully-fledged and detailed "sustainability" report.

The Directive equally leaves flexibility for companies to disclose relevant information in the way that they consider most useful. Companies may use international or national guidelines which they consider appropriate (for instance, the UN Global Compact, ISO 26000, etc).

As regards transparency on boardroom diversity, large listed companies would be required to provide information on their diversity policy, covering age, gender, geographical diversity, and educational and professional background. Disclosures would set out the objectives of the policy, how it has been implemented, and results. Companies which do not have a diversity policy would have to explain why not, in line with the general EU corporate governance framework.

In May 2013 the Commission proposed, and political agreement was found in March 2014 with the final vote in Parliament held in April 2014 on the **Directive on the transparency and comparability of payment account fees, payment account switching and access to payment accounts with basic features**¹³⁶. The two main sources of market failure in relation to the issues that the Directive addresses are information asymmetries and misaligned incentives. In relation to switching and fee transparency, the current regulatory differences across Member States are exacerbated by the failure of self-regulatory initiatives; and with regard to access, by Member States' reluctance to implement the Commission recommendation on this issue.

The agreement tackles therefore three areas: a) the comparability of payment account fees; by making it easier for consumers to compare the fees charged for payment accounts by banks and other payment service providers in the EU, b) payment account switching; by establishing a simple and quick procedure for consumers who wish to change from their payment account to one with another bank or payment service provider and c) access to

¹³⁵ COM(2013) 207

¹³⁶ COM(2013) 0266

payment accounts; by allowing EU consumers who want to open a payment account, without being residents of the country where the payment service provider is located, to do so.

Moreover, these provisions will allow all EU consumers, irrespective of their financial situation, to open a payment account that allows them to perform essential operations, such as receiving their salary, pensions and allowances or payment of utility bills etc.

Political agreement was equally reached in March 2014, with the final vote in Parliament held in April 2014 on the Regulation on key information documents for Packaged Retail Investment Products (PRIPs)¹³⁷:

The consequences of taking unexpected risks and facing consequent losses can be devastating for consumers, given that investments often form the backbone of a consumer's life savings. Given an EU retail investment market of up to 10 trillion euro, buying wrong or unsuitable products can quickly become a major problem.

The agreement aims to inform consumers in a format easy to understand by introducing a new, innovative standard for product information, one that is short and plain-speaking, and thus far more consumer-friendly. This document is called the 'Key Information Document' (KID).

Each KID will provide information on the product's main features, as well as the risks and costs associated with the investment in that product. Information on risks will be as straightforward and comparable as possible, without over-simplifying often complex products. The KID will make clear to every consumer whether or not they could lose money with a certain product and how complex the product is.

The KIDs will follow a common standard as regards structure, content, and presentation. In this way, consumers will be able to use the document to compare different investment products and ultimately choose the product that best suits their needs.

New Commission proposed legislation

In February 2013 the Commission presented a Directive on the **prevention** of the use of the financial system for the purpose of **money laundering** and terrorist financing¹³⁸ and a Regulation on **information accompanying transfers of funds**¹³⁹ to secure "due traceability" of these transfers. The proposals were necessary since existing rules were inconsistent with the recently revised international Anti-money Laundering (AML) and Combatting the financing of terrorism (CFT) standards, and they were differently applied across Member States leading to reduced legal certainty and inadequacies and loopholes.

The two initiatives complement other actions taken or planned by the Commission in respect of fight against crime, corruption and tax evasion.

¹³⁷ COM(2012) 352

¹³⁸ COM(2013) 045

¹³⁹ COM(2013) 044

Both proposals fully take into account the latest Recommendations of the Financial Action Task Force (FATF)¹⁴⁰, the world anti-money laundering body, and go further in a number of fields to promote the highest standards for anti-money laundering and countering terrorism financing.

More specifically, both proposals provide for a more targeted and focussed risk-based approach and foresee a reinforcement of the sanctioning powers of the competent authorities by introducing for instance a set of minimum principle-based rules to strengthen administrative sanctions and a requirement for them to coordinate actions when dealing with cross-border cases.

The Commission proposed in June 2013 a new investment fund framework designed for investors who want to put money into companies and projects for the long term. These private **European Long-Term Investment Funds**¹⁴¹ (ELTIFs) will only be allowed to invest in businesses that need money to be committed for long periods of time.

Investing in long-term assets, whether via financial instruments or in real assets, entails substantial risks when these investments are not properly managed. The first risk is that investors are misled as to the nature and risks of the assets they invest in due to the lack of a harmonized approach to these assets. Uncertainty exists over the identity of long term assets, their risk and return profiles and recommended holding periods. The second risk is linked to the characteristics of the assets, namely that they are illiquid in nature. The third risk is linked to the fact that funds offering access to these assets might not possess the relevant expertise in selecting and monitoring assets and tailoring a fund's return profile to the needs of potential clients. Due to these reasons, LTI funds have not always performed according to plan and investors have sometimes been misled about the return that has been promised.

With the proposal, the new Funds will be available to all types of investor across Europe subject to certain requirements. These include: the types of long-term assets and firms that the ELTIFs are allowed to invest in (for example, infrastructure, transport and sustainable energy projects), how the funds have to spread their investments to diversify risks, the information they have to give to investors, the obligation to have a depositary, the possibility to use derivatives only to manage currency risks in relation to the assets they hold, and limits to the amounts they can borrow.

Any ELTIF manager will, finally, also have to comply with all of the stringent requirements of the Alternative Investment Fund Managers Directive to provide adequate protection for its investors. ELTIF investors will not be able to withdraw money until the specified end date of their investment, and this will have to be disclosed clearly up front.

¹⁴⁰ http://www.fatf-gafi.org/media/fatf/documents/recommendations/pdfs/FATF_Recommendations.pdf

¹⁴¹ COM(2013) 0462

In July 2013, the Commission adopted a legislative package in the field of the EU payments framework: a **revised Payments Services Directive**¹⁴² (PSD2) and a **Regulation on Multilateral Interchange Fees**¹⁴³ (MIFs).

The rationale behind those proposals is: market fragmentation related to the degree of technical standardisation and interoperability; observed ineffective competition in certain areas of card and internet payments; diverse charging practices between Member States; a legal vacuum for third party providers (TPPs) for payment initiation services, account information services and other equivalent services; scope gaps, and; inconsistent application of the PSD.

The revised **Payment Services Directive** brings therefore a number of new important elements and improvements to the EU payment market: it facilitates and renders more secure the use of low cost internet payment services by including within its scope new so-called payment initiation services; consumers will be better protected against fraud, possible abuses and payment incidents (e.g. in case of disputed and incorrectly executed payment transactions); and it increases consumer rights when sending transfers and money remittances outside Europe or paying in non-EU currencies.

The **Regulation on interchange fees**, combined with the revised PSD, will introduce maximum levels of interchange fees for transactions based on consumer debit and credit cards and ban surcharges on these types of cards. By complementing the enforcement of antitrust rules, the Regulation prevents excessive levels of these fees across the board.

In September 2013 the Commission proposed a **Regulation on indices used as benchmarks in financial instruments and financial contracts**¹⁴⁴:

Whilst the prices of financial instruments worth trillions of euro depend on benchmarks, and millions of residential mortgages are also linked to them, we have witnessed recently the manipulation of the London Interbank Offered Rate (LIBOR) and the Euro Interbank Offered Rate (EURIBOR), resulting in multi-million euro fines on several banks in Europe and the US. Allegations of manipulation of commodity (e.g. oil, gas and biofuel) and exchange-rate benchmarks are also under investigation;

The Regulation, the proposal for which had even been amended in order to include manipulations of indexes as LIBOR and EURIBOR aims at tackling these two main risks: a) the risk of benchmark manipulation: there is ample evidence that conflicts of interest together with the inappropriate use of discretion, ineffective governance and lack of transparency lead to the tangible risk of benchmark manipulation and b) the risk of using benchmarks which are not robust, reliable or fit for purpose, particularly for retail consumers who may not be fully informed of the nature of the benchmark to which a financial contract they enter into is referenced and/or may not have any choice about the benchmark used.

¹⁴² COM(2013) 0547

¹⁴³ COM(2013) 0550

¹⁴⁴ COM(2013) 0641

The new rules will enhance the reliability and robustness of benchmarks and aim as well at facilitating the prevention and detection of their manipulation and clarify responsibility for and the supervision of benchmarks by the authorities, complementing the Market Abuse Regulation agreed in early 2014.

One of the most recent proposals, published in January 2014, is the **Regulation on structural measures improving the resilience of EU credit institutions**¹⁴⁵, which complements the new rules on capital requirements for banks and bank recovery and resolution in their aim to contribute to increasing the resilience of banks and to reducing the impact of potential bank failures by removing impediments to resolution and supervision and minimising distorted incentives for banks.

The structural separation of the risks associated with banks' trading activities from its deposit-taking function tackles therefore the question of too-big-to-fail, too-big-to-save and too-complex-to-resolve.

The proposal will apply only to the largest and most complex EU banks with significant trading activities and it will: a) ban proprietary trading in financial instruments and commodities, i.e. trading on own account for the sole purpose of making profit for the bank; b) grant supervisors the power and, in certain instances, the obligation to require the transfer of other high-risk trading activities (such as market-making, complex derivatives and securitisation operations) to separate legal trading entities within the group ("subsidiarisation") and c) provide rules on the economic, legal, governance, and operational links between the separated trading entity and the rest of the banking group.

On 27 March 2014 the Commission adopted a **package of measures to channel funds to the real economy, in particular to long-term investment**. The package included a communication on the long-term financing of the economy¹⁴⁶, a legislative proposal for new rules for occupational pension funds (IORPs) and a communication on crowdfunding¹⁴⁷. The IORPs proposal¹⁴⁸ aims at improving governance and transparency of these funds in Europe, promoting cross-border activity, and helping long-term investment.

References to Chapter 2

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¹⁴⁵ COM(2014) 43

¹⁴⁶ COM(2014) 168

¹⁴⁷ COM(2014) 172

¹⁴⁸ Proposal for a Directive of the European Parliament and of the Council on the activities and supervision of institutions for occupational retirement provision, COM/2014/0091

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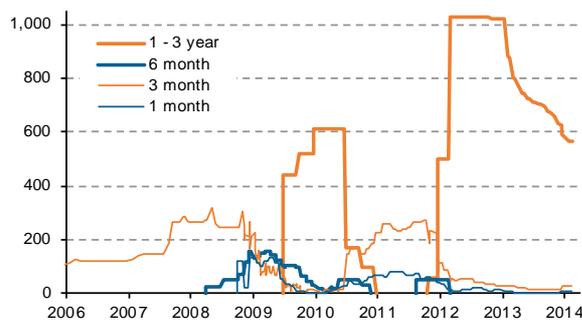
ANNEX TO CHAPTER 2: ADDITIONAL CHARTS

2.A.1 Additional charts on monetary policy

The traditional 3-month LTROs were substituted by operations with longer maturities, initially, 6-month operations and later 1-year operations. Since early 2012, the 3-year LTROs have phased almost out any other operations liquidity provided by the central bank through open market operations (Chart 2.A.1).

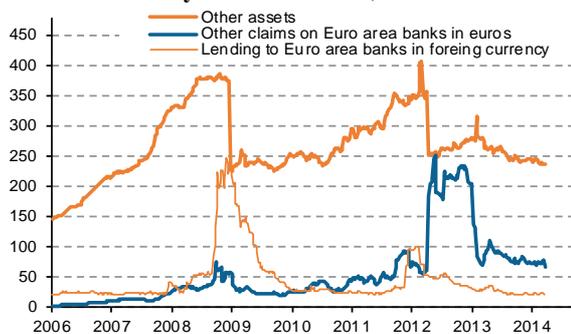
Access to open market operations requires banks to hold collateral of a certain quality. Whenever banks run out of collateral, they can still obtain liquidity through Emergency Liquidity Assistance (ELA), although at a higher price. The liquidity provided under ELA was initially included under "other assets" and later on under "Other claims"¹⁴⁹. After an intensive recourse to ELA in 2011 and 2012, banks seem to have used it to a much more limited extent in 2013.

Chart 2.A.1: Outstanding amounts allotted in LTROs: breakdown by maturity, €billion



Source: ECB: Monthly bulletin and own calculations.

Chart 2.A.2: Eurosystem Other claims on MFIs and Eurosystem other assets, €billion

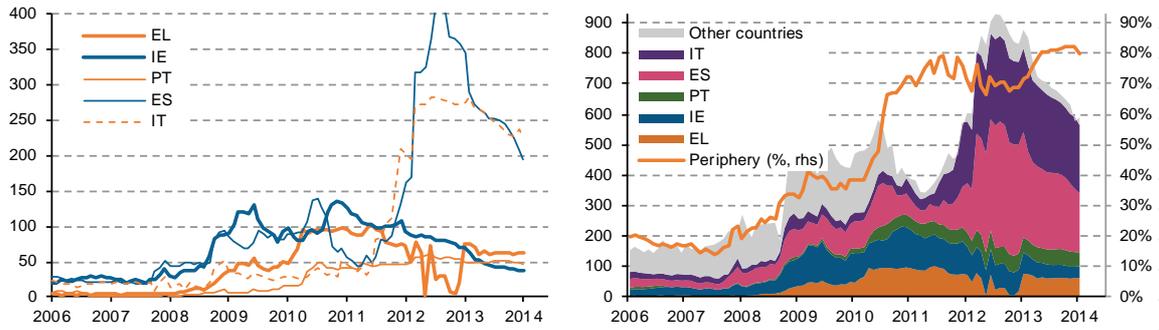


Notes: Part of the items "Other assets" and "Other claims on MFIs in Euros" includes emergency liquidity assistance. In April 2012, the ECB made a reclassification within those two items. Last available data: 10 September 2013.

Source: ECB: Monthly bulletin and own calculations.

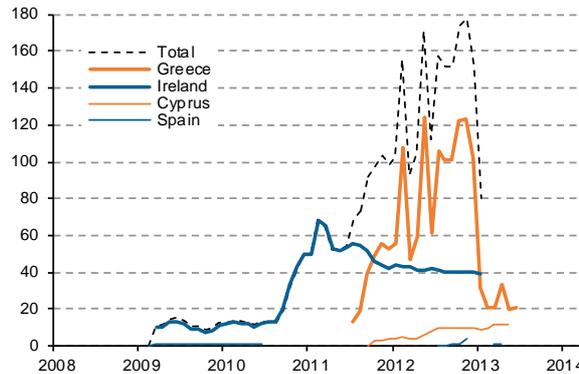
Chart 2.A.3: Liquidity provided by the central bank for monetary purposes, , €billion

¹⁴⁹ These two categories contain also items other than ELA. The use of ELA can be estimated by the difference with respect to the value of "other assets" or "other claims" in 2009.



Notes: Periphery includes: Greece, Ireland, Portugal, Spain and Italy.
Source: Bloomberg and own calculations.

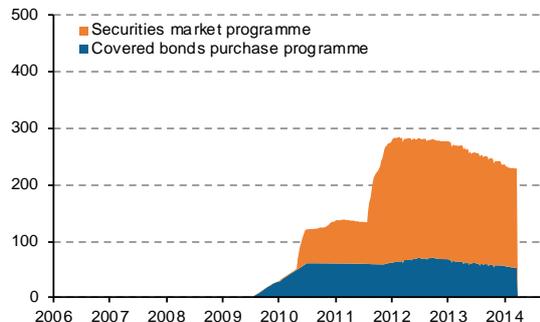
Chart 2.A.4: Emergency Liquidity Assistance (ELA) support in Greece, Ireland, Cyprus and Spain, €billion



Notes: Last available data vary per country: Ireland, January 2013; Greece, June 2013; Cyprus, May 2013; Spain, April 2013. The author is most grateful to Marcin Cecot for all his efforts to compile and estimate these ELA amounts.
Source: ECB, Central Bank of Ireland, Bank of Greece, Central Bank of Cyprus, Bank of Spain and own calculations.

The SMP and the CBPPs were discontinued, but the bonds purchased remain in the balance of the Eurosystem until they reach maturity. By April 2014, both portfolios amounted still to over €200 bn. While the SMP is sterilised through the collection of fixed term deposits, the CBPP represents a net injection of liquidity by the central bank in the economy.

Chart 2.A.5: Securities held by ECB, €billion



Note: Holdings for monetary policy purposes.
Source: ECB: Monthly bulletin and own calculations.

CHAPTER 3: REGULATING THE EU SHADOW BANKING SECTOR

3.1 INTRODUCTION

Following **financial innovation, deregulation and globalisation**, the financial system has grown rapidly in the decades preceding the financial crisis. Following a prolonged period of excessive growth of debt and leverage and the subsequent systemic crisis, the European Commission has undertaken the biggest reform of financial services ever seen in Europe (see Section 2.4). The aim of the unprecedented reform agenda is to restore the stability and resilience of the financial system, such that it contributes to sustainable economic growth. The Commission aims to address systemic risk comprehensively and effectively. Benefits achieved by strengthening certain actors and markets should not result in risks being merely shifted to less regulated sectors. Unregulated or less regulated activities should not grow at an unsustainable pace giving rise to systemic risk elsewhere in the financial system.

Over recent years, **shadow banking** has come to be identified within international policy debates as one of the main sources of possible concern about financial stability, giving rise to numerous policy initiatives to improve its monitoring and regulation. Shadow banking is understood as the **diverse system of entities and activities that perform bank-like activities, without being regulated and supervised like banks**. Shadow banking has grown rapidly in the run-up to the crisis and **is of systemic importance because of its size, leverage, scalability, complexity, interconnectedness and close links with the banking system**.

This chapter aims to provide answers to the following questions: What is shadow banking? What role does shadow banking play within the financial system? How large is the shadow banking sector and how is it evolving? Why did it grow so quickly in the run-up to the crisis and what is the current outlook? Is shadow banking able to step in for reduced bank appetite to make loans to SMEs and less creditworthy consumers? Should shadow banking be regulated? What are the regulatory and policy concerns linked to shadow banking? Which new shadow banking risks are possibly building up? What is the role of regulated European banks in the different shadow banking activities? What regulatory measures did the EU already take in the area of shadow banking and are additional measures required?

This chapter is built up as follows. Section 3.2 discusses the role of shadow banking within the EU financial system, defines and measures shadow banking, and points to remaining data gaps in the assessment of the systemic risks of EU shadow banking activities. Section 3.3 lists the main underlying drivers behind the rapid growth of shadow banking in the EU. Section 3.4 discusses the policy concerns related to shadow banking. Section 3.5 provides an overview of the EU shadow banking regulatory agenda by mapping the regulatory reforms against the policy concerns in shadow banking. Section 3.6 concludes.

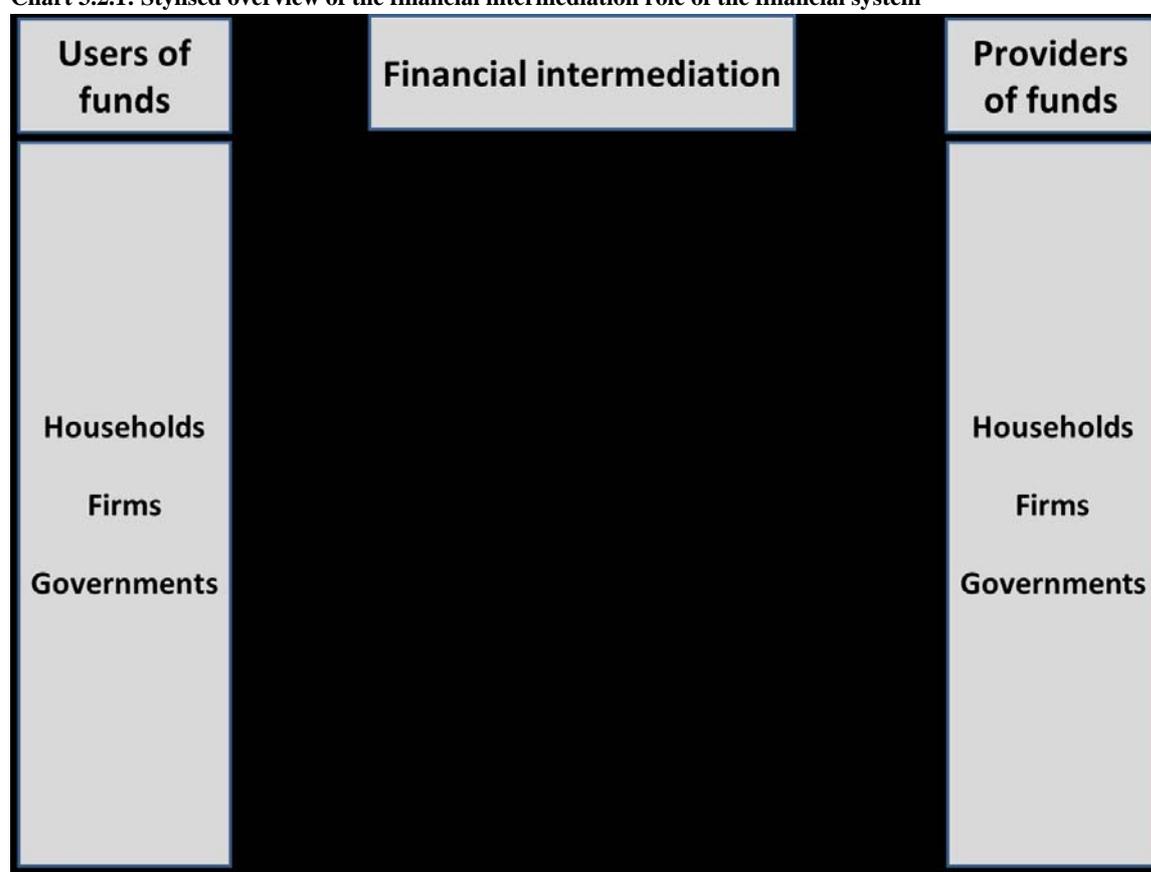
3.2 ROLE, DEFINITION, SIZE, RECENT DYNAMICS AND ROLE OF SHADOW BANKING

3.2.1 Role and definition of shadow banking within the EU financial system

One of the most important roles of our financial system is to act as a “**bridge**” between providers of funds and users of funds or “**financial intermediation**” in short. The bridge

function played by the financial system is welfare-enhancing for the real economy for two reasons. First, the channelling of funds **facilitates productive investment and efficient capital allocation in the economy**. For example, a young student or an entrepreneur may have an idea and tons of energy, but no money. The retired person may have money and wisdom and is looking for a good investment opportunity. The financial system makes both of them better off by bringing them together in an efficient way, which also benefits the wider economy through higher economic growth and capital allocation to its most productive use. Second, the channelling of funds also enables **life-cycle consumption smoothing and inter-generational resource transfers**. The financial system allows consumers to time their purchases and investments (better), which is welfare increasing. Note that this second objective will also make everyone involved in the transaction better off, but will not necessarily give rise to greater investment and economic growth. **Chart 3.2.1** provides a stylised overview of financial intermediation within the financial system and the role played therein by regular banks, shadow banks, other financial intermediaries, and financial markets.

Chart 3.2.1: Stylised overview of the financial intermediation role of the financial system



Source: Commission Services

Providers and users of funds can be linked **directly** through financial market transactions, i.e. basically sidestepping the financial intermediary.¹⁵⁰ Users of funds can issue debt or equity which is then purchased directly by investors. However, it turns out that a relatively small

¹⁵⁰ In practice a financial intermediary will still be needed in its role as "soft broker" that matches buyers and sellers of securities, but it will not itself enter into a contractual arrangement with the buyer or the seller ("hard broker").

proportion of the funding needs of borrowers is provided by direct finance. Roughly 75% of funding of corporates in the euro area comes from bank borrowing and only a relatively small percentage from debt and equity issuance. **Why is direct intermediation relatively unimportant?** Why do savers not simply lend directly to borrowers or invest in the debt paper issued by the borrowers? Why do savers typically prefer to deposit their savings in intermediaries such as banks which in turn lend it out to ultimate borrowers?

It turns out that **financial intermediaries** have important advantages over financial markets in **indirectly** linking savers and borrowers. First, intermediaries lead to **cost savings**. Pooling savings by using intermediaries allows reaping economies of scale and scope and lowers transaction, contracting, and search costs for savers. Without intermediaries the latter costs would be prohibitive for otherwise mutually beneficial transactions to take place. Second, intermediaries lead to **risk diversification and liquidity insurance**. Pooling savings by using intermediaries allows investing in more illiquid, but more profitable securities, while preserving desired liquidity. It also allows households to smooth their consumption pattern across time and is hence welfare enhancing (Diamond and Dybvig, 1983). Third, intermediaries lead to **valuable information production**. Intermediaries act as specialist delegated monitor for lenders and ensure that borrowers use the funds effectively and efficiently. Without intermediaries it would be prohibitively costly to monitor borrowers (Diamond, 1984). Finally, intermediaries **reduce asymmetric information**. Intermediaries actively reduce information problems related to borrowers' adverse selection and moral hazard by creating long-term customer relationships, requiring collateral, screening ex ante, and monitoring ex post. Asymmetric information between relatively unknowledgeable savers and knowledgeable borrowers may give rise to market collapses or missing markets.

Regular **banks** typically act as the main bridge between ultimate providers of funds and ultimate users of funds in the EU. Ultimate providers of funds are lenders, savers, or investors (households, firms, or governments with an excess of funds) that often want to run little risk although they are unable to monitor borrowers and want to retain access to their funds at short notice. Ultimate users of funds are borrowers, entrepreneurs, or spenders (again households, firms, governments, but different ones as they have a shortage of funds) that often need control over the funds for a relatively long time to realise their ideas, but which cannot issue a safe promise. Regular banks issue short term liabilities (such as retail deposits) and hold long term assets (such as loans), leading to a fundamental maturity mismatch between their assets and liabilities and making banks structurally exposed to liquidity risk. To avoid costly and inefficient runs, governments have introduced public safety nets such as deposit guarantee schemes and lender of last resort facilities. Traditionally, deposit runs have always been perceived as a key bank vulnerability, but the financial crisis has taught us that another important source of liquidity risk within modern banks stems from the liquidity demands from borrowers (such as through credit lines) and the use of short term wholesale market financing.¹⁵¹ A materialisation of funding liquidity risk can lead to the drying up of liquidity in entire market segments, such as in the unsecured

¹⁵¹ Although wholesale funding does not benefit from *public* safety nets, they often concern short term collateralised borrowing, whereby the collateral is a kind of *private* safety net for the creditor.

interbank markets. There are also powerful feedback effects between solvency risk and liquidity risk.

However, as **Chart 3.2.1** illustrates, regular banks are not the sole intermediaries that can play this important bridge function. Non-bank intermediaries such as **insurers, pension funds, and regulated investment funds** also link providers and users of funds. These intermediaries: are typically not highly leveraged; do not engage in maturity transformation to a similar extent; and do not enjoy explicit public safety nets. However, these intermediaries are still being regulated to address information asymmetries and other market failures. When retail consumers are at a disadvantage relative to professional market agents, in particular financial market intermediaries, regulation can help protecting them against potential conflicts of interest or market abuses.

The Financial Stability Board (FSB) defines "**shadow banking**" broadly as "**credit intermediation that involves entities and activities fully or partially outside the regular banking system**" or "**non-bank credit intermediation**" in short.^{152,153} Shadow banking is an important alternative financial intermediation channel, alongside financing through regulated banks, thereby playing a similar role and yielding similar benefits for society.¹⁵⁴ A recently developing sector of shadow banking are creditors which are formally not credit institutions in the meaning of Article 4(1) of Regulation (EU) No 575/2013. As such, they are not covered by the prudential supervision, and, due to their number and frequent non-requirement of any licence, they escape the relevant regulation, namely the Directive 2008/48/EC on credit agreements for consumers¹⁵⁵.

Shadow banking is a phenomenon that defies institutional boundaries and comprises a chain of interconnected financial intermediaries that conduct either all three or any one of the classic banking functions -**maturity, credit, and liquidity transformation**-, **but without access to the explicit public safety nets** of the deposit guarantee schemes and/or the central

¹⁵² The literature has formulated a number of criticisms with respect to the FSB shadow banking definition. First, the FSB definition focus on activities outside the regular banking system may underestimate the role played by large regulated banking groups (Pozsar and Singh, 2011; Cetorelli and Peristiani, 2012). Second, the FSB definition may cover entities that should not be thought as being part of the shadow banking sector based on a liquidity, maturity, leverage, and interconnectedness risk assessment (such as leasing companies, finance companies, corporate tax vehicles, etc.). Third, the FSB definition may not allow to pro-actively detect new shadow banking activities. Claessens and Ratnovski (2013) put the focus on the presence of a backstop or safety net and on systemic risk and propose as an alternative definition for shadow banking "all financial activities, except traditional banking, which require a private or public backstop to operate".

¹⁵³ The term "shadow banking" system is in fact quite new and credited to the economist Paul McCulley in a 2007 speech at the annual financial symposium hosted by the Kansas City Federal Reserve Bank in Jackson Hole, Wyoming: "Unlike regulated banks [...], unregulated shadow banks fund themselves with uninsured commercial paper, which may or may not be backstopped by liquidity lines from real banks. Thus, the shadow banking system is particularly vulnerable to runs." In McCulley's talk, shadow banking mainly referred to nonbank financial institutions that engaged in maturity transformation. Nowadays, it is generally perceived to be broader in scope.

¹⁵⁴ Shadow banking should however not be confused with "shadow economy" and certainly does not deserve a similarly negative connotation. A less confusing and more neutral term could be "parallel banking sector."

¹⁵⁵ Some types of lenders (e.g. pawnbrokers or those lending small sums) are not under the Directive 2008/48/EC.

bank emergency liquidity assistance programmes.¹⁵⁶ Maturity transformation broadly relates to the use of short-term liabilities to fund investment in long-term assets. This is often, but not necessarily, complemented by liquidity and credit transformation. Liquidity transformation refers to the investment in illiquid assets while acquiring funding through more liquid liabilities. Credit transformation refers to the investment in assets that carry default risk, while acquiring funding that is allegedly risk free (often thanks to the use of adequate collateral or other financial innovation). Hence, similar to traditional banking, shadow banking is also characterised by liquidity, maturity, leverage, and interconnectedness risk. Hence there are **similarities** between traditional banking and "shadow" banking. At the same time, there are also important **differences** between the two types of intermediation, implying that different regulatory approaches are appropriate. For example, the "shadow banking" sector is often operated by sophisticated professional market players, in contrast to the traditional banking sector, which interacts regularly with less informed market participants, such as retail depositors and household borrowers. Different levels and forms of regulations are therefore appropriate.

3.2.2 Size and recent dynamics of EU shadow banking

Identifying and measuring shadow banking is **challenging** for a number of reasons. First, shadow banking brings together a group of **heterogeneous entities and activities**. Second, it is **easily scalable and can hence quickly evolve**. Third, it is **not always easy to distinguish from traditional banking**. Regulated banks often engage in activities deemed part of shadow banking activities. Finally, there are significant data gaps to date in the area of shadow banking. As a result, there is significant uncertainty about the precise size of shadow banking and different approaches result in different estimates. See **Box 3.2** for a review of the different approaches and corresponding EU and US shadow banking estimates.

Measuring the size and dynamics of shadow banking is nevertheless important given the fact that **important policy concerns arise in the area of shadow banking** (see section 3.4 below). The FSB reports that the size of the shadow banking sector in the EU (more precisely euro area and UK combined) is greater than in the US, and that the decline in US shadow banking since the financial crisis is more than compensated by increasing shadow banking volumes in UK, euro area, and other jurisdictions (FSB, 2012; FSB, 2013a). The FSB estimates that worldwide aggregated financial assets of "other (financial) intermediaries"¹⁵⁷ reached 71.2 trillion USD at the end of 2012, which is equivalent to 24% of total financial system assets (or 117% of the corresponding aggregate GDP).¹⁵⁸ The **"EU" non-bank financial intermediation accounts for 31 trillion USD** (22 trillion USD for the euro area and 9 trillion USD for the UK), whereas the US non-bank financial intermediation amounts

¹⁵⁶ European Commission (2013a) refers to shadow banking as including entities raising funding with deposit-like characteristics, performing maturity and/or liquidity transformation, allowing credit risk transfer or using direct or indirect leverage.

¹⁵⁷ FSB defines "other financial intermediaries" as all financial institutions that are not classified as banks, insurance companies, pension funds, public financial institutions, and central banks.

¹⁵⁸ FSB uses flow of fund data from 20 jurisdictions plus ECB data for the euro area. Box 3 in Pozsar and Singh (2011) succinctly summarise the limitations and data gaps of Flow of Funds data for measuring shadow banking activities and entities.

to 26 trillion USD. ESRB (2014) estimates of EU shadow banking assets are broadly in line with this.¹⁵⁹ ESRB (2014) reports that **the EU shadow banking sector is estimated to have grown by 67% in the 7 years between December 2005 and December 2012. In contrast, EU banks according to ECB Monetary Financial Institutions (MFI) statistics have grown by only 34% or roughly half that much over that same time period.**

Table 3.2.1 presents a rough estimate for the relative size of shadow banking entities by using the proxy of “other intermediaries” in the euro area financial system as of mid-2012.¹⁶⁰ Total assets of “**other intermediaries**” is the residual group of financial entities after excluding regulated banks, insurance companies, pension funds, and regulated investment funds from the euro area financial system.¹⁶¹ Insurance companies, pension funds and most investment funds are excluded as these intermediaries do not face the risk of a run on their liabilities. On the other hand, MMFs are included, as their liabilities are a close substitute for regular bank deposits. Total assets of regulated banks made up roughly 55% of the total assets of the entire euro area financial system. The residual is made up as follows: 13% by insurance companies and pension funds, 11% by investment funds other than money market funds (MMFs), and “other intermediaries” account for 20.3% of total assets of the euro area financial system.

Table 3.2.1: Relative size of financial institutions in the euro area (total assets)

	2012Q2	
	EUR trillion	% total
Regulated banks	29.3	55.2
“Other intermediaries”	10.8	20.3
Money Market Funds (MMFs)	1.0	1.9
Financial vehicle corporations	2.1	4.1
“Other miscellaneous intermediaries”	7.6	14.4
Insurance corporations and pension funds	7.0	13.3
Regulated investment funds other than MMFs	5.9	11.2
Total assets of euro area financial institutions	53.0	100.0

¹⁵⁹ ESRB (2014) aggregates funds (MMFs, bond funds, equity funds, private equity funds, real estate funds, ETFs), financial vehicle corporations engaged in securitisation, security and derivative dealers, and financial corporations engaged in lending.

¹⁶⁰ This proxy is not fully comparable with the measures provided in the US literature (Adrian and Ashcraft, 2012a, 2012b; Adrian et al., 2013; Claessens et al., 2012; Pozsar et al., 2013). The information from the US Flow of Funds allow for a more granular breakdown of the liabilities of the different sectors. Lacking this type of data granularity, the “other intermediaries” proxy covers most of the institutions engaged in shadow banking activities, but not only and not all. See **Box 3.2** for more on methodology.

¹⁶¹ Total assets of hedge funds are not included in the non-banking aggregate “other intermediaries” but are reported to amount to 0.1 trillion EUR. This number is underestimating the relative importance of the European hedge fund industry, as many hedge funds engaging in business with euro area residents are actually located outside the euro area and are therefore not covered by the available European Economic Area (EEA) and monetary statistics.

The category **“other intermediaries”** includes: **MMFs, financial vehicle corporations (financial vehicles engaged in securitisation), and other miscellaneous intermediaries (such as securities dealers, venture capital companies, leasing and factoring companies, and financial holding companies).**

Progress has been made in determining the size of the shadow banking sector by ESMA (2013, 2014), Bouveret (2011), Bakk-Simon et al. (2012)¹⁶², FSB (2012, 2013a), and ESRB (2014). However, these initiatives all necessarily compile and combine several databases that are managed by central banks, industry associations, and commercial data providers and that often have not been designed for these purposes. Moreover, no official data are available for certain shadow banking activities and entities, rendering a precise estimate of the complete "shadow banking" sector challenging. For example, almost 70% of the assets of the “other intermediaries” aggregate in the euro area are held by miscellaneous financial institutions for which regular statistical information is not available (Bakk-Simon et al., 2012).

Maturity transformation by the shadow banking sector is also difficult to assess and map given the existing databases. The available breakdowns often only refer to original maturity, rather than residual maturity. Furthermore, data collected by industry or within other publicly available surveys, has weaknesses in terms of level of granularity, coverage of instruments and of institutions, and level of geographic coverage across Member States. Data on lending activity of shadow creditors are gathered only by some Member States and they are not systematically reported by the ECB. In sum, the **economic and financial statistics collected for the EU to date are insufficient to fully understand some of the important policy concerns in the area of shadow banking.** Better data on the size, scope and interactions of shadow banking sector is needed to investigate the leverage and maturity transformation within the shadow banking sector, as well as the possible contagion channels towards the regulated banking sector. Creating a time series of statistics across Member States and at EU level would help evaluate the need and/or impact of current and possible future regulatory measures at the European level.

Box 3.2: Measuring the size of shadow banking

There are two main points of view to define shadow banking (Bouveret, 2011). The **“institutional” point of view** focuses on the balance sheet size of the entities identified as shadow banking entities, whereas the **“functional” point of view** focuses on selected activities performed by the shadow banking system.

Both points of view have their drawbacks in assessing the size of shadow banking, given the current lack of consensus on which institutions and which activities are deemed part of the shadow banking sector. In the institutional point of view, complexities arise with respect to

¹⁶² Bakk-Simon et al. (2012) analyse in more detail the following shadow banking activities and entities in the euro area: (i) securitisation activities, (ii) money market funds, (iii) the repo market, and (iv) hedge funds.

deciding whether all the assets or liabilities of entities identified as doing shadow banking activities can be labelled as shadow banking and monitoring and dealing with the entrance of new institutions. In the functional point of view, complexities arise with respect to the measurement of activity volumes (given data gaps), how to capture new activities spurred by financial innovation and whether or not to add the shadow banking activities performed by the regulated banks themselves.

To operationalize these points of view and given current data gaps, two approaches have been followed in the existing empirical literature: the “subtractive” approach to operationalize the institutional point of view and the “additive” approach to operationalize the functional point of view.

The **“subtractive” approach**¹⁶³ defines the shadow banking system as the residual after subtracting the assets of regulated financial credit institutions, insurance and pension funds and public sector financial entities from the total assets of the financial system. The result is called “other (financial) intermediaries” and is taken as a proxy for shadow banking. The use of the “subtractive” approach is linked to the fact that existing statistics, especially at the European level, tend to focus on credit institutions (banks) and insurance companies, while the remaining financial entities (with the exception of investment and money market funds) are merged into an “other financial intermediaries” category. This approach can be criticised for mixing very different entities such as brokers and derivatives dealers as well as leasing corporations and mixing different activities performed by other financial intermediaries, but has been used by the Financial Stability Board for assessing the size of the global shadow banking system. The FSB also provides an assessment based on the narrow shadow banking system, which consists in subtracting some entities from the broad measure, such as entities consolidated in banking groups or that benefit from public backstops, investment funds that cannot be characterised as engaging directly in shadow banking activities (equity funds) and securitisations retained on bank balance sheet.

Several comments need to be made. First, the insurance sector is not included in the perimeter of shadow banking, although some activities of insurance companies might qualify as shadow banking activity. Second, typical shadow banking activities, such as securities financing transactions, cannot be allocated to the sectors recognised in the national accounts on the basis of available data. Third, there are significant data gaps in the coverage of EU entities. For the EU as a whole, the ESCB provides flow of funds data on other (financial) intermediaries, and the ECB also provides more granular data (monetary statistics) for the euro area by disentangling between investment funds, finance companies, securities derivatives and dealers, financial vehicle corporations (securitisation vehicles) and financial corporations engaged in lending. However, even for the euro area there are significant data gaps.

The **“additive” approach**¹⁶⁴ aggregates individual shadow banking financial instruments such as securitized products, securities lending transactions and the money market funds (as

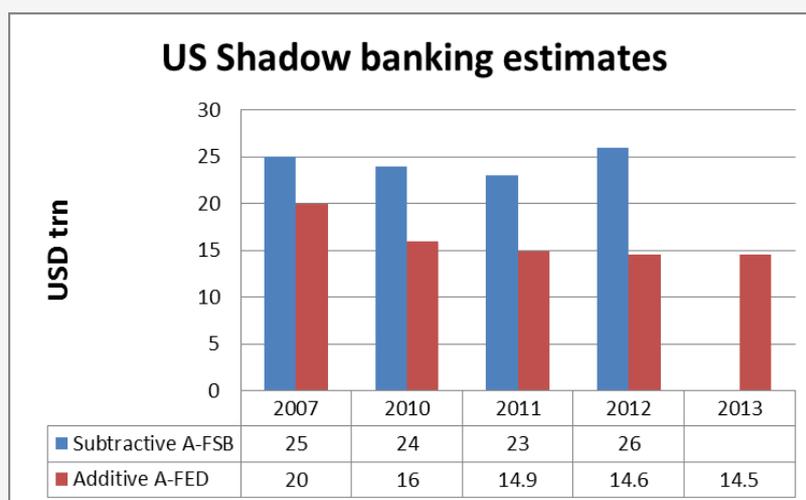
¹⁶³ Used in Bakk-Simon et al. (2012), ECB (2013) and FSB (2012).

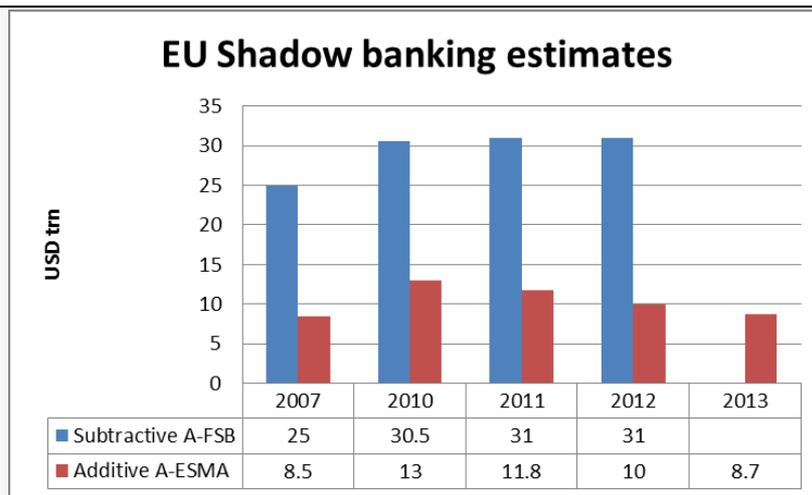
¹⁶⁴ Used by Pozsar et al. (2013), Adrian and Ashcraft (2012a,b) and Bouveret (2011)

a product, not as an entity). The main financial instruments relate to the securitisation process. The additive approach hence sums up asset backed securities (ABS) resulting from the securitisation of loan pools transferred to, or originated by, shadow banking entities, asset backed commercial paper (ABCP) subsequently issued to fund the purchase of those ABS or the short-term instruments such as repo and securities lending transactions that were also used for funding these ABS products, and the money market investors that subsequently purchased the ABCP. This approach therefore focuses on the “liabilities” that connect the different steps in the securitisation process and is referred to as “liabilities of the shadow banking”. The focus on the chain of the securitisation process implies that this approach may have a backward bias as it does not capture future products that might be created by shadow banking in order to pursue new activities, for example collateral or liquidity swaps in the collateral transformation process.

The additive approach also mirrors the shadow banking statistics that the Federal Reserve Board discloses in their quarterly Flow of Funds. To collect the same data for the EU is not straightforward. The ECB provides data for the euro area but they are not entirely fit for purpose. Data on securitisation can be compiled from ECB Financial Vehicle Corporations (FVCs) but the collection only started in 2009:Q4, therefore reliance on the data provided by Association for Financial Markets in Europe (AFME) is needed. For the repo market, the main dataset for Europe is the half-yearly survey from the International Capital Market Association (ICMA), although ICAP through its Brokertec platform provides some transaction-level data but only for short maturities and the ECB money market survey provides also some qualitative information. For securities lending, the Risk Management Association provides quarterly data, while Markit allows subscribers to retrieve aggregate and individual information on securities lending.

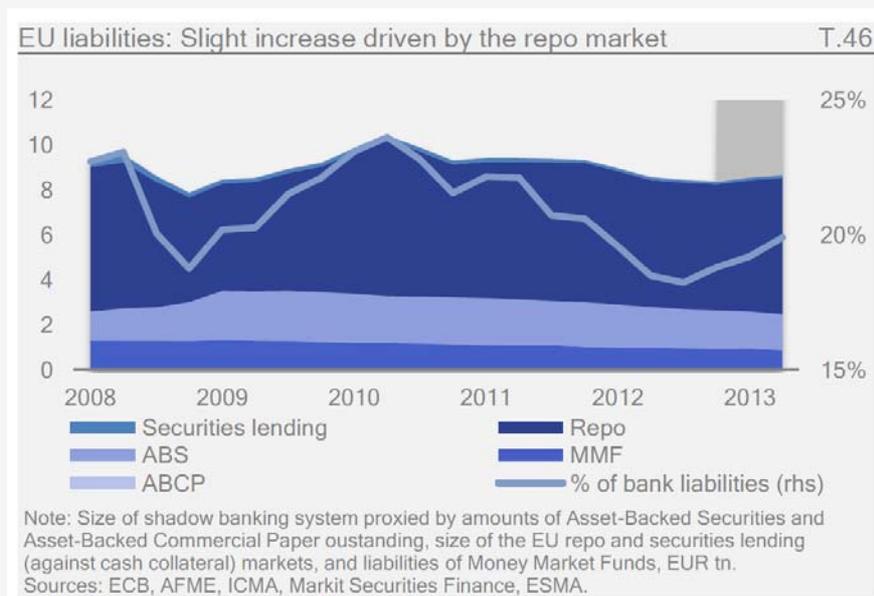
The estimates provided by the different approaches are shown in the next two charts in USD trillion. The subtractive approach numbers are taken from FSB reports. For the additive approach, the US Federal Reserve Bank flow of funds statistics are reported for the US, whereas ESMA statistics are reported for the EU.



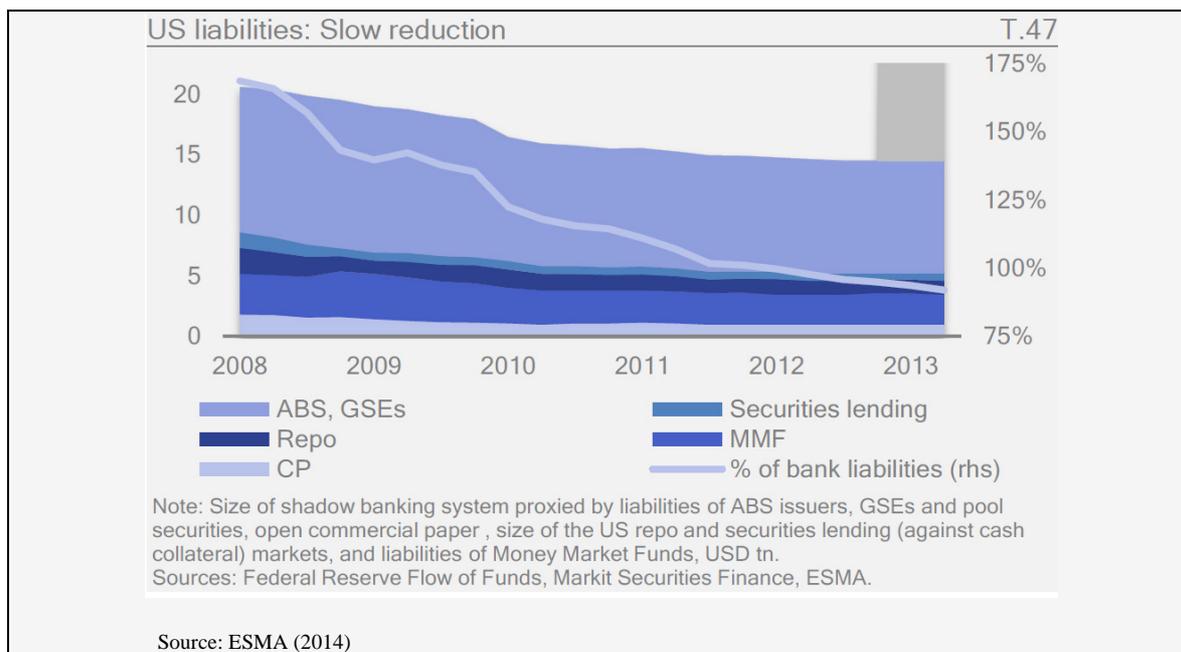


For both the US and EU evidence, we observe that the subtractive approach results in significantly higher estimates than the additive approach. The subtractive approach may overestimate the shadow banking figures whereas the additive approach may underestimate the shadow banking size. However, the gap is significantly larger for the EU (Euro area + UK), possibly due to the fact that is harder to aggregate evidence across EU countries. Whereas a subtractive approach would conclude that the EU shadow banking sector is approximately 5 trillion USD larger in size than the shadow banking sector in the US in 2012, the inverse is approximately true for the additive approach.

The additive approach charts below (ESMA, 2014) illustrate that repos are the main shadow banking liability components in the EU, whereas ABS and liabilities of the government sponsored entities (GSE) are the main components in the US. This chart also show that the relevance of shadow banking thus measured has decreased from more than 175% weight over the bank liabilities to 130% in 2013 since 2008 in the US, whereas for the EU the relative importance fluctuates between 18-23% of bank liabilities with a non-persistent trend upwards or downwards.



Source: ESMA (2014)



Below we highlight selected and important residual data gaps by type of shadow banking activity or entity (ESRB, 2014).

Securities lending is an important shadow banking activity. However, there is no publicly available data on securities lending transactions in the EU. Several private data vendors conduct private market surveys on securities lending. FSB (2013b) provides a summary of the data available to regulators on securities financing transactions (SFTs, see below for a definition), showing the lack of frequent and granular data on EU securities financing markets. Similarly, ESRB (2013) concludes that the information available to EU regulatory authorities is not sufficient for the purpose of monitoring the systemic risks that may arise from SFTs. There is no data on securities lending aggregated transactions by instrument, agent lender, counterparty, or country. There is no data on haircuts or initial margins to assess leverage. There is no data on collateral reuse and collateral re-hypothecation. Existing industry data or data collected in other publicly available surveys displays weaknesses in relation to the level of granularity, coverage of instruments and of institutions and their geographic coverage across Member States. This makes it particularly difficult to compare and use the data from different surveys for prudential purposes. For **repo activity**¹⁶⁵, scarce and non-standardised survey data is the only source, with limited granularity. There is no data on exposures between MFIs, hence it is difficult to measure the interconnectedness. There is no data on the original maturity of repo transactions, just semi-annual survey data on residual maturity. There is no data on haircuts. There is only limited information on the type

¹⁶⁵ A repo transaction is a maturity transforming transaction consisting of the provision of funds by counterparty A to counterparty B against the guarantee of collateral issued (or guaranteed) by counterparty C for a limited and pre-specified period of time. As market participants A, B, and C are all subject to credit or liquidity risk, any change in the actual or perceived credit or liquidity constraints for any of them, may have implications for the other participants in the transaction, possibly triggering reaction chains that amplify the initial liquidity or credit shocks and which ultimately may result in runs or broad withdrawals of market participants.

and origin of collateral used. The EU rules on capital requirements require supervisory reporting of aggregate data on repo transactions of credit institutions, but existing requirements are not detailed and frequent enough for the purposes of monitoring financial stability. ECB, AFME, Markit, and Dealogic all provide data on **securitisation activities**, but there is still limited data on prices (spreads), tranches, trading volumes, and who effectively holds securitised products other than monetary financial institutions (MFIs). Cetorelli and Peristiani (2012) infer a lot of insights from mapping the M&A activity and expansion over time of US Bank Holding Companies. A similar mapping of the corporate structure of regulated EU banking and insurance groups over time is lacking to date, so as to get more insight into the **role played by large EU banks, notably in securitisation and securities finance transactions**. Securitisation is an activity that defies institutional boundaries and in which numerous entities play a role and we lack good information on the relative importance of the different players.

Important work is currently being undertaken by the European Central Bank (ECB), European Systemic Risk Board (ESRB) and European Supervisory Authorities (EBA, EIOPA, ESMA) to **fill EU shadow banking data gaps**. Important **measures to improve the transparency of securities financing transactions** activities (i.e. securities lending and repo) have been proposed by the Commission. In January 2014, the European Commission published a proposal for a Regulation requiring the reporting of SFTs to trade repositories in the EU. This reporting will allow central banks and supervisors to monitor closely the build-up of system risks related to SFTs. These initiatives will shed light on shadow banking activities, in particular with a view to add granularity in (i) the breakdown within non-bank financial institutions so as to better identify leverage and maturity transformation concerns, (ii) the counterpart information to monitor relationships between regulated banks and shadow banks, and (iii) the residual maturity breakdowns of exposures (current statistics often focus on original maturity only). If agreement is reached with the co-legislators and the regulation gets adopted, the transparency measures are expected to enter into force in 2016. To ensure that regulators have access to the information, the proposal requires that all SFTs are reported to a trade repository, or, if that is not possible, directly to ESMA. In order to ensure that investors have sufficient information over the use of SFTs, periodical reports and fund's pre-investment documents such as the prospectus will include detailed information. Finally, to ensure that counterparties are informed over re-hypothecation activities of the collateral that they provided, specific transparency requirements have to be met by contractual agreement. The Commission has entrusted the EBA with conducting a comprehensive study on legal and quantitative aspects of the regulatory treatments applied to **financial entities carrying out similar activities to those performed by banks** without being classified as a credit institution in every Member State.¹⁶⁶ As such, this study will help the Commission to have a

¹⁶⁶ The entry into force of the Capital Requirements Regulation (CRR) – which is a regulation as opposed to the previous situation where the definition of credit institutions was contained in a Directive - means that only financial entities fulfilling both deposits-taking and credit activities will be qualified as “credit institutions” starting from 2014. Until now Member States have been allowed to define a credit institution more broadly when transposing the Directive 2006/48/EC. For instance, in some Member States, non-deposit taking credit providers, such as finance companies, may be qualified as credit institutions and hence be required to fulfil EU banking prudential rules. Some Member States might take the decision to continue to apply the banking

better view of all non-bank financial entities across the EU. The Alternative Investment Fund Managers Directive (AIFMD, see section 3.5.1 for details) includes a data collection process on **hedge funds, private equity funds, real estate funds, funds of funds, and MMFs**. The phase in takes place gradually until 2018 and will fill a number of data gaps in terms of portfolio exposures (assets under management, turnover, strategy breakdown, main exposures, and concentration) and fund risk profile (liquidity, leverage, etc.). In the meantime, market databases, surveys, and ECB data need to be relied upon. Maturity and liquidity transformation of EU MMFs is assessed exclusively on the basis of Fitch data on EU MMFs, thus excluding two thirds of the market of MMFs funds not rated by Fitch and excluding data before January 2012. Section 3.5 below elaborates on some of the above initiatives.

3.3 DRIVERS BEHIND RAPID SHADOW BANKING GROWTH IN THE EU

Why did shadow banking grow so rapidly? The drivers behind shadow banking growth are briefly discussed below, by referring to securitisation and securities financing transactions as examples of shadow banking activities that have grown rapidly, in particular in the run-up to the financial crisis. As to alternative lenders to consumers, a main driver of their development is reticence of regulated banks to lend to some categories of consumers (e.g. with lower creditworthiness) or of some categories of loans (low value or short term).

Securitisation refers to the process that creates (often tradable) assets through pooling, tranching, and repackaging cash flows from underlying risky loans and other assets. Securitisation transactions enable banks to refinance loans, by pooling assets and converting them into securities that are attractive to institutional investors. From a bank's perspective, such transactions can unlock capital resources, reduce borrowing costs (through credit arbitrage), and promote other balance sheet benefits, thereby increasing the ability of banks to expand their lending and finance economic growth. For institutional investors such securities, if of sufficient size, offer liquid investment opportunities in asset classes in which they do not invest directly, e.g. SMEs or mortgages.

Securities financing transactions (SFT) mainly consists of repurchase agreements and securities lending.¹⁶⁷ SFTs are techniques that are used by almost all actors in the financial

prudential requirements or adjusted prudential requirements to these credit providers. Others might decide not to and to apply specific rules. This may result in different prudential treatments across Member State as regards entities which do not fulfil the requirements of the definition of a credit institution in CRR. Including in this assessment all financial entities performing activities similar to those performed by banks without being classified as credit institutions will help to assess the differences in national prudential treatments. EBA is requested to assess the size of those financial entities falling outside the scope of European banking prudential regulation. In case this impact is significant, the Commission could clarify, by means of a delegated act, the definition of a “credit institution” for the purposes of prudential banking regulation, in order to leave less scope for divergence and possibly regulatory arbitrage across Member States.

¹⁶⁷ SFT involve practices such as collateral rehypothecation and cash collateral reinvestment. Collateral rehypothecation is any use of financial instruments received as collateral by the collateral taker in its own name and for its own or for the account of another counterparty. Re-hypothecation of the same piece of collateral

system (banks, securities dealers, insurance companies, pension funds, investment funds, etc.) and use assets to either obtain funding from another entity or lend them out to another entity against a fee. SFT are instrumental in allowing market participants to finance their assets and, consequently, in building up leverage at the institutional and market level (and hence also interconnectedness and maturity transformation).

The **drivers behind the rapid growth of shadow banking** (entities and activities) can be grouped into four categories: **genuine benefits or efficiencies, the ability to generate allegedly safe assets and additional collateral, regulatory arbitrage, and institutional factors.**

Genuine efficiencies – In the pre-crisis conventional wisdom, key shadow banking activities such as securitisation and SFT were generally believed to deliver a number of benefits to society, such as improved price discovery, enhanced market efficiency, additional credit creation, market liquidity and economic growth, and increased financial stability. For example, it was believed that all types of securitisation would provide benefits to the originators of loans (i.e. banks) as it would result in superior balance sheet management (allowing to realise economies of scale from their loan origination platforms, branches, and call centres), superior portfolio and risk management (allowing to limit the concentration to certain borrowers, loan types and geographies), superior funding management (allowing to raise long term maturity-matched funding to manage their asset-liability mismatches), price discovery by “liquefying” previously illiquid assets (allowing for third-party discipline and market pricing of assets that would be opaque otherwise), and lower capital requirements. It was believed to also provide benefits to investors from being able to invest in alternative asset classes (allowing risk diversification across geographies and asset types), enjoying greater risk-return flexibility (instruments being better tailored to the investor needs, preferences and profile), and achieving greater insulation from the originator’s credit risk. In addition, the financial system as a whole would also become more stable, as credit risk was believed to be dispersed away from highly leveraged banks and towards those that are most willing and best suited to bear the risks. Similarly, SFT was believed to support secondary market liquidity and increase the credit creation potential of the financial system through a money multiplier effect analogous to the traditional money creation process. Collateral is like base money: the haircut is equivalent to the reserve ratio and the number of re-pledges (the length of the collateral chain) is equivalent to the money multiplier. SFT was further believed to complete financial markets and to improve the monetary policy transmission mechanism. The current wisdom -after the crisis- is that such generalisations are inappropriate and need to be qualified.

Accommodating investor demand for safe assets and financial institution demand for collateral - Investor demand for safe and liquid assets has increased significantly because of risk-aversion or regulatory reasons and has exceeded the available pool of insured deposits and government bonds. Shadow banking growth effectively allows accommodating the

over and over again grosses up the level of activity in the shadow banking sector, even though the net amount of borrowing at the end of the chain is small.

excess investor demand for safe and liquid assets, as shadow banking creates safe, short-term and liquid instruments, i.e. quasi money, from risky, long-term and illiquid assets. Securitisation has played an important role in this process, and SFT further increases the quasi-money creation potential of the financial system. Likewise, the collateral demand from financial institutions has also increased significantly, following the materialisation of counterparty risk in the financial crisis. First, increased counterparty risks materialised in the financial crisis and made secured funding more attractive. Second, market participants are seeking the security of collateral to underpin a wider range of claims to execute arms-length transactions in an increasingly integrated global financial system. New regulations may also have increased the demand for collateral-based operations. Regulatory reforms such as the European Market Infrastructure Regulation (EMIR) require eligible (standardised) derivative contracts to be cleared through central counterparties (CCPs). If a contract is not standardised and eligible for CCP clearing, enhanced risk management techniques must be applied to reduce bilateral counterparty credit risk. EMIR requires non-centrally cleared trades to be appropriately collateralised through the posting of initial and variation margins.

Regulatory arbitrage - Another shadow banking driver has been the desire of private actors to avoid traditional and regulated banking intermediation.¹⁶⁸ Regulatory arbitrage certainly explains part of the growth of shadow banking in the US and Europe (Acharya and Schnabl, 2009). In the pre-crisis period, banks could reduce regulatory capital charges by the use of allegedly bankruptcy remote special purpose vehicles (so-called conduits and structured investment vehicles) that relied on implicit (thus not requiring capital charges) and explicit credit and liquidity support from banks or by simply holding securitised assets on their own balance sheet which received better credit ratings than the original non-securitised assets (Acharya et al., 2010). Or through investments in structured products where capital charges did not adequately reflect underlying risks. Regulatory arbitrage has exploited loopholes and has led to a sharp build-up of risk and leverage along the way.¹⁶⁹

Institutional factors may explain certain discrepancies in shadow banking trends between the US and the EU throughout the crisis. In the early crisis stages, US ABCP and US ABS markets have collapsed (despite unprecedented policy action) whereas ABS issuance in euros peaked in the euro area in 2008 and early 2009. The role of institutions and the different nature of financial system intermediation is illustrated and emphasized in explaining this discrepancy (Bouveret, 2011). Specifically, unlike the Fed and Bank of England, the ECB monetary policy framework allowed for a wide range of collateral to be used for ECB open market operations. As a result, almost all of the EUR ABS issuance in 2008 was retained by the issuer and used as collateral for ECB refinancing operations. This was one of the ways in which the ECB provided liquidity backstops to the euro area banks (ABS issuers).

¹⁶⁸ Tax arbitrage may have been another driver behind securitisation growth. Certain shadow banking entities have been used as instruments to hide illicit activities such as tax fraud or money laundering strategies (European Commission, 2012). Tax arbitrage is outside the scope of this paper. Alworth and Arachi (2010) investigate the impact of taxes and tax avoidance activity on the recent financial boom and bust more broadly.

¹⁶⁹ In this context one can mention that shadow lending institutions may also move to another jurisdiction while still lending in a given country, or close and then re-open their business, thus making supervising them even more difficult.

3.4 POLICY CONCERNS RELATED TO SHADOW BANKING

Shadow banking has **important benefits** as intermediation channel and can help foster sustainable economic growth, as explained in section 3.1. Hence, policy makers are concerned about undue stigma attached to sound, simple, and transparent shadow banking intermediation in the post-crisis era. The policy focus has shifted to **reviving sound, simple, and transparent securitisation markets** to unlock and diversify funding sources of non-financial corporates (see section 3.4.2 below). Despite the disappointing financial crisis experience with complex securitisation, there are significant potential benefits to be achieved through securitisation if performed in a crisis-resilient way.

On the other hand and despite the significant potential benefits, **shadow banking can still give rise to systemic risk**. The crisis demonstrated how systemic risks can build up quickly through certain shadow banking activities. The systemic importance of shadow banking is driven by: its sheer size and interconnectedness with the regulated banking sector, regulatory arbitrage, gross miss-pricing of risks, and moral hazard (see section 3.4.1).

Where market failures exist, regulation is needed. Curtailing the generation of systemic risk in the shadow banking sector is an important regulatory driver. This is why the EU has already brought forward a number of legislative proposals¹⁷⁰, many of which have already been adopted, to help tackle some of these risks (see section 3.5 below). It is clear that more time is needed before the full impact of all these reforms can feed through into the market. So, at this time, it is hard to assess exactly what impact they have had and where potential gaps remain. It may be premature to strengthen or weaken these regulations before considering what a proportionate response may look like. Further important work continues at the international level with the FSB, and so the European rules will need to remain aligned with any future international agreements in this area.

3.4.1 Curtailing systemic risk

The shadow banking **size** has already been documented and discussed above in section 3.2.

A second factor that raises systemic risk concerns is the high level of **interconnectedness between the shadow banking system and the regulated sector**, particularly **the regulated banking system**. Prudentially regulated banks can become involved in shadow banking in a number of ways, thereby giving rise to interconnectedness and contagion. Firstly, banks could move risks that they themselves would ordinarily be exposed to off-balance sheet for reasons of regulatory arbitrage through establishing non-bank entities that perform elements of credit intermediation. While regulatory arbitrage is not acceptable, this practice should be distinguished from that arising from market demand. Secondly, banks are often naturally connected to the broader system of non-bank intermediation, and these connections may

¹⁷⁰ For example, CRR/CRD IV has strengthened banks' resilience to risks outside the banking system. Solvency II does the same for insurers. MiFID carries prudential provisions to relevant investment firms. UCITS V and AIFMD include measures to address systemic risks posed by large EU domiciled funds. MMF and SFT proposals are also other legislative proposals in the pipeline to help address risks from the shadow banking sector.

represent channels of contagion. There is further work to do here to precisely understand these contagion channels (partially due to data constraints set out above), and it is by no means the case that all connections to banks have to the shadow banking sector are risky (or indeed systemic).

Several shadow banking activities are executed within systemically important banks or in a chain in which systemically important banks play an important role (Adrian and Shin, 2010b). The **shadow banking system is “much less shadowy than we thought”** (Cetorelli and Peristiani, 2012). It turned out that securitisation often did not actually transfer risks, but effectively concentrated risks in the run-prone leveraged financial sector (Acharya et al., 2010b). In the EU, shadow banks provide up to 7% of banks’ liabilities, and banks hold up to 10% of their assets issued by the shadow banking system (ESRB, 2014). Given that the EU financial system is bank-intermediated, compared to the much more market-intermediated US financial system, the EU faces a greater urgency to map and understand the role of large EU banks in shadow banking activities.

Shadow banking is a phenomenon that also defies geographic boundaries and there are important cross-border and even trans-Atlantic links between regulated banking and shadow banking. It turns out that the **large EU banking groups have become intimately linked and connected to the US financial system in the run-up to the crisis**, notably through the US shadow banking sector. At the peak of the crisis, the large EU banking groups are documented to significantly (i) rely on US MMFs funding, (ii) sponsor USD ABCP vehicles, (iii) perform repo with US collateral, and (iv) invest in US MBS & ABS (Bouveret, 2011; Shin, 2012).

Third, **regulatory inadequacies, regulatory arbitrage possibilities and regulatory gaps** may drive shadow banking sector growth and in turn raise concerns about the stability and leverage of the financial system. Capital charges for securitised assets have for example been inadequately reflecting underlying risks and potential losses in several cases, particularly in the US sub-prime markets. Highly rated securitisation exposures received too low risk weights. AAA-rated RMBS (residential mortgage backed securities) received a 20% risk weighting in the standardised approach of Basel II, but only a 7% risk weighting in the IRB (internal ratings based) approach of Basel II, implying a capital requirement of merely 0.56% of the exposure (Chart 3.4.1). Trading book assets tended to attract risk weights appropriate for dealing with market but not credit risk. This meant it was capital-efficient for banks to bundle loans into tradable structured credit products for onward sale through securitisation. Indeed, by securitising assets in this way, it was hypothetically possible for two banks to swap their underlying claims but for both firms to claim capital relief. The system as a whole would then be left holding less capital, even though the underlying exposures were identical. As a result, large EU banking groups relying on the IRB approach were able to significantly increase their volume of AAA-rated RMBS assets without requiring more capital and were unable to absorb losses on these securities when they occurred.¹⁷¹ With the benefit of

¹⁷¹ Note that such a balance sheet expansion may have further fuelled the bubble and may have given rise to valuation gains (risk premium reductions) on these securities that in turn allowed for even greater balance

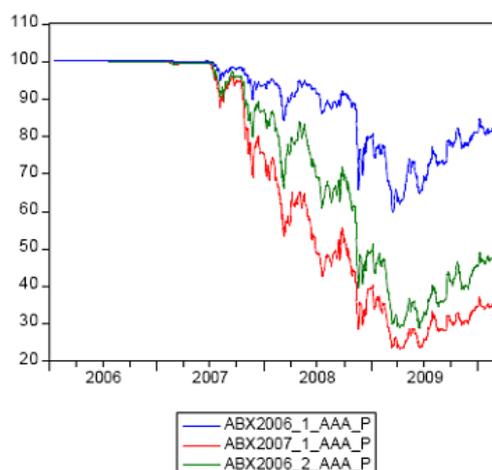
hindsight and given the experienced losses on these instruments in some markets, capital adequacy rules did not adequately reflect risks and seemed to have failed in putting in place the appropriate shock absorbers (compare **Chart 3.4.1** and **Chart 3.4.2**).¹⁷²

Chart 3.4.1: RMBS risk weights and total capital requirement according to Basel II IRB approach

Rating	Risk weight In % of nominal amount of exposure	Total capital requirement In % of nominal amount of exposure
AAA	7%	0.56%
AA	8%	0.64%
A+	10%	0.80%
A	12%	0.96%
A-	20%	1.60%
BBB+	35%	2.80%
BBB	60%	4.80%
BBB-	100%	8.00%
BB+	250%	20.00%
BB	425%	34.00%
BB-	650%	52.00%
B+ and below	1,250%	100.00%

Source: Commission Services.

Chart 3.4.2: Performance of AAA-rated indices according to vintage year



Source: Bloomberg.

In addition, **maturity and liquidity mismatches increased sharply outside the regulatory perimeter** (through structured investment vehicles or SIVs, broker-dealers, etc.). The underestimation of correlation enabled financial institutions to hold insufficient amounts of liquidity and capital and to sell cheap insurance against negative shocks. **Tail risks are not adequately priced and controlled in the shadow banking sector** because shadow banking entities are not regulated like banks and because financial actors often neglected risks for behavioural reasons (e.g. to meet short-term performance objectives), thereby giving rise to an **overinvesting and underpricing in the boom and excessive collapse of real activity and negative externalities in the financial sector in the bust**. “Complex” securitisation did not prove to be crisis-resilient. Many of those assets alleged to be safe assets (e.g. senior collateralised debt obligations (CDO) tranches) turned out to be risky assets, and allegedly “safe entities” (e.g. MMFs) became much riskier than expected. The danger is that if regulation and supervision of shadow banking activities and entities is inadequate then, the reinforced banking regulation could drive substantial systemic risks of banking activities beyond the boundaries of traditional banking and towards shadow banking.

Fourth, **shadow banking can be prone to bank-like runs**, given the absence of explicit public safety nets, as recently shown by the MMF crisis in the US. The crisis of 2008 can be understood as a run on repo and wholesale funding has given rise to additional procyclicality,

sheet expansion (Adrian and Shin, 2010a). In this sense, financial regulation is said to contribute to the natural procyclicality of the financial system.

possibly stronger than already is the case in the traditional banking sector. Excessive leverage arose in the financial system and when wholesale funding dried up throughout the system, an unprecedented systemic crisis has been triggered which to date requires significant and exceptional government and central bank intervention. The financial system has proven to be highly unstable and excessively procyclical. Negative feedback loops and strong procyclicality arose (loss-price-loss spirals, haircut deleveraging, etc.).¹⁷³ The procyclicality of funding liquidity created by private financial players, especially shadow banking entities, can be disruptive if not controlled and curtailed. The rehypothecation of collateral to support multiple deals, in particular securities lending and repurchase agreements, helped to fuel the financial bubble and allowed for increased liquidity as well as the build-up of hidden leverage and interconnectedness in the system.

Fifth, shadow banking regulation is required to **curtail moral hazard coming from implicit public safety nets** (Singh, 2012). Given their de facto similarity to regulated banks, numerous shadow banking activities and entities have (directly or indirectly through sponsoring banks) enjoyed the ex post coverage of public safety nets. Safety nets serve useful purposes ex post, but create incentives for excessive risk-taking and significant competition and other distortions ex ante. As is the case in the bank structural reform debate (see section 1.4 and European Commission 2013b), the question arises why and to what extent shadow banking activities necessarily need to enjoy (implicit) taxpayer support. It may need to be ensured that public safety nets only cover (i) activities essential to the economy and (ii) liquidity risk (not solvency risk), so as to curtail moral hazard and aggressive and inappropriate growth of the activities under consideration. If performed by entities more alienated from safety net enjoying commercial banks, shadow banking activities may not create systemic risks to the same extent.

3.4.2 Repairing sound, simple, and transparent shadow banking intermediation

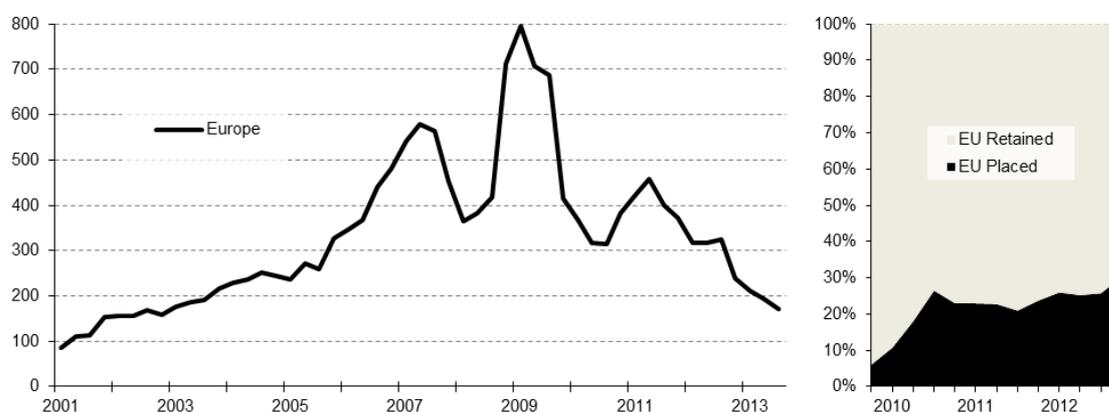
¹⁷² There was also a mechanistic reliance on external ratings. Deterioration in credit quality of the underlying pool led to cliff-effects in capital requirements, which gave rise to sales of securitisation exposures which in turn increased downward price pressures and led to additional losses.

¹⁷³ Margins and haircuts implicitly determine the maximum leverage of a repo-funded financial institution. If the margin is 2%, the borrower can borrow 98 euro for 100 euro worth of securities pledged. Hence, to hold 100 euros worth of securities, the borrower must come up with 2 euros of equity. Thus, if the repo margin is 2%, the maximum permissible leverage is 50 (=100/2). The liquidity impact of increased margins can be enormous. If margins would increase from 2% to 4%, the permitted leverage halves from 50 to 25. The borrower either must raise new equity so that its equity doubles from its previous level (difficult in crisis times), or it must sell half its assets, or some combination of both. The evidence in the crisis has been that margins on repo agreements have increased rapidly from very low to high levels. Haircuts on US Treasuries for example increased sharply from 0.25% in April 2007 to 3% in August 2008, for invest-grade bonds from 0-3% to 8-12%, for prime MBS from 2-4% to 10-20%, etc. which imply massive and acute deleveraging pressure on highly leveraged financial institutions, giving rise to price decreases and endogenous second-round effects. Brunnermeier and Pedersen (2009) emphasise that "funding liquidity", "market liquidity" and asset values are linked in self-reinforcing procyclical cycles. The example also makes clear that increases in haircuts will do most harm when they start from very low levels. In this sense, the low risk premiums at the peak of financial cycles is of particular concern. When haircuts rise, all balance sheets shrink in unison. Thus, there is a generalised decline in the willingness to lend.

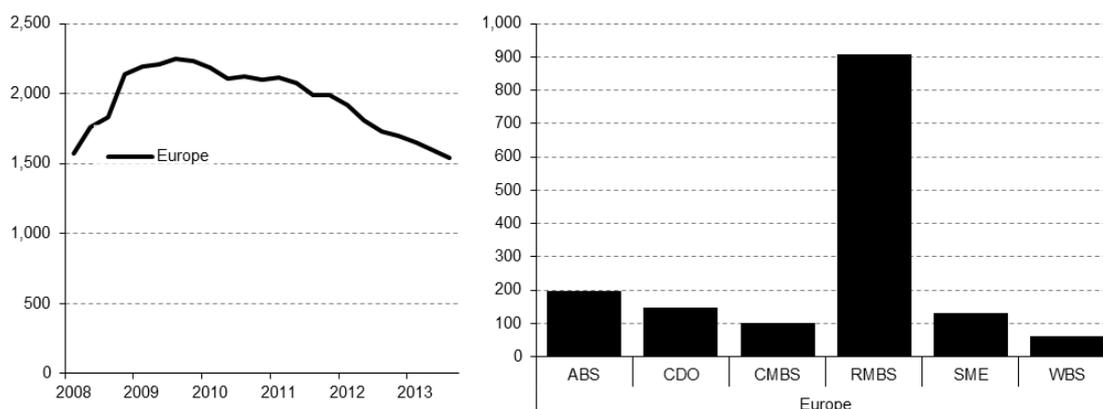
The economic and financial crisis has impaired the ability of the financial sector to channel funds from providers to users of funds. Heavy dependence on bank intermediation, combined with the need for banks to deleverage their balance sheets have reduced funding to all sectors of the economy.¹⁷⁴ Furthermore, a weak economic outlook and uncertainty about the future have reduced the confidence and risk appetite of both borrowers and providers of financing. Policy concerns in the area of shadow banking are hence not solely driven by systemic risk concerns. Regulation can and should also help in **repairing an impaired credit intermediation channel**.

Chart 3.4.3 illustrates that **no substantial recovery of (publicly and privately placed) securitisation transactions** has been observed to date. There are a number of temporary and structural reasons for the very limited recovery of the EU securitisation markets since the crisis. The **temporary factors** that can partially explain the muted recovery in securitisation in Europe include: weak funding demand by large banks that are trying to shrink their balance sheets; the availability of cheap alternative funding sources, including from central banks; uncertainty over the final form of regulations relating to securitisations; and a lingering stigma attached to securitisation given its role in the crisis. There may also be **structural factors** impeding the development of a well-functioning securitisation market. These could include: a lack of standardisation of structures and information about asset performance; the difficulty of modelling cash flows of underlying assets (for example due to prepayment options); the lack of mechanisms for smaller issuers to pool assets to overcome the fixed costs of issuance and hence the high barriers to entry.

Chart 3.4.3: A bird's eye view on securitisation activity in Europe



¹⁷⁴ Despite low interest rates, according to the ECB, bank lending in the euro area decreased by 3.9 percent between November 2012 and November 2013. In November 2013, bank lending to private companies fell by 13bn EUR compared to the previous month. For instance, bank lending in Italy decreased by almost 6 percent, while a decline of 13.5 percent was recorded in Spain. Banks have been reported to tighten their credit standards for non-financial corporates in the crisis (ECB, 2013b; ECB, 2014).



Source: AFME, as processed by Commission Services. Top-left panel: annual issuance of securitised products in Europe; Top-right panel: breakdown of issuance by retention; Bottom-left panel: outstanding aggregate amount over time; Bottom-right panel: outstanding aggregate amount per type as of 2013:Q3.

Chart 3.4.3 illustrates that the peak of annual issuance of securitised products was reached in 2009:Q1 with almost 800bn EUR. In 2013:Q3 it had dropped to 2002 levels again of 170bn EUR. Roughly 70% to 75% of the issuance is retained on the balance sheet or used for repo, whereas the remainder is placed with investors. The total outstanding amount has peaked at 2250bn EUR in 2009, but has dropped to somewhat more than 1500bn EUR in 2013:Q3. RMBS make up 60% of outstanding securitised notes.

Ensuring effective and efficient intermediation channels for long-term financing is a complex and multi-dimensional task. The Commission adopted a Green Paper¹⁷⁵ on the long-term financing of the European economy in March 2013 that opened a public consultation period. Its purpose was to initiate a broad debate about how to foster the supply of long-term financing and how to improve and diversify the system of financial intermediation for long-term investment in Europe. While a well-defined and stable regulatory environment was underlined as very important, many stakeholders also called for better calibration of regulatory reform to take account of long-term financing objectives. Responses to the consultation contributed to further assessment by the Commission of the barriers to long-term financing, with a view to identifying possible policy actions and feeding the overall debate on this at European and international level.

In March 2014 the Commission published the follow-up to this work: a **Communication**¹⁷⁶ **on long-term financing of the European economy** proposing a set of actions focusing on (i) mobilising private sources of long-term financing, (ii) making better use of public funding, (iii) developing European capital markets, (iv) improving SMEs' access to financing, (v) attracting private finance to infrastructure, (vi) fostering the development of sustainable securitisation markets; and (vii) enhancing the overall environment for sustainable finance. An important question is whether Europe's historically heavy dependence on bank intermediation in financing long-term investment will give way to a

¹⁷⁵ COM(2013) 150 final.

¹⁷⁶ COM(2014) 168 final.

more diversified system with significantly higher shares of direct capital market financing and greater involvement of institutional investors and alternative financing.

Small and medium-sized enterprises (“SMEs”) contribute significantly to economic growth in the European Union. More than 99% of all European businesses are SMEs. They provide two out of three private sector jobs and contribute to more than half of the total value-added created by businesses in the EU. SMEs are essentially responsible for wealth and economic growth, innovation, research and development in the European Union.¹⁷⁷

Securitisation is one of the possible tools to help stimulate funding to SMEs and other non-financial corporates through market-based financing by non-banks.¹⁷⁸

However, specific **asset-class characteristics may have prevented the securitisation of SME loans from taking off** even in the pre-crisis era. The assessment of creditworthiness of an SME loan is much more complex and difficult compared to a mortgage loan. The monitoring effort is significant, due to the heterogeneity of the businesses and information limitations. This makes securitisations of SME loans more complex and difficult than securitisation of a pool of mortgages. The granularity of the underlying asset pool is crucial to the tranching exercise, and relatively chunkier SME loans entails higher idiosyncratic risk which can result in quick credit enhancement depletion and senior tranches being hit after just a small number of individual defaults. The average tenor of SME loans tends to be around 4-5 years in most jurisdictions (if not shorter), which compared to around 20-25 years for mortgages could make them a less desirable investment for investors such as pensions funds and insurance companies with long-dated liabilities to match against. For these reasons, aside from any potential regulatory hurdle, there are other challenges that policy makers will need to address if serious about the growth in the SME securitisation market.

General factors which may have an important impact on a **securitisation market revival** and are the subject of regulatory efforts are (i) differentiation between “high-quality” and other securitisation instruments, (ii) prudential treatment, (iii) transparency rules, and (iv) risk retention rules.

Some securitisation and similar “originate-to-distribute” models were **inadequately regulated in the past** (see also section 3.4.1). The weaknesses of these models have been identified early on and addressed in the subsequent EU financial reform agenda (see also section 3.5). **Risk retention (“skin-in-the-game”) requirements** that align incentives of the different parties involved in securitisation transactions have been in place in the EU banking sector since 2011 and have been widened to all financial sectors.

¹⁷⁷ Lawless and McCann (2011) and "Fact and figures about the EU's Small and Medium Enterprise (SME)": http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/index_en.htm; EU "Access to Finance" Days - helping to shape an SME-friendly financing market (EC): http://ec.europa.eu/enterprise/newsroom/cf/itemdetail.cfm?item_id=7011

¹⁷⁸ Next to securitisation, non-bank direct lending also provides funding to SMEs and other borrowers for which bank appetite has decreased. Non-bank institutions (e.g. insurance companies, pension funds, private equity funds) have recently initiated or stepped up their lending activities in order to fill the void left by deleveraging banks. Despite their desirability, these and other alternative direct lending initiatives to SMEs currently still represent a small fraction of total funding needs of SMEs.

In addition, **disclosure obligations** applicable to originators and sponsors have been reinforced to allow investors to develop a thorough understanding of the instruments in which they invest. **Transparency** is a key factor to enhance investors' confidence in these instruments. Many concrete actions are being taken by the authorities to make securitisation transactions more standardised and transparent, thereby enhancing investors' confidence. EU institutions and agencies need to increase their cooperation and develop synergies, for instance in terms of the standardisation of reporting templates. In addition initiatives led by industry such as the implementation of labelling provide an essential contribution to enhancing transparency and standardisation over time.

Many stakeholders have called for a **differentiation of securitisation instruments** for prudential purposes in order to foster the development of sustainable securitisation markets. As indicated in the Commission Communication on long-term financing of the European economy, EIOPA advocated an approach identifying **“high quality” securitisations** for the insurance sector in December 2013. It is worth exploring the possibility of incorporating such an approach in the calculation of insurers' capital requirements. A reflection is justified on whether a similar approach could be adopted for other financial sectors to ensure a consistent approach for securitisation products taking into account the specificities of each sector. Rules on retention, high quality standardisation and transparency should be consistent in order to avoid regulatory arbitrage across countries and sectors.

3.5 EU REFORM AGENDA IN THE AREA OF SHADOW BANKING

Shadow banking is a phenomenon that defies institutional and geographic boundaries. The EU regulatory response has therefore been **internationally coordinated through the G20 and the FSB**. FSB (2013c) lists the policy recommendations intended to strengthen the oversight and regulation of the shadow banking system. The policy recommendations to strengthen the oversight and regulation of the shadow banking system are the culmination of almost three years' work.

The FSB has been mandated by the G20 at the November 2010 Seoul Summit. This followed the completion of the new capital standards for banks (Basel III) and reflected the G20 Leaders concern of the potential risk that regulatory gaps may emerge between the banking and shadow banking sectors. The policy recommendations have been considered and endorsed by the G20 leaders at their meeting in St. Petersburg in September 2013. At the end of 2011, the FSB initiated **five general work streams aimed at identifying the key risks of the shadow banking system**.

These work streams focus on the following policy concerns:

- Limiting spill-overs between shadow banking entities and regulated banks;
- Reducing the vulnerability of money market funds to runs;
- Identifying and controlling the systemic risks from new and unregulated shadow banking entities;
- Assessing and aligning incentives associated with securitisation activities; and
- Dampening the risks and procyclicality associated with securities lending and repo.

The Commission has been very active in addressing the above policy concerns and has explained its shadow banking regulatory agenda in a **Communication** (European Commission, 2013a; COM(2013) 614 final) which sets out the concrete policy objectives and the timing of the reform proposals.

Table 3.5.1: Overview of EU policy measures in the field of shadow banking

		2009-2013	2014 and beyond
General initiatives	Transparency of Shadow Banking	<ul style="list-style-type: none"> Monitoring / risk metrics under development (eg. ESRB working group, FSB annual monitoring report). Establishment of the LEI Regulatory Oversight Committee IMF-FSB initiative to close Data Gaps. Shortselling regulation implementation (increased transparency for CDS and banning uncovered sovereign CDS) Amendment to IFRS 7 in 2011 (incl. certain securitisation risks) 	<ul style="list-style-type: none"> COM regulation proposal to increase transparency on securities financing transactions and on re-hypothecation (trade repository) Entry into force of the reporting requirements for derivatives transactions to trade repo (12/02/14) Monitoring / Risk metrics to be completed by authorities (eg. ESRB working group), Legal identifier (LEI) implementation interim phase / final phase as of 2015 MIFID revision / increase the scope of transparency (political agreement Jan 14) Implementation of amendments to IFRS 10, 11, 12 (consolidation requirements / disclosure)
	EU Supervisory framework	<ul style="list-style-type: none"> Commitment consultation on the ESFS framework (2013) FSB policy recommendations to identify "other shadow banking entities" (2013) 	<ul style="list-style-type: none"> Commission Report recommends possible extensions in medium term of the current mandates of ESAs to cover shadow banking (early 2014). FSB to develop information-sharing process within its policy framework for "other shadow banking entities" (2014) / FSB peer review on member implementation of its policy framework (2015)
Approach by entities	Banking sector FSB -WS 1 & 3	<ul style="list-style-type: none"> CRD 2 implemented in 2010 CRD 3 implemented in 2011 Launch of EBA assessment on the scope of credit institutions across EU (final report in 2014) 	<ul style="list-style-type: none"> CRD 4 application as of 01/01/2014 COM proposal on structural reform (29/01/2014) including ban on investments in hedge funds FSB recommendations on indirect approach to be finalised (eg. consolidation, investment in funds). Finalisation of the EBA assessment on the scope of credit institutions EBA report on possible limits for bank's exposures to unregulated counterparties
	Insurance sector	<ul style="list-style-type: none"> Political agreement on Omnibus II (Dec 2013) 	<ul style="list-style-type: none"> Delegated Acts for Solvency II (including capital requirements and risk management requirements)
	Asset management FSB -WS 2 / 3 & 5	<ul style="list-style-type: none"> IOSCO/FSB/ESRB work on policy recommendations for Money Market Funds (2012) AIFMD implementation (transposition deadline 22/07/2013) COM regulation proposal for Money Market Funds (04/09/2013) COM public Consultation on non-bank resolution Works at joint level (CPSS-IOSCO on recovery of MMFs / FSB on methodologies to identify Non-Bank/non-Insurance SIFIs) 	<ul style="list-style-type: none"> COM regulation proposal to increase UCITS/AIF transparency/reporting on securities financing transactions to investors (29/01/2014) IOSCO peer review on the implementation of its MMF standards (end 2014) UCITS review including investment techniques and strategies of the funds Finalisation of the FSB methodologies to identify Non-Bank/non-Insurance SIFIs
	Resolution tools for non-banks FSB -WS 3	<ul style="list-style-type: none"> Works at joint level (CPSS-IOSCO on recovery of MMFs / FSB on methodologies to identify Non-Bank/non-Insurance SIFIs) 	<ul style="list-style-type: none"> Finalisation of the FSB methodologies to identify Non-Bank/non-Insurance SIFIs
Approach by activities	Securitisation FSB -WS 4	<ul style="list-style-type: none"> FSB/IOSCO recommendations on securitisation (2012). Risk retention requirements implemented in the EU regulatory framework (CRD, AIFM...) 	<ul style="list-style-type: none"> IOSCO peer review on the implementation of its standards (end 2014) Cross-sectoral initiative to develop criteria to identify and promote simple, transparent and high quality securitisation structures (IOSCO-BCBS working group)
	Derivatives	<ul style="list-style-type: none"> EMIR in force since 2012 Adoption of technical standards adopted (March 2014) 	<ul style="list-style-type: none"> Technical standards on contracts subject to mandatory clearing to be adopted (Q2) and to enter into force (Q4) Margin requirements for non-centrally cleared trades to be adopted by Q4 2014 and to enter into force Q4 2015
	Securities financing transactions FSB -WS 5	<ul style="list-style-type: none"> FSB work on policy recommendations related to repo and securities lending transactions 	<ul style="list-style-type: none"> FSB works to continue on policy recommendations (mainly on minimum haircuts) COM regulation proposal to increase transparency on securities financing transactions and on rehypothecation (29/01/2014) ESRB surveys on securities financing transactions' rehypothecation practices in the EU

Source: Commission Services

Amongst others, reinforced requirements have been imposed on banks in their dealings with the shadow banking system, securitisation arrangements have been strengthened, a harmonized framework for alternative investment funds managers has been introduced, a framework for risk transfer instruments has been introduced, the framework for rating agencies has been enhanced, the framework for MMFs and undertakings for collective investment in transferable securities (UCITs) will be enhanced, transparency has been increased. **Table 3.5.1** summarises and reviews all policy measures in the area of shadow banking.

The below sections focus on three specific areas where a new regulatory framework has either been adopted (AIFMD) or proposed (MMF, SFT).

3.5.1 Alternative Investment Fund Managers Directive (AIFMD)¹⁷⁹

Before the G20 and the FSB looked at the shadow banking system, hedge funds were singled out as an area of concern. The Commission proposed in April 2009 a directive on Alternative Investment Fund Managers (AIFMD), which also covered managers of hedge funds.

¹⁷⁹ COM(2009) 207 final

Non-harmonised investment funds or so-called Alternative Investment Funds (AIFs) invest in a wide variety of asset types and employ very different investment strategies. Inter alia, hedge funds, private equity funds, infrastructure funds, commodity funds, real estate funds or other special funds can all be classified as AIFs. The AIF sector is estimated to represent around €2.5 trillion in assets.

Macro- and microprudential problems with alternative investment funds

AIFs **amplified the boom and bust**. Certain types of AIF managers have exhibited a strong appetite for credit derivatives and ABS and have contributed to the rapid growth of these markets. AIF managers may also have contributed to the pre-crisis asset price inflation in many markets, in particular those managing large and leveraged hedge funds. The same actors may also have contributed to the speed and scale of the market correction witnessed in the early stages of the crisis. On average, AIFs lost significant value during 2008 and assets managed by EU-domiciled managers contracted by 11.5%. In addition to adverse market conditions, many managers were faced with increased redemption demands from investors and with tighter lending conditions from banks. Leveraged funds were forced to unwind positions (hedge fund leverage for example has declined from around 3 to 1.5). Faced with such pressures, in particular hedge funds were often forced to sell assets into declining markets, thereby realising losses and adding further pressure on declining asset prices. This pro-cyclical behaviour may have undermined financial stability and contributed to a deepening of the crisis.

AIFs had **inadequate liquidity and capital (i.e. shock absorbers)**. Excessive reliance on counterparties and trend-following at the expense of sound risk management and due diligence were observed by many market participants, including managers of alternative funds. The combination of increasing redemption requests and illiquid asset markets resulted in major funding liquidity risks for several AIFs. Many AIFs experienced net outflows of funds. Others unable to exit illiquid investments had to activate gate provisions in order to limit withdrawals and some offered lower fees in exchange for longer lock-up periods. The counterparty risks faced by hedge fund managers were demonstrated by the near-failure of Bear Stearns and the bankruptcy of Lehman Brothers that highlighted the importance of monitoring the security of the cash and security balances held with prime brokers.

Adopted measure

The AIFMD aims to put in place a **comprehensive and effective regulatory and supervisory framework for managers of alternative investment funds in the EU**. Concretely, the AIFMD makes all AIF managers subject to appropriate authorisation and registration requirements, allows monitoring of macro and microprudential risks, and introduces several investor protection tools. Another objective is to develop a single market in the area of AIFs.

The AIFMD has been adopted by the co-legislators in 2011. As from July 2013, the Member States should have finished their transposition of the directive so that the provisions start applying.

- In order to be authorised as an AIFM, a number of key conditions have to be met. The AIF must hold sufficient capital; have appropriate arrangements in place for the risk management, the valuation, the assets safe-keeping (depository), the audit and the management of conflict of interests.
- In order to provide competent authorities and investors the necessary information that is needed to monitor the macro- and microprudential risks, AIFMs are subject to detailed reporting requirements on their activity, including their positions and risks to their counterparties.
- A specific set of rules has been established on AIFMs that manage leveraged AIFs (typically the hedge funds). These funds are subject to more stringent reporting requirements. Competent authorities may decide to limit the use of leverage should they assess it poses a substantial risk to the financial system.

Expected benefits

Due diligence will be facilitated on an ongoing basis. Each AIF manager will be required to set a limit on the leverage it uses and will be obliged to comply with these limits on an ongoing basis. AIF managers will also be required to inform competent authorities about their use of leverage, so authorities can assess whether this use of leverage contributes to a build-up of systemic risk in the financial system. This information will be shared with the European Systemic Risk Board. The AIFMD will also create powers for competent authorities to intervene to impose limits on leverage when deemed necessary in order to ensure the stability and integrity of the financial system. ESMA will advise competent authorities in this regard and will coordinate their action, in order to ensure a consistent approach. As a result, the procyclicality of the financial system is expected to be dampened by the AIFMD. In addition, investor protection will improve, mainly through the increased transparency of the AIFs and markets.

3.5.2 Money Market Funds (MMFs) Regulation¹⁸⁰

In Europe, MMFs are an important source of short-term financing for financial institutions, corporates and governments. Around 22% of short-term debt securities issued either by governments or by the corporate sector are held by MMFs. MMFs hold 38% of short-term debt issued by the EU banking sector. MMFs in Europe manage assets of around €1 trillion. The EU market is equally split between Variable Net Asset Value (VNAV) MMFs and Constant Net Asset Value (CNAV) MMFs. While VNAV MMFs behave like any mutual fund with a NAV or share that fluctuates in line with the value of the investment assets held in the portfolio, CNAV MMFs maintain a constant share price (e.g. 1 EUR or 1 USD per share), irrespective of fluctuations in the value of the MMF's investment assets.

Problems

¹⁸⁰ COM(2013) 615 final

MMFs give rise to **contagion** and are **vulnerable to runs**. The inherent liquidity mismatch between the maturity of MMF assets that generate investor returns and the commitment to provide daily redemptions may prevent an MMF from meeting all redemption requests during stressed market conditions. Both CNAV and VNAV funds tend to attract particularly risk-averse investors, which can therefore be more "flighty" in run scenarios. The liquidity mismatch can cause redemption bottlenecks for both CNAV and VNAV MMFs. During the crisis, several EU based MMFs had to suspend redemptions due to their inability to sell illiquid assets (mostly securitized products like Asset Backed Commercial Papers (ABCP)). If one MMF stops redeeming investors, investors in all other MMF tended to "rush to the exit" by withdrawing their money as well. As a consequence, banks and corporate issuers lose an essential channel to distribute their short-term debt. Their vulnerability to runs is a particular concern given their significant involvement in key short term funding markets and their often close relationship with sponsoring banks.

CNAV MMFs are structured as an investment fund where each share invested can be redeemed at a stable price (unlike other investment funds). Events in 2007/08 and again in 2011 have shown that stable redemption prices cannot be maintained during stressed market conditions. In these situations, the MMF has to either decrease its NAV or share price or the sponsor has to provide financial assistance to "prop up" a stable redemption price. The first situation (decrease in value) is often referred to a "breaking the buck" (breaking the dollar or breaking the euro) because the fund must decrease its NAV from 1 EUR per share to reflect current market value of its shares. "Breaking the buck" is an event that can trigger **massive outflows**, in particular when coupled with a general deterioration in the credit quality of one or more MMF issuers. When the Reserve Primary Fund in the US broke the buck, it led to **investor panic** that ultimately obliged the Federal Reserve to provide a 3 trillion USD guarantee to the entire CNAV sector. The second situation is less transparent because the injection of sponsor support avoids that the MMF is obliged to formally "break the buck". Instead, the MMF sponsor (often a bank) needs to make up the difference between the stable redemption price and the real value of the NAV out of its own means. Because banks did not build capital reserves directly linked to their exposure to the risk of MMFs decreasing in value (regulatory arbitrage), **sponsor support often reached proportions that exceeded the sponsor's available reserves**.

Proposed measure

The MMF regulation proposal aims to prevent the risk of contagion to the real economy (the issuers of short-term debt) and to the sponsors (usually banks). The MMFs should have adequate liquidity to face investor's redemption requests and their structure should be transformed such that the stability promise can withstand adverse market conditions.

In September 2013, the Commission adopted a regulation proposal that intends to make the MMFs that are managed and marketed in the EU safer. Liquidity and stability aspects are at the core of the Commission proposal. The proposal is now with the co-legislators which may introduce amendments in the course of negotiations. Under the current proposal, the rules are expected to enter into force in 2015.

Liquidity shock absorbers are put in place. During the crisis numerous MMFs had to suspend redemptions or even to close the fund. To respond to that problem, MMFs should always have "natural" liquidity at hand in order to provide orderly redemptions. This is achieved in the Commission proposal by introducing daily and weekly thresholds of maturing assets (10% daily, 20% weekly). The second aspect is to ensure that the portfolio is of appropriate duration and sufficient quality. This is ensured in the proposal by introducing new diversification standards (5% cap on individual issuers in CNAV MMFs), including new maturity and credit requirements for those MMFs that invest in Asset Backed Securities (ABS), in particular ABCP. The third point is on the investor side. Under the current proposal, managers will be obliged to "know their customers" better (in terms of redemption cycles, amounts, etc.). This in order to better anticipate the redemptions patterns of their investors.

The proposal puts in place **solvency shock absorbers**. Stable redemptions are often impossible without the support of the sponsor. To remedy to this unhealthy dependence on 'discretionary' sponsor support the Commission proposal introduces an obligation that all CNAV MMF gradually establish a capital buffer amounting to 3% of the MMF's NAV. This buffer will serve to absorb differences between the stable NAV per share and the real NAV per share.

Expected benefits

The MMF proposed regulation is expected to render the European MMFs more secure in adverse market conditions, mitigating related systemic risk concerns. The proposed regulation is expected to give retail investors a fairer treatment (compared to institutional investors). By increasing the MMF safeguards, more retail investors will be attracted to these markets. With regard to SMEs, their protection will be enhanced when acting as investors. SMEs, like corporates of larger size, may use MMFs to place their excess cash for short periods. Reducing the probability to face limits or suspensions of redemptions will prevent SMEs from suffering cash shortfalls.

3.5.3 Transparency of Securities Financing Transactions (SFTs) Regulation¹⁸¹

SFTs are used by almost all actors in the financial system, be they banks, securities dealers, insurance companies, pension funds or investment funds. SFTs use assets belonging to an entity to obtain funding from another entity or to lend them out to another entity against a fee. The main purpose of SFTs is therefore to obtain additional cash or to achieve additional flexibility in carrying out a particular investment strategy.

Problems

SFTs have the propensity to **increase the build-up of leverage** in the financial system as well as to **create contagion channels** between different financial sectors. The recent financial crisis showed that securities financing markets are vulnerable to bank-like runs and fire sales of the underlying collateral, especially when the value of the assets is decreasing.

¹⁸¹ COM (2014) 40 final

Moreover, the assumption that securities financing is always robust even in stressed market conditions proved to be flawed, as interconnections among markets and market participants led to contagion.

EU regulatory **authorities lack the necessary data** to better monitor the use of SFTs and the risks and the vulnerabilities for the stability of the financial system that they imply. Investors are also often not properly informed about the extent to which the investment fund in which they have invested or plan to invest has encumbered or intends to encumber investment assets by means of SFTs. The same can be true for other equivalent financing structures that would create additional risks for the investors. Finally, insufficient contractual transparency makes clients uncertain about the extent to which their assets can be rehypothecated, or about the risks posed by rehypothecation.¹⁸² When market conditions deteriorate, rehypothecation can amplify market strains. Simply put, rehypothecation re-introduces counterparty risk in case a trader fails. Rehypothecation increases the linkages between traders. As dealers grow unsure of the quality of their counterparty, they prefer to take precautionary measures regarding their collateral. It is, therefore, natural that in a time of crisis, dealers become reluctant to agree to rehypothecation to ensure that they know where their collateral is. Traders can become wary about agreeing to rehypothecation when conditions deteriorate. As a consequence, funding liquidity needs can increase and amplify market strains.

Proposed measure

To ensure that the use of SFTs is properly monitored, the regulatory authorities should have access to **frequent and granular information on SFT markets**. With better access to the information, competent authorities would be in a better situation to overview the general risks posed by SFTs. In order that investors regain trust in the financial markets, they should have better access to the information over the use of SFTs by entities in which they have placed their money; this would also include contractual transparency over rehypothecation activities.

Together with the Commission proposal on bank structural separation adopted in January 2014, different measures on the transparency of shadow banking activities have been proposed. Under this proposal, the transparency measures would enter into force in 2016. The proposal will be discussed by the co-legislators.

To ensure that regulators have access to the information, the proposal requires that all SFTs are reported to a trade repository, or, if that is not possible, directly to ESMA. In order to ensure that investors have sufficient information over the use of SFTs, the proposal requires periodical reports and fund's pre-investment documents such as the prospectus to include detailed information on the use of those SFTs by fund managers. To ensure that investors are informed over rehypothecation activity, the proposal includes specific transparency

¹⁸² “Rehypothecation” is defined as any pre-default use of assets collateral by the collateral taker for its own purposes. Rehypothecation is used in bilateral transactions between commercial market participants (dynamic rehypothecation) and between intermediaries and their clients (static rehypothecation).

requirements which have to be met by the parties involved, including written agreement and prior client consent.

Expected benefits

Transparency in the area of SFT is important as it provides the information necessary to develop effective and efficient policy tools to **prevent systemic risks**. The reporting of SFTs to trade repositories will allow supervisors to **better identify links between banks and shadow banking entities**. It will also shed more light on the funding operations of shadow banking entities. Supervisors and regulators will then be able to monitor the market and, if necessary, design better-targeted and timely actions to address any risks to financial stability that emerge. Transparency in the use of SFTs by investment funds is vital. At present, there is very little information available on the use of these transactions by funds, in particular with regard to securities lending and total return swaps. The Regulation will therefore not only benefit investors, but also enable regulators to access valuable information. This, in turn, will allow them to assess the risk linked to the use of these instruments and propose further measures if necessary. Finally, the harmonised rules with respect to rehypothecation will limit potential financial stability risks and remove uncertainty about the extent to which financial instruments have been rehypothecated.

3.5.4 Vigilance is required as new shadow banking risks can build up quickly

Will the strengthened regulation of banks and the regulation of certain shadow banking entities and activities spur the growth of new shadow markets and activities? If so, can worrisome new forms of shadow banking be identified quickly and pro-actively? Where should we look for new shadow banking risks? And how can we identify implicit safety nets? These are important questions that require vigilance and analysis.

Several pre-crisis shadow banking activities ceded to exist. New activities have arisen and are growing rapidly. New risks may arise, given that shadow banking intermediation is evolving rapidly. New concerns may hence arise, in particular if activities benefit unduly from implicit public safety nets. In the US, new areas of potential policy concern have been identified in the areas of leveraged loans, Real Estate Investment Trusts (REITs), and re-insurance (Adrian et al., 2013).

At the riskiest end of lending activities, leveraged loans, of which a sizeable proportion is syndicated to non-banks, have experienced buoyant activity recently. US leveraged loan volumes collapsed in 2008 but rebounded quickly. The sharp increase is driven by the refinancing prospects in a low interest rate environment. Covenant lite loans have increased from 0% in 2010 to 60% in 2013 in the US. There is an increased presence of retail investors through CLOs and funds, whereas sophisticated investors like banks and hedge funds are exiting. Leveraged loans are funded through mutual funds and ETFs. In the EU, leveraged and high yield loan issuance has also increased.

Over the past few years new and improved REIT regimes have been introduced in the EU to meet the growing demand from investors for tax efficient real estate investments vehicles. REITs own and often operate income-producing real estate and rely on liquidity and leverage, but are typically not under prudential regulation rules. REITs perform liquidity

transformation and are vulnerable to crises which trigger forced deleveraging and haircut spirals and contagion to dealer banks. REITs can obtain leverage from dealer banks outside the EU, and vice versa.

Policies to mitigate new shadow banking risks may require significantly enhanced monitoring and an expanded regulatory scope including macroprudential policies (such as leveraged lending guidance, minimum haircuts, etc.).¹⁸³

3.6 CONCLUDING REMARKS

The financial crisis revealed deep financial system flaws such as regulatory arbitrage, ineffective supervision, opaque markets and overly-complex financial products, highlighting the need to improve regulation and monitoring not only in the traditional banking sector but also in the area of what is called “shadow banking”.

Shadow banking or "non-bank credit intermediation" is significant in size and has grown rapidly in the run-up to the crisis. The EU regulatory response to the shadow banking sector has been grounded in an understanding of the dynamics that drove its rapid growth, the social usefulness and sustainable economic growth that follows from its intermediating role, and the market failures and systemic risks that it unintentionally creates (e.g. the extent to which shadow banking activities amplify and increase the natural procyclicality of the EU financial system).

However, to date one cannot but conclude that shadow banking remains relatively unexplored by official statistics. The available EU economic and financial statistics collected are not sufficiently detailed, nor have sufficient coverage to allow for a full understanding of shadow banking related policy concerns. Important data gaps still exist to allow an adequate assessment of the systemic risk of shadow banking. To analyse the impact of the current reforms and whether further measures may be needed requires an improvement in the availability of data and other related qualitative information. Important work to fill data gaps is ongoing within the European Central Bank (ECB), European Systemic Risk Board (ESRB) and European Supervisory Authorities (EBA, EIOPA, ESMA).

Important progress has been made in recent years but more work needs to be undertaken to fully understand the possible systemic issues within shadow banking. In particular, there is a need to understand the relative importance of the drivers behind the growth of shadow banking (i.e. increased demand for safe assets, genuine benefits, regulation and regulatory arbitrage, role of the ECB collateral framework, etc.) and the role of the regulated EU banking sector in shadow banking activities.

Shadow banking may raise systemic risks, but is and should remain an important financial intermediation channel alongside regulated banks. Shadow banks have for example recently stepped up their lending activities in order to fill the void left by deleveraging regulated

¹⁸³ Turner (2012a, 2012b) argues that macroprudential policies are essential, that an expanded regulatory scope is required, and that limits need to be imposed on the total amount of leverage and maturity transformation within the financial system to curtail the excessive procyclicality of the financial system.

banks. The shadow banking sector may even be able to do this more efficiently and cheaply than banks are able to, by specialising in particular aspects of credit intermediation, and by connecting corporations directly to sources of funding in the capital and financial markets. Moreover, the provision of services outside the banking sector can reduce the systemic importance of banks, helping to reduce too big to fail concerns. It is therefore important that efforts to further reform shadow bank take these contributions into account. Regulation should not be so strict so as to remove its potential and positive impact.

Systemic risk and important market failures may arise in the area of shadow banking. Any risk assessment should however examine the extent to which risks are already being addressed or accounted for by existing regulation. A first step should be to assess the success of the reforms being implemented, and track their effectiveness in mitigating risks in shadow banking. A focus on the system as a whole would be useful, in particular to aid macro-prudential surveillance and monitoring, to help regulators keep up with the fast pace of innovation, and to help understand where the future risks are likely to arise and build up.

The Commission will continue to assess how to respond to the ongoing changes in the shadow banking system, which is constantly adapting in the regulatory context. Monitoring should focus on shadow banking's potential to increase systemic risk, whilst retaining the genuine and potentially important benefits and efficiencies for the financial system. Ultimately, the aim is to ensure that the potential systemic risks to the financial sector are covered and that the opportunities for regulatory arbitrage are limited in order to strengthen market integrity and to increase the confidence of savers and consumers. For this, the Commission will continue to closely follow the future work of the Financial Stability Board and G-20, which addresses the risks stemming from shadow banking.

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CHAPTER 4: HFT REGULATION AND SOLUTIONS FOR THE SPEED RACE

4.1. THE EMERGENCE OF HFT AND ITS EFFECTS

“Asset markets rely on accurate pricing of risk. And financial regulation relies on an accurate reading of markets. Whether trading assets or regulating exchanges, ignorance is rarely bliss. It is this uncertainty (generated by HFT impact on markets) which makes this an issue of potential systemic importance.” Andrew G Haldane 2010

Over the last two decades, improved telecommunications and computing have all but rendered obsolete the old style floor based auctions which equity markets had been using for centuries. This technological change has disrupted the traditional market environment. It has also fuelled intense debate over the costs and benefits of the new world of electronic trading and specifically on the role of the so-called High Frequency Trading (HFT).

High frequency traders (HFTs) use powerful computers transacting a large number of orders at very high speeds. They apply complex mathematic algorithms to analyse multiple markets data and execute orders based on market conditions. All portfolio-allocation decisions (the volume of position and the length of time for which positions are held) are made by computerized quantitative models. Their diverse trading strategies are largely driven by their ability to simultaneously process large volumes of information, something human traders could not do in any comparable manner. HFTs move in and out of short-term positions geared towards extracting very small margins from each trading. In doing so, they generate large numbers of orders many of which are cancelled (or not executed) shortly after submission. They may trade either correlated financial instruments in the same venue or between different trading platforms at hyper fast speed. HFT firms usually do not employ significant leverage, accumulate positions or hold their portfolios overnight.

As explained in the Impact Assessment on MiFID¹⁸⁴, HFT represents an increasing share of transactions, especially on equity markets, creating new risks to the orderly functioning of markets, e.g. due to rogue algorithms or sudden withdrawals of liquidity in adverse market conditions. The analysis of the May 6th, 2010 flash crash¹⁸⁵ performed by US regulatory authorities has underlined the fact that even if HFT firms may not have been the cause of this crash, the way and the speed of their reaction has greatly amplified its effects. Even if the effect of this type of trading on the markets is still being investigated and discussed, with some arguing that it is beneficial in terms of liquidity and spreads while others consider that markets have become more shallow, it is obvious that this type of activity deserves to be properly regulated simply in light of the size that it represents in terms of trading as of today, and given the potential spill over effects across financial markets. The scale of HFT in Europe already accounts for a significant portion of equity trading in the EU and is expected to grow further. According to

¹⁸⁴ See Commission Staff Working Paper, Impact Assessment on MIFID (2011). Full text at http://ec.europa.eu/internal_market/securities/docs/isd/mifid/SEC_2011_1226_en.pdf.

¹⁸⁵ Findings regarding the market events of May 6, 2010; Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on emerging regulatory issues; 30 September 2010.

CESR¹⁸⁶, HFT trading accounts for between 13% and 40% of total share trading in the EU. In comparison, HFT traders account for as much as 70% of all U.S. equity trading volume¹⁸⁷.

The existing theoretical and empirical literature on HFT is vast and growing rapidly¹⁸⁸. However it is inconclusive as regards the beneficial effects or otherwise of HFT. Moreover, it mostly centred on U.S. markets making it difficult to extrapolate results to EU market. Early U.S. studies were supportive and emphasized the benefits of HFT. Empirical research suggested that HFT was a natural evolution due to advances in technology and quantitative finance.

According to some experts, HFT helps improving liquidity in the securities markets. The huge volume of trade (made possible through HFT) guarantees the existence of highly liquid securities markets. Somehow, HFTs are makeshift market makers in so far as they are willing to sell or buy stocks when no other participants in the markets will. The bid/ask spreads made off their trading operations are considerably less than what is taken out of the securities markets by traditional market makers. Indeed, in the securities markets average investors have the ability to find a counterparty (high-frequency trader), prone to buy/sell stocks, as HFT trades can make up to 75% of a daily trading volume. This applies even more in the case of large companies.

HFT is also expected to have positive impacts on market efficiency according to the following reasoning: according to the Efficient Market Hypothesis (EMH), the prices of stocks traded in the securities markets incorporate both public and non-publicly available information. According to the EMH, stocks systematically trade at their fair value, thus making it impossible for any participants in the markets to sell overvalued stocks or to buy undervalued stocks. Thanks to HFTs there are large trades in the markets. HFTs profit from discrepancies in stock prices and benefit from market imperfections. Thus, with the use of HFT, the bid/ask spreads are smaller. Somehow, narrow bid/ask spreads make securities markets more stable.

Related to the above point, defenders of HFT argue that it reduces trading costs for small investors as it leads to a reduction of bid/ask spreads and margins. In addition, HFTs can break large fund transactions into smaller trades in order to considerably reduce the effect of a big buy/sell order. In sum, HFT according to this line of reasoning contributes to market quality via (i) greater liquidity (ii) lower volatility (iii) lower transaction costs and (iv) improved speed and accuracy of the price discovery process. In sum, HFTs are market makers providing liquidity to the market, lowering volatility and narrowing bid-offer spreads, thereby making trading and investing cheaper for other market participants.

However, deep concerns emerged after several flash crashes and turbulences attributed to the presence of HFTs¹⁸⁹. The recent empirical literature assessing these market episodes¹⁹⁰ and relying on more recent available data has concluded that HFT can also decrease liquidity, increase volatility, and adversely impact market confidence.

¹⁸⁶ Technical Advice to the European Commission in the context of the MiFID Review – Equity Markets, CESR/10-802, 29 July 2010.

¹⁸⁷ High Frequency Trading Technology, A TABB Anthology, TABB Group, August 2009.

¹⁸⁸ See Jones (2013) and Gomber et al (2011) for literature surveys; the references to this chapter include a representative sample of the relevant literature.

¹⁸⁹ See Popper (2012) Valetkevitch et al (2012), Bowley (2010).

¹⁹⁰ Boehmer et al 2012, SEC report of Flash Crash, Jarrow and Protter (2011), Cartea and Penalva (2010), Zhang and Powell.

First, there are natural limits to the theoretical benefits of HFT. There is unhealthy competition among HF traders to acquire the capability to trade at ever higher speeds by investing in broadband cables, microwave technology, etc. This leads to a sort of speed race, or arms race, to profit from “low latency arbitrage”¹⁹¹. HFTs invest in speed to trade virtually one fraction of a second faster than other traders. As a result the fastest trader can know, with near certainty, where the market will be a fraction of a second ahead of everybody else, profiting at nearly zero risk. The problem is that, beyond a certain threshold, this speed race becomes essentially a zero sum game with a severe potential negative impact on efficiency of the markets.

A second concern is that any increased market quality is only ephemeral and it comes at the expense of HFTs taking advantage of institutional liquidity providers whose presence ensures the adequate valuation of tradable securities in the long-term. The claim is that HFTs may gradually push institutional investors out into dark pools, where HFT activity does not take place. There is anecdotic evidence that institutional investors, at least in some instances, have chosen to execute their orders through systems that do not involve any pre trade transparency. By using voice trading systems or dark pools they ensure that their orders cannot be picked up by HFTs. While this may be in the investors individual interest it is not in the interests of the market as a whole; by increasing dark trading the market price formation mechanism is harmed. If, as feared, the speed race among HFTs ends up shifting market quality participants away from exchange markets, this could have severe negative impact on market efficiency and discourage long-term investment trading in exchange markets.

In sum, technology is a key driver of innovations and growth but also raise some risks in the market place, therefore global market regulation is confronted with a tough challenge; maintain the integrity of the markets while at the same time not suffocating advances in their development.

An additional concern is whether regulators and the regulatory process can keep up with the fast paced and evolving nature of technology and, in particular, the impact of high frequency trading and its unintended consequences. For example, as recently pointed out by financial journalist and analyst Michael Lewis in his account of the inner workings of the HFT industry¹⁹², it is already spreading to other markets such as foreign exchange (FX) markets. Indeed HFT already accounts for more than 35 percent of spot currency volume in October 2013, up from 9 percent in October 2008, according to consultant Aite Group LLC¹⁹³. It’s the opposite of equities, where their proportion shrank to 50 percent in 2012 from 66 percent four years ago, according to Rosenblatt Securities Inc.

As brokers get better at cloaking orders and volume shrinks in stocks, speed trading remains a growth business in the \$5.3 trillion foreign-exchange market, where authorities on three continents are examining the manipulation of benchmarks. While some see them as a sign of

¹⁹¹ Low-latency trading uses computers that execute trades within microseconds, or "with extremely low latency" in the jargon of the trade. Low-latency traders profit by providing information to their algorithms, such as competing bids and offers, microseconds faster than their competitors.

¹⁹² Michael Lewis (2014) “Flash Boys”.

¹⁹³ About 30 to 35 percent of transactions on EBS, an electronic trading platform owned by ICAP Plc that facilitates currency deals, are high-frequency driven, the Bank of International Settlements said in a December report. The rise in electronic and algorithmic trading is prompting firms to set up shop close to the servers of electronic platforms, a strategy to reduce transmission time that has long been popular in stocks.

transparency, the tactics are catching on just as their role in equities is probed by the New York state attorney general and Federal Bureau of Investigation.

The aim of this chapter is, however, more narrowly construed. First it provides a comprehensive overview and summary of the far reaching measures taken at EU level, notably included in MiFID/R to mitigate and control the risks and concerns associated with HFT. Effective implementation of these measures across Europe shall ensure that HFT lives up to its promise of improving market quality without endangering or distorting the adequate functioning of securities markets either in normal times or in times of market stress.

In the second part of the chapter we assess the economic rationale and regulatory appeal of measures specifically targeted to curtail a possible zero-sum speed race, which is largely driven by the existing market design. Proponents and researchers have argued that some of these measures, in particular batch auctioning, could be considered in the context of drafting and implementing secondary legislation derived from MiFID II.¹⁹⁴

4.2. HFT REGULATION IN THE EU

The Commission, in its proposal to revise the MiFID set out a comprehensive framework to address HFT risks. Political agreement between co-legislators on this file was reached on 14 January 2014.¹⁹⁵ The proposal strengthens the organisational requirements for trading venues and HFT traders, including a requirement for authorisation along with some more granular measures such as a requirement for continuous liquidity provision by market makers.

What constitutes HFT activity?

At the outset, EU legislators acknowledged that assessing the market impact of HFT activity is a challenge since its effects often depend on who is undertaking that behaviour and/or why, at any given time. For example a proprietary hedge fund may use a computer program to execute or issue an order rapidly in order to front run and profit from long term investors. This type of HFT activity is often considered harmful because it transfers profits from long term investors to short term speculators. On the other hand a pension fund or asset manager may use a computer program that cuts up an order and executes it swiftly, reducing transaction costs to the benefit of clients engaged in long term investments. Thus identifying and classifying HFT, let alone assessing its overall market impact, can be controversial, because it involves making value judgements about different types of investors and behaviours.

Indeed, there is no commonly agreed and precise definition of what constitutes HFT. Divergences relate to the specific trading strategies¹⁹⁶ employed and the identity and objectives of the traders. Empirical studies assessing the effects on securities markets of HFT to date use

¹⁹⁴ Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on markets in financial instruments repealing Directive 2004/39/EC of the European Parliament and of the Council, Brussels, 20.10.2011, COM(2011) 656 final, 2011/0298 (COD).

¹⁹⁵ See http://europa.eu/rapid/press-release_MEMO-14-15_en.htm?locale=en

¹⁹⁶ Financial trading jargon not easy for the general public appears constantly in relation to HFT. A dedicated glossary at the end of this chapter briefly defines the most common terms used by market participants.

different definitions and hence, unsurprisingly sometimes come to divergent results and conclusions.

One approach to identify HFT activity is to select HFTs based on an existing listing or by relying on trades flagged as HFT by market participants themselves. The main problem with this approach is that it focuses on firms whose primary activity is HFT, excluding other firms which do not engage in HFT as a primary activity, for example investment banks that have a HFT desk. Comparability across countries is also difficult since not all trading venues oblige traders to flag HF trades. In addition, there exist severe constraints for other researchers to replicate (let alone falsify or validate) prior empirical studies on the effects of HFT on securities markets.

An alternative, indirect approach, or lifetime approach¹⁹⁷, identifies HFT activity based on the use of market data. However, this requires access to large amount of non-anonymous data from trading venues and/or firms and the capabilities to handle and process it, in order to identify HFT strategies.

Identification problems explain the large divergence on the results of empirical research devoted to HFT. In addition, the lack of comparability of empirical results is particularly acute in EU equity market. This is because of market fragmentation in Europe. Research on HFT is traditionally focused in one venue¹⁹⁸ or one country. This largely because it has had not been possible¹⁹⁹ to build a consistent database covering 27 different countries with their different venues. ESMA recently²⁰⁰ has made a first attempt to overcome this constraint but controversy on its HFT identification methodology might continue to undermine the reach of its results.

For regulatory purposes, EU legislators have opted for a broad definitional approach that covers not only the conduct but also the identity of the participants and its intent when engaging in the activity in question. In MiFID, HFT trading is defined as “any algorithmic trading technique characterised by:

- (a) infrastructure intended to minimise network and other types of latencies, including at least one of the following facilities for algorithmic order entry: co- location, proximity hosting or high speed direct electronic access;
- (b) system determination of order initiation, generating, routing or execution without human intervention for individual trades or orders; and
- (c) high message intraday rates which constitute orders, quotes or cancellations.”

Such trades will then be identified through flags.

MiFID introduces a comprehensive regime to address the causes, risks and impacts to financial markets posed by HFT, including:

¹⁹⁷ Jovanovic et al (2012), Kirilenko et al (2010) Baron et al (2013) and Weller (2012).

¹⁹⁸ See for example: Jarcenic and Snape (2010) and Brogard et al. (2013b) for LSE, Gomber and Gsell (2009) and Hendershott and Riordan (2013) for Xetra, Hagströmer and Nordén (2013) for Nasdaq-OMX, Jovanovic and Menkveld (2010) for NYSE Euronext Amsterdam and Chi-X.

¹⁹⁹ Due to clock synchronization, legal issues and different country disclosures.

²⁰⁰ Trend Risk and Vulnerabilities report 02-2014.

- An authorisation requirement for HFT traders along with organisational obligations to control risks. This effectively will allow supervisors to impose sanctions if needed since all HFT participants are identified independently on the institution in which they operate.
- Provides supervisors with all the necessary tools to oversee HFT trading and intervene when necessary. In particular supervisors will be provided with information about where HFT trading is taking place and by whom. Record keeping obligations then ensure that a paper trail exists to ensure that any market abuse or other breaches of the rules can be detected and sanctioned by the relevant competent authority.

In addition to these general provisions, more targeted requirements and measures to address specific concerns include:

- A **continuous liquidity provision obligation**: flash crashes may be caused or accentuated by HFT trading systems shutting down whenever there is an unforeseen movement in the market. This has the effect of withdrawing liquidity for the market, accentuating any fall. To address this problem algorithmic market makers are required to provide liquidity into markets continuously and could be sanctioned for any failure to provide such liquidity.
- **Minimum tick sizes**: minimum tick sizes limit the quote life or latency of the quote to a certain measure and are adopted to reduce the chances of the disorderly trading in markets. HFT strategies frequently exploit minor differences in prices (which is only possible where tick size are small) to step ahead of more long term investors. Long term investors by contrast are less likely to make trading decisions on the basis of small price differences. Imposing minimum tick sizes may therefore reduce HFT trading opportunities whilst favouring long term investors.
- **Minimum order to trade ratio**: HF trading strategies frequently involve the issuing of numerous orders, to spoof or test the market, which are then rapidly withdrawn. To address this concern a minimum ratio of unexecuted orders to executed trades is imposed on market participants.

Restrictions on distortive fee structures: in some cases the fee structures of venues may encourage distortive HFT practices and so restrictions are imposed to ameliorate this. Restrictions are in particular required to ensure that co-location services are offered on a non-discriminatory basis and do not create incentives for disorderly trading. A requirement for the testing of algorithms by the persons using the algorithms; this ensures not only do the firms using such algorithms understand them both for their own risk management purposes and also to reduce risk in the system as a whole.

Going forward regulators still face a number of challenges. For example, competent authorities will need to clearly specify which algorithmic trading techniques and to what level of detail need to be reported and described, presumably on an annual basis (in line accordance with Clause 17.2). Other challenges relate to massive trading order cancellations ('spoofing strategy' made possible through the use of HFT) that may disrupt the markets, through the use of complex algorithms and CBT systems. Possible responses include setting speed limits for HFTs or

imposing resting periods in the markets, forcing HFT not to cancel too quickly the trading orders posted in securities markets²⁰¹.

The Commission proposed amendments to MiFID aimed to considerably change the growth trend in HFT by restricting the extent of naked access to stock markets. A key goal is to level the playing field so that no one segment in the securities market has an advantage over another one due to a lack of homogeneity in risk checks in the industry. The Commission shall continuously evaluate and assess whether the adoption of MiFID II is having a real concrete impact on the market and its objectives are being met.

4.3. EFFECT ON MARKET QUALITY OF A HFT SPEED RACE TO ZERO

4.3.1. Low Latency arbitrage and its incentives

Algorithmic trading may allow traders to react to market events faster than the competition and thereby increase profitability of trades. For example, when executing arbitrage strategies the opportunity to “arb” the market may only present itself for a few milliseconds before parity is achieved. To demonstrate the value that clients put on latency, a large global investment bank has stated that every millisecond lost results in \$100m per annum in lost opportunity.²⁰²

What is considered “low latency” is therefore relative. There are many factors which impact on the time it takes a trading system to detect an opportunity and to successfully exploit that opportunity, including: (i) Distance between the exchange and the trading system (ii) Distance between two trading venues, in the case of for example arbitrage (iii) Efficiency of the trading system architecture, for example networking infrastructure choice: Copper or fibre or microwave.

“Latency arbitrage” refers to trading strategies that exploit the advantage of achieving a faster speed while accessing and responding to market information earlier than competing traders. This arbitrage allows the HFT trader to know, with near certainty, where the market will be a fraction of a second ahead of everybody else.

The private value of relative speed result from two types of activities:

- 1) Exploiting or defending stale passive orders (orders placed by non HFT institutional investors) and from aggressive orders (orders placed by HFT). This practice has been estimated²⁰³ to account for, at minimum, 21bln\$ profits per year in US markets.
- 2) Obtaining a better position in order book queues than competitors with similar information and strategies. The strategy is estimated to worth at least \$500bln per year worldwide²⁰⁴.

²⁰¹ The SEC recently implemented a new algorithm technology ‘Midas’ to record all trading orders posted in the securities markets, whether they are effectively executed or cancelled. By doing so, the SEC will be able to clearly know when manipulative HFT strategies are implemented, in so far as Midas will be able to identify trading order cancellations. Thus, this new technology is expected to prevent dramatic market events. Midas should enable regulators to take emergency measures if they see that orders are being cancelled massively in the markets, and, by extension, dramatic events (such as Flash Crashes) could be prevented.

²⁰² ["Wall Street's Quest To Process Data At The Speed Of Light"](http://en.wikipedia.org/wiki/Low_latency_%28capital_markets%29). Information Week., quotes in Wikipedia http://en.wikipedia.org/wiki/Low_latency_%28capital_markets%29.

²⁰³ Schneider (2012).

These figures, whilst significant, only constitute a minimum estimate as they do not take into account the fleeting near-arbitrage opportunities generated from trading the same or similar instruments across different exchanges – or fragmentation. Market fragmentation has been driven by both technology and regulation: technology has made setting up an electronic exchange much cheaper, while regulation has encouraged and facilitated competition in the exchange market. The result is that more exchanges have been set up and that financial instruments are more frequently traded on more than one exchange.

But fragmentation of securities markets across multiple exchanges is associated correlated with increased and significant investments in speed. In 2010, Spread Networks invested \$300mm to dig a high-speed optic cable from New York to Chicago which saved 3 milliseconds in round-trip data transmission. But only 1 year later, Spread's cable was already obsolete and the company moved to implement microwave technology. There are reports of speed races occurring at the level of microseconds (millionths of a second), nanoseconds²⁰⁵ (billionths of a second) and even picoseconds (trillionths of a second). This is also happening in EU markets: the life cycles of orders in European equity markets were in 2010 as short as seven microseconds (with “low latency” strategies of 40 microseconds, “market making” strategies of 180 microseconds and “statistical arbitrage” has 200 microseconds).²⁰⁶

Unfortunately it has been impossible for regulators, academics or even exchanges to estimate the profits available from fleeting near-arbitrage opportunities as this would require data synchronized at the location of trading servers and time-stamped within microsecond accuracy, which is affordable only to HFT firms themselves.

Of course, latency arbitrage comes at a private cost. Investments in speed (dedicated computer hardware and software, co-located servers on exchange floors called “proximity hosting” or even construction of dedicated communication lines) need to be continuously updated. However, any benefits result only from being faster than competing traders, resulting in a speed race that is costly for all engaged in it, even if they would all benefit from setting up a limit to the level of such investments in increasing speed. More importantly, it is doubtful that trading ever closer to the speed of light leads to any benefits in terms of market quality, as explained in the next section.

4.3.2. Empirical evidence that ever-lower latency “arms race” does not enhance market quality

The fact that HF traders only profit from higher speeds to the extent that they are faster than competing traders begs the question whether the speed race can, at least as by product, provide benefits to non-HFT participants or more generally improve market quality. Recent and independent economic research, both empirical and theoretical, suggests that this is not the case: the speeds race is a sort of prisoners dilemma and harms all participants, including many HF traders themselves, other than the few that manage to win the zero-sum race, even if such benefits are likely to be ephemeral.

²⁰⁴ Skouras and Farmer (2011).

²⁰⁵ WSJ June 14, 2011 “Wall street’s need for trading Speed: the nanosecond age”.

²⁰⁶ See AMF (2011).

Absence of benefits

Several authors, notably Gai, Yao and Ye (2013)²⁰⁷, have empirically assessed the negative externalities of this HFT speed race. They conclude that ever increasing speed has no beneficial impact on market quality: whether in terms of quoted spread, effective spread, trading volume or variance ratio. In sum higher speeds allowing for low latency strategies contribute neither to liquidity nor price discovery. However, improving speed increases the cancellation/execution ratio and the short term volatility while decreasing the market depth. Thus, speed allows HFTs to play more complex games without any accompanying social benefit. These researchers conclude there will always be an overinvestment in speed that will create a negative externality to non-HF traders.

The costs of the speed race

Three different teams of academics have also investigated separately and independently the claim that “speed race” is an outgrowth of continuous limit order book (CLOB) that dominates global stock and futures markets, but also certain FX, options and bond markets²⁰⁸. These researchers have shown that CLOB introduces a severe flaw in financial market design. CLOB is a transparent system continuous in time trading and execution that matches customer orders and on which priority is assigned based on the price of quotes and their arrival order. Investors can see market depth or the "stack" meaning they can view bid orders for various sizes and prices on one side vs. viewing offer orders at various sizes and prices on the other side. The CLOB is by definition real-time, anonymous and low cost in execution. Nevertheless, continuous markets are computationally unrealistic since exchanges can't possibly keep up in real time - not least since this is mathematically impossible. CLOB also incentivize HFT algorithms to sacrifice efficiency for speed. Importantly, if and when there is a crisis, regulators can't piece together what happened because the paper trail is confusing. The combination of continuous trading with fragmented markets make it hard to figure out in what order orders arrived or trades took place.

Farmer and Skouras (2012) state that it is difficult to find theoretical reasons why current speed levels incentivized by CLOB might confer significant benefits compared to its costs to society. They summarize their cost benefit approach in the following table:

Sources of potential benefits	Sources of potential costs
Faster price discovery	Speed may be achieved at the expense of more operational risks
More accurate price discovery	Increase in probability of systemic instability & collapse
Gains from trade sooner rather than later	Increase in instability in market location
	Reduces competition because it is a barrier to entry
	Wasteful arms Race
	Regulation is harder

Whereas for them the potential benefits can be easily neglected at current nano-second speeds, all but the two last sources of potential cost are high and self explanatory. For the last two, they consider speed a wasteful arms race as it results in a transfer of wealth from investors and market participants to technology participants A winner-takes-all outcome may eventually cause

²⁰⁷ Presented and discussed in FED, BoE, ECB, Shanghai, NASDAQ.

²⁰⁸ CLOB dominate global stock and futures markets, but also appear in certain FX, options and bond markets.

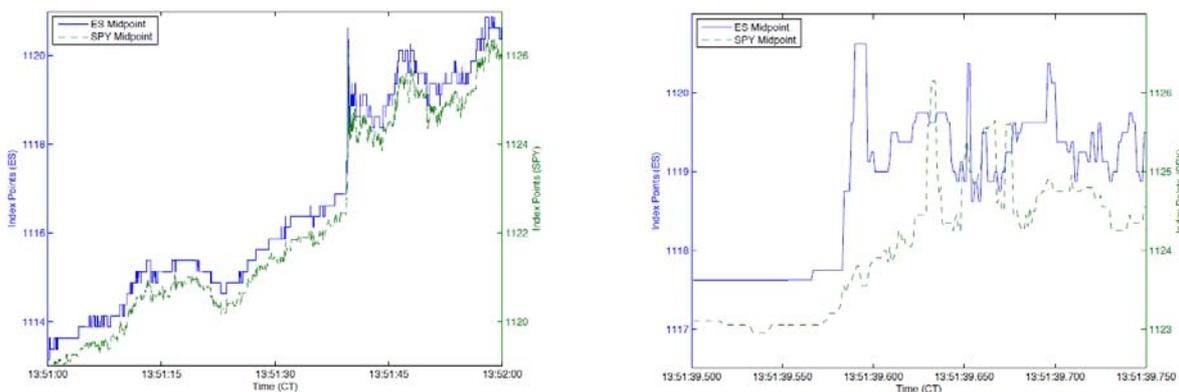
competitors to exit the race decreasing competitive pressure on the winner. They also consider speed interferes with good regulation as regulators have incomparably smaller resources and incentives to collect and analyze market data than HFT firms. As a result the capability to analyze many issues of concern lags reality because markets change faster than the needed studies can be done. In sum, for them we have long reached the point where diminished returns to speed have kicked in.

Experimental and simulation evidence confirms the above findings. For example Wah and Wellman (2013) develop an agent-based model populated by representative trading strategies interacting within carefully specified market mechanisms. Their model comprises a latency arbitrageur and multiple non-HF traders, with a single security whose trading is fragmented across two markets. They implement their model in a discrete-event simulation system which affords the precise specification of temporal changes in system state. Their experiment evaluate: presence of latency arbitrage, market fragmentation, market clearing rules, allocative efficiency, liquidity, volatility and price discovery. They find that the presence of a latency arbitrageur reduces total surplus and has a mixed effect on market liquidity, reflected in slightly improved execution times but widened bid-ask spreads. Consequently, they demonstrate that market efficiency is negatively affected by the actions of a latency arbitrageur, with no countervailing benefit in liquidity or any other measured market performance characteristic. For them as markets employ continuous trading, enables speed advantaged traders to make risk-free profits over fragmented markets and which degrades overall efficiency.

Flawed market design?

The absence of benefits in terms of market quality associated with the low-latency speed race in the context of CLOB, together with potential significant costs has shifted attention to alternative market designs that would further minimise the risks of ever-lower latency trading - essentially, by stopping the zero sum speed race but without affecting the positive effects of HFT activity.

Graph 4.3.1 Time Series at Human-Scale and High-Frequency Time Horizons



A recent simulation study by Busish, Cramton and Shim (2013) suggests one way to do this. It uses millisecond-level data from exchanges. It shows that the CLOB market design does not actually work in continuous time: market correlations that function properly at human-scale time horizons completely break down at high-frequency time horizons (see Graph 4.3.1). That is because continuous time markets don't actually work in continuous time. Nothing in market

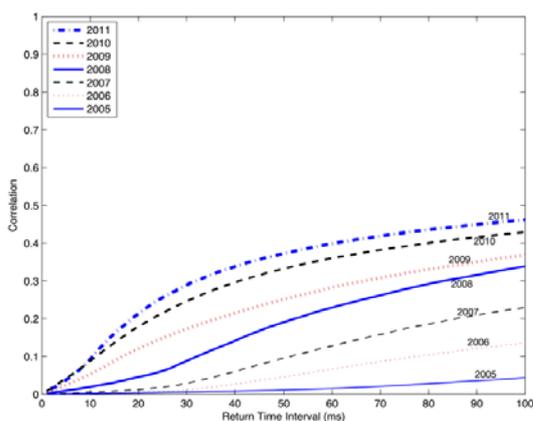
structure allows correlated securities prices to change at exactly the same time therefore correlation breakdown is inevitable.

This correlation breakdown has real consequences: it creates purely technical arbitrage profits, available only to whoever is fastest. They subsequently show that while the duration of this arbitrage has decline over time (see Graph 4.3.2), the profitability is extraordinarily constant.

These findings suggest that while there is an arms race in speed, the arms race does not actually eliminate the arbitrage opportunities; rather, it just continually raises the bar for capturing them, meaning this inefficiency is not competed away over time.

Informed by these empirical facts they develop a theoretical model that shows that liquidity providers usually lose the race, even if liquidity providers can invest in speed technologies. In a competitive market, liquidity providers must incorporate the cost of getting sniped into the bid-ask²⁰⁹ spread (meaning that HFT may make a profit for setting the wrong price – therefore liquidity providers widen the spread to compensate and reduce the chance of this happening) that they charge; this is a purely technical cost of liquidity provision caused by the CLOB market design.

Graph 4.3.2 Arbitrage durations per year



Therefore ultimately all of the money that market participants invest in speed technology comes out of the pockets of fundamental investors via these wider bid-ask spreads. A related implication is that CLOB markets are unnecessarily thin. The equilibrium of their model can be interpreted as the outcome of a prisoner’s dilemma. If all of the market participants – both liquidity providers and those looking to snipe stale/old quotes – could commit not to invest in speed, they would all be better off. But, each individual market participant has incentive to deviate and invest in speed. Therefore for them the HFT arms race is an inevitable consequence of the CLOB market design.

4.3.3. Alternative regulatory approaches to limit the HFT speed race

The latest studies find the speed arm race to be harmful and so propose a resetting of the current financial market design to decrease this externality. Proposals are sorted from most radical to least disruptive or feasible.

Pigovian taxes

As relative increases in speed are seen to have harmful externalities a Pigovian tax to internalize its cost is a straightforward proposal. The tax can be imposed on any investments in speed (Biais, Foucault, Moinas, 2011). The other alternative is to tax rapid order cancellation, which is accomplished through a cancellation fee. Friederich and Payne (2013). Also, when a trader's investment in speed can be neutralized by the same investment by his competitors in a positional game, a restriction on this type of investment may benefit all traders in the market as long as the restriction does not change the relative ranking of speed. Also a broad Financial Transaction Tax could curb speed dramatically. However, these proposals are not without risk since they would indiscriminately kill large and diverse niches of trading activity with far reaching unintended consequences. They would also disrupt liquidity and distort price formation and unless done globally will allow huge regulatory arbitrage opportunities to arise.

Direct regulation on speed

A minimum quote life (or resting order) could be applied to liquidity providers. However the general consensus is that this requirement may not slow down the market but it is widely expected to have a big impact on liquidity. Indeed, liquidity providers will suffer losses if they cannot cancel orders when the market moves against them. As a result they may simply widen spreads or exit the market entirely. This measure may also increase the speed of execution relative to cancellation.

An alternative proposal is to decrease the importance of time priority below the millisecond level, where orders that arrive at the same millisecond share priority. This policy would change the relative speed of liquidity providers and liquidity demanders, which leads to an ambiguous effect. Decreasing the importance of time priority, however, affects all traders in a similar manner.

Private Arms control Agreement

Collectively, the high-frequency traders may be better off by not investing in speed, but the individual rationale of each trader provides a strong incentive to deviate. The private solution to this problem is called the positional arms control agreement (Bernanke and Frank, 2012), in which market participants agree not to engage in mutually offsetting investments or activities. One challenge to this solution is the difficulty for a trader to verify the actions of his competitors. As a result, the consolidated audit trail to be created by the regulators is the first step for this type of solution.

Batch auctions

Several specialised researchers and expert academics have proposed introducing Batch Auctions as a way to address the core fatal flaw in CLOB that fuels the HFT zero sum speed race. This proposal involves requiring exchanges to replace CLOB with uniform-price sealed-bid auctions

²⁰⁹ This just means that someone may make a profit for setting the wrong price – therefore they widen the spread to compensate and reduce the chance of this happening.

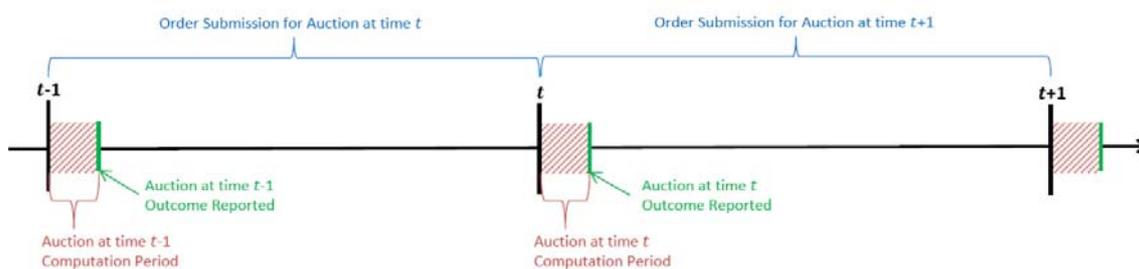
run at frequent but discrete time intervals, such as every 1 second or 100ms (i.e. batch auctions; see process flow in Chart 4.3.3 as proposed by Budish et al (2014))²¹⁰.

This is seen as a more subtle way to contain the private benefits to speed for HFT racers, reducing speed without having much direct impact on trading strategies that are not predicated on speed i.e. it will slow down markets a lot relative to continuous trading but most investors won't be able to tell the difference and would not be negatively impacted in any way. This is more of a technocratic, backend, proposal than a radical "slowing down" of markets. Batching eliminates the arms race for two reasons.

- i. First, batching substantially reduces the value of a tiny speed advantage while otherwise affecting markets as little as possible.
- ii. Second, batching changes the nature of competition among fast traders, encouraging competition on price instead of speed. This ultimately benefits fundamental investors, via deeper markets with better prices (narrower spreads, especially for large lots).

Batch auctions also benefits market surveillance providing cleaner paper trail. Intuitively, in the CLOB market design, it is possible to earn a rent based on a piece of information that many fast traders observe at the same time because it process orders serially, and somebody is always first. In the batch market, by contrast, if multiple traders observe the same information at the same time, they are forced to compete on price instead of speed. For these reasons, frequent batch auctions eliminate the cost of liquidity provision in CLOB markets associated with stale quotes getting sniped. Batching also resolves the prisoner's dilemma associated with CLOB markets, and in a manner that allocates the welfare savings to fundamental investors. In equilibrium of the frequent batch auction, relative to CLOB, bid-ask spreads are narrower, markets are deeper, and social welfare is thereby enhanced unambiguously.

Chart 4.3.3 Process flow for frequent batch auctions



Source: Budish, Cramton and Shim (2014)

Proponents of batch auctioning also suggest that it may offer market stability benefits:

²¹⁰ Different researchers propose slightly different minimal specific differences on the duration of the auctions but the essence of their proposal is similar. For Farmer and Skouras (2012), Wah and Wellman (2013) and Budish, Cramton and Shim (2013) frequent batch auctions are the best market design response to the HFT arms race.

First, frequent batch auctions give exchange computers a discrete period of time to process current orders which simplifies the exchange's computational task, perhaps making markets less vulnerable to incidents like the August 2013 NASDAQ outage, and also prevents order backlog and incorrect time stamps (issues that occurred during the Facebook IPO and the Flash Crash). Second, batching also reduces the incentive to trade off code robustness for speed; error checking takes time.

Third, frequent batch auctions produce a better paper trail for regulators, exchanges, market participants and fundamental investors, i.e. all market participants.

Lastly, the market thickness resulting from the theoretical model can also be interpreted as a stability benefit of frequent batch auctions, since thin markets are more vulnerable to what have come to be known as "mini flash crashes".

Despite all the available empirical and theoretical evidence indicates that introducing batch auctions is very likely to limit the zero sum speed race which HF traders are trapped in, to the benefit of all market participants (possibly including HF traders themselves) and market quality there exists certain obstacles to the adoption of batch auctioning to improve market design, whether through self-regulation by market participants or by regulatory fiat. These are discussed in the next section.

4.3.4. Obstacles to the Implementation of Batch Auctioning

Auctions have long been used by exchanges to set opening and closing prices, so the idea of auctions is not something that is in any way novel to them. However, auctions are predominantly used at the opening and closing trading period as these are the times when liquidity is greatest and there is a need to set a price that is an average of a number of orders. Auctions are a fair and efficient way of doing this. However if during the rest of the day, there may not be sufficient liquidity in the market (meaning there will not be HF trading) to sustain an auction process on an ongoing basis.

More importantly, one may reasonably ask why market forces have not delivered a trading mechanism based on batch-auctioning if it is as effective as claimed by proponents and as suggested by the empirical evidence.

One obstacle is, naturally, the opposition from those HFTs and infrastructure providers that for different reasons stand to benefit from the continued race to faster trading ever closer to the speed of light: *"When you solve an arms race, the key losers are the arms dealers and anyone who had an arms stockpile. Arms dealers in this case are the exchanges, cable, microwave providers. And who has arms stockpile are HFT firms who are presently fastest"*. Hence, here will be some market participants who will lose from adopting proposed batch-auction mechanism, especially stakeholders in the private value of speed. These include trading operations as well as market venues where the competitive edge comes from their own speed. Some market venues in fact may become redundant in slower markets. For example, and somewhat ironically, an important reason for why "dark pool" markets have become popular is because such markets decrease the advantage of high frequency traders. To the extent this is true, batch-auctions would in fact undermine the commercial viability of dark pools and related markets. This would seem of relatively little importance other than to the stakeholders in the companies that own these market mechanisms.

Regulatory arbitrage is also a concern. Auctions are a system of execution that has been long authorised under the current MiFID in EU markets. Hence there is nothing in the legislation standing in the way of replacing CLOB with a different market design that relies primarily on batch auctions every ever second, or every 100ms. This, however, is not the case in the US. US legislation has historically adopted a far more prescriptive approach to the order matching system – for example the new US Swaps regime requires that trading venues can only use a CLOB.

A related but rather technical consideration is that for the batch auction proposal to work optimally it might require that no transparency takes place during the auction process (at 1 or half a second); many exchanges have expressed their concerns on the gaming issues that would arise if bids in a batch auction were displayed before the auction is conducted. It is not clear whether this lack of transparency is absolutely critical for the batch-auction mechanism, but it seems reasonable to expect that such a requirement would probably lessen its effectiveness. Nonetheless, even if pre-trade transparency may limit the magnitude of the benefits of batch-auctioning it does not in any way undermine the mechanism through which such benefits arise, in particular as regards slowing down the zero sum speed race.

Moreover, from a policy perspective alone, it is well understood that pre-trade transparency is an absolute necessity in cases where humans are engaging in trading decisions, and equally useful even in the case of automated trades that typically last half an hour or a portion of a day. However, the general consensus is that there are decreasing marginal benefits of pre-trade transparency as trades approach a second or a millisecond duration, that is, at the nano-second or pico-second speeds. At these speeds only HFTs engaged in a speed race can make use of pre-trade bid and ask quotes to develop ever more sophisticated and complex algorithms to continue to extract rents from millisecond latency advantage, even if this is at the expense of institutional market makers and liquidity providers.

Hence, building of the principles and objectives enshrined in MiFID II it may be appropriate in the context of drafting and implementation of secondary legislation to give due consideration to the calibration of pre-trade transparency requirements in the very single and very specific case of batch auctions, possibly through a system of limited waivers and only for certain markets.²¹¹ Indeed, already for non-equities, pre trade transparency waivers based on market model are already permitted.²¹²

However, the primary reason that a batch-auction mechanism is unlikely to evolve to limit the speed race among HFTs, without regulatory intervention, is that competition among markets has essentially become a competition to attract the handful of institutions that provide liquidity and these institutions use high frequency technology. It is therefore very difficult for a “slow” market to threaten incumbent fast markets, even though this might be a more efficient market structure and could have been the observed outcome were it not for path dependency and various historical accidents including previous regulations.

²¹¹ Moreover, to the extent the batch auction market design discourages or eliminates the zero sum race towards trading at the speed of light, this would obviate the need for supervision and regulation of HFT at ever shorter speeds, and the very significant associated costs, both to ensure adequate enforcement and supervision as well as compliance costs to all participants.

²¹² Although it is not clear how attractive batch auctions could be held for most non equities given their liquidity profile.

All exchanges would benefit from stopping the speed race but there would then be an inevitable and unilateral incentive for one exchange, provided all others introduced batch auctioning, to deviate and reintroduce CLOB thus allowing the speed race to continue and attracting all HF traders to its venue. In sum, in the absence of regulatory coordination or incentives it seems unlikely that markets will choose to slow themselves down voluntarily, even though introducing market design relying on batch-auctions as opposed to CLOB has been shown empirically and theoretically to mitigate the negative externalities of a race towards trading at the speed thereby inducing a more efficient market structure conducive to greater market quality.

Regulators, however, can still overcome some of the above obstacles in various ways: First, getting stakeholders to agree that “in an ideal world” they should prefer frequent batching to continuous limit order books would be an important first step. Second, it is clear from the above discussion that some form of regulatory coordination is essential. A fragmented batch auction doesn't work.

Looking ahead, there will be delegated or implementing acts for which the Commission is empowered under MiFID. They will also deal with the question whether listing companies could have the right to choose frequent batch auctions.

4.4. CONCLUSION AND OUTLOOK

The risks posed by HFT have been identified and measures to address these risks adopted in the agreement on the MiFID review. An updated MiFID II will introduce new safeguards for algorithmic and high frequency trading activities which have drastically increased the speed of trading and pose possible systemic risks. The proposals plan to introduce a series of safeguards both on market participants who use algorithms as part of their trading strategies as well as on trading venues where algorithmic and high-frequency trading takes place:

- Information requirements towards regulators on the strategies of various algorithmic traders will be enhanced, and stricter checks will be imposed on arrangements whereby members of trading venues allow other firms employing high-frequency algorithms to access public markets through their systems. Currently, regulators do not know which kinds of strategies are being used, by which strategy an order is generated, and members may not check what sort of strategies the persons using their systems are using and how those persons control their strategies.
- Trading venues will also be required to have robust controls against problems such as disorderly trading, erratic price movements, and capacity overload. To mitigate the latter, limits will be placed on how many orders per transaction participants can place as well as on how far venues may compete in attracting order flow for example by reducing the size by which prices may rise or fall ("tick size") or through the design of their fee structures. The order to transaction ratio and the minimum tick size will be determined in subsequent measures.
- Additionally, requirements for algorithmic traders to trade on a continuous basis are foreseen to reduce volatility and contribute to more orderly trading.
- Finally, venues shall be required to be able to halt trading in case of significant price movements ("circuit breakers") in a harmonised fashion.

It is hard to imagine what markets will look like ten years from now, even if the measures introduced in MiFID II will be successful and all the intended benefits will materialise. In some sense, regulation and supervision of HFT activity is a moving target.

However EU regulators should be fully conscious of the risks. In the next decade, what “minute” means will change with technology but the basic nature of the speed race is likely to remain the same. Regulators can intervene if necessary and appropriate, relying on all the available theoretical and empirical evidence on the effects of HFT, in order to ensure market quality, integrity and efficiency.

The recent evidence reviewed in this chapter suggests conclusively that the replacement of continuous-time limit-order book by discrete-time frequent batch auctions would reduce some of the non-disputed harms produced by HFT dynamics. We have argued that, in principle, its adoption would not necessarily be dependent on regulatory intervention. For example, a listing exchange may choose to run frequent batch auctions instead of continuous trading, for a subset of securities. In addition, the exchange may offer the listing company the option to elect frequent batch auctions instead of continuous trading. If a company were to elect batch auctions, its stock would trade only on the listing exchange, since otherwise fragmentation would undermine the batch–auction system: one needs a single unified order book to discover the market-clearing price. In this set up, competition occurs at the level of competition for listings.

However, regulatory oversight and action may be advisable, in the event that individual incentives for exchanges restrict or discourage the adoption of batch auctions for certain securities, even if this would be collectively beneficial to the listing companies, and ultimately to most exchanges²¹³, as the theoretical and empirical evidence²¹³ reported in this chapter suggests. Nonetheless any regulatory intervention would need to be supported in a thorough analysis of all the available evidence and due consideration is needed of possible unintended consequences and the costs to exchanges of re-designing their systems.

Glossary of Chapter 4²¹⁴

Dark pools: Networks that allow traders to buy or sell large orders outside the exchanges without pre-trade prices (the price at which shares are offered for sale)

Ping orders: The practice of entering small orders to ascertain the level of hidden orders

Quote stuffing: The practice of entering large numbers of orders to create uncertainty for other participants which is called congestion

Layering and spoofing: The practice of entering manipulative orders that are not executed in the end

Momentum ignition: The practice of entering orders intended to start or exacerbate a trend

Sniping or picking off of passive stale orders: The practice of taking advantage of liquidity providers through speed

²¹³ This is a coordination failure reminiscent of the traditional prisoners dilemma, where it is a dominant strategy for each participant to act in a self-interested way, but in doing so, all players end up worse-off than if they had acted to maximise collective benefits or profits. Coordination failures of this kind are one of many instances of market failure defeating or reversing the presumption that the purely self-interested conduct of market participants interacting through even perfectly competitive and unfettered markets, tends to enhance collective welfare.

²¹⁴ See also the glossary at http://ec.europa.eu/internal_market/securities/docs/glossary_en.pdf

Consolidated order-level audit trails: Is a chronological consolidated set of records that provides documentary evidence of the sequence of activities that have affected at any time a specific operation

Minimum cancel to fill ratio or order cancellation ratio: Puts an upper limit on the order-to-execution-ratios to encourage traders to cancel fewer orders

Excess message fees: Fees imposed on HFT that generates too much message traffic in the exchanges

Minimum tick size: The smallest allowable increment between quoted prices in a market

Minimum quote life or minimum resting times: Specify a minimum time that a limit order must remain in force

Kill switches or circuit breakers: Tools to quickly stop trading algorithms from running

Pigovian tax: Is a tax applied to a market activity that is generating negative externalities

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CHAPTER 5: CHANGES AND DEVELOPMENTS IN COMMODITY DERIVATIVES MARKETS AND THEIR REGULATION

5.1. INTRODUCTION - MOTIVATION OF THE CHAPTER

Commodity markets have changed considerably over the last fifteen years. This transformation has been both quantitative and qualitative, and is the result of a number of structural developments that happened during the 1990s and 2000s. Among those are a dramatic rise in global trade, market deregulation in the US, important technological and legal developments, increased liquidity and access to finance for commodity markets participants.

The commodity markets structure that evolved and formed around this new environment is one where **commodity-linked financial transactions have grown in size, complexity and purposes**. Financial participants have entered or re-entered financial, and to a lower degree also physical, commodity markets, raising concerns about their role and influence in both markets.

The financial crisis did not spare commodity markets. On the contrary it revealed, through price developments and market events, **how intertwined commodity markets' assets, participants and structures are with those of financial markets**. In the framework of the G20, and in the context of the FSB and of IOSCO's work on financial and commodity markets reform, policy makers and financial supervisors are currently in the process of responding to this new set of relationships with a view to implementing appropriate policy responses.

The objective of this chapter is primarily to take stock of the important changes that happened in the commodities sphere over the last fifteen years and to convey the on-going debate on risks arising from these changes. Further, the chapter analyses current developments from a policy point of view and describes the **state of play of regulatory reform of commodity markets in the EU**.

Section 2 provides an overview of the key features of commodity markets and explains how commodity derivatives are used to manage risk across market segments. It also provides a brief overview of recent developments and trends in commodity markets and exposes the large impact of the financial on those.

Section 3 discusses risks attached to commodity markets, focusing on the lack of transparency and market concentration, leading to asymmetry of information for market participants and regulators and to counterparty risks. It also examines the regulatory responses to address those risks, mainly in the US through the Dodd-Frank Act in the US and

in the EU though the EMIR²¹⁵, MiFID II²¹⁶ and revised MAR²¹⁷ package and the Commission proposal for a regulation on benchmarks²¹⁸.

Section 4 concludes that whilst it is not possible yet to determine the overall impacts of the commodity derivative markets reform, recent phenomena in commodity derivatives markets, such as the 'futurisation' trend driven by regulatory developments, point out to potential positive impacts on transparency, decrease of information asymmetries and reduction of counterparty risks. It also looks at potential new challenges in the regulation of commodity markets.

5.2. THE GROWTH OF COMMODITY FINANCIAL TRANSACTIONS IN TERMS OF SIZE, COMPLEXITY AND PURPOSES.

Alongside physical commodity markets, financial commodity markets (also referred to as commodity derivatives markets) allow for risk transfer amongst market participants using either **exchange-traded standardised contracts (futures contracts and listed options)** or **over-the-counter (OTC) bilateral contracts (forwards, swaps and OTC options)**. Thus, commodity derivatives markets play an important role in facilitating the management of a number of risks attached to physical commodity markets and in doing so, they support the development of international commodity trade. In addition, because of their relationship with physical commodity markets, commodity derivatives markets are essential to facilitating price formation and discovery also in the physical markets.

In addition to these risk transfer and risk management functions, over the last fifteen years, commodity derivatives markets have grown as an asset market through their "financialisation". Financialisation refers to the various uses of commodities derivatives for investment purposes (be it mutual funds, hedge funds, exchange-traded vehicles, over-the-counter swaps, structured debt instruments, etc.). With financialisation, new market participants have entered these markets adding to their complexity. Therefore, commodity derivatives markets have grown in size, scope and interconnectedness.

Following the period of high volatility of commodity prices and the sustained price increase for some commodities in the run-up to and during the crisis, there is an ongoing debate about potential negative effects of the financialisation of commodity derivatives markets.

²¹⁵ Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties (CCPs) and trade repositories (TRs) (EMIR).

²¹⁶ Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on markets in financial instruments repealing Directive 2004/39/EC of the European Parliament and of the Council, Brussels, 20.10.2011, COM(2011) 656 final, 2011/0298 (COD).

²¹⁷ COM(2011) 651

²¹⁸ Proposal for a Regulation on indices used as benchmark in financial instruments and financial contracts (COM(2013) 641 final) of 18 September 2013, which objectives and content are explained more detail in section 2.3.

To provide a framework from which this chapter can be understood and avoid confusion on the main instruments and vehicles used by market participants, their definitions are provided below as well as other trading jargon.

Trading jargon

For all instruments, the party agreeing to buy a commodity is said to take a long position and the party agreeing to sell a commodity is said to take a short position. Commodity derivative contracts can be consummated or settled physically, with the underlying commodity being delivered on the expiration date from the seller to the buyer, or by cash.

Commodity derivatives markets instruments

1. Exchange traded commodities derivatives

- Commodity futures contracts (or ‘futures’) are standardised contracts, traded on an exchange between two parties, to buy or sell an agreed quantity of a commodity at a specified future time and at a price agreed upfront. Future contracts can be settled in cash or physically. Detailed futures markets data is directly available through futures exchanges and providers of financial markets data.

2. OTC Commodities derivatives

These types of bilateral transactions always involve a financial intermediary or dealer which is called “sell side”, and the rest of investors in this market which are called “buy side”. In addition to the economic risk, the “buy side” bears the counterparty risk that the “sell side” may not honour its commitment to pay. The market data is opaque.

- A Commodity forward contract is a non-standardised contract between two parties to buy or sell a commodity at a specified future time at a price agreed upfront. Commodity forwards are commonly settled physically but can also be settled in cash. Its economic essence is the same as that of future but it is traded OTC.
- A Single commodity swap is an agreement between two parties under which the cash flows that need to be exchanged are dependent on the price changes of the underlying commodity during the life of the contract. This type of contract works essentially as a series of cash settled commodity forward contracts.
- A Commodity index swap is an agreement between two parties under which the cash flows that need to be exchanged are dependent on a commodity index performance. A commodity index is an index that tracks a basket of commodities to measure their performance. These indexes are often traded on exchanges, allowing investors to gain easier access to commodities without having to enter the futures market. The value of these indexes fluctuates based on that of their underlying commodities, and this value can be traded on an exchange in much the same way as stock index futures. Periodic payments will be made to account for any change in the level of the index versus the agreed fixed price. In entering the swap, the dealer is effectively short in the index and manages the risk by establishing long positions in the index underlying

commodities futures contracts. This instrument can also be referred as a commodity investment swap, and it can be classified as investment vehicle as it represents for some institutional investors (pension funds, insurance companies, etc.) the typical vehicle to access commodity markets as investors.

3. Mix of exchange traded commodities derivatives & OTC Commodities derivatives

- Commodity options can be exchange-traded, if they are standardised or OTC-traded, if they are bespoke. The terms of the OTC options are tailored to individual needs. These contracts give the buyer the right but not the obligation to buy or sell a certain quantity of that commodity at a particular price after a particular period of time.

Investment vehicles in commodities

- Investment funds such as Mutual funds and Hedge Funds, which are invested in commodities either through directly holding commodity futures or through commodity index swaps
- Exchange Traded Products (ETPs), also referred to as Exchange Traded Vehicles (ETVs), comprise Exchange Traded Funds (ETFs), Exchange Traded Notes (ETNs) and Exchange Traded Commodities (ETCs).
 - ETFs are exchange-listed investments which track the performance of a commodity instrument, through full replication (purchase of futures) or through synthetic replication (swap agreement). ETFs are funds and not debt instruments.
 - ETNs are structured investments issued by financial intermediaries that track the performance of a commodity instrument and they are a type of unsecured, unsubordinated debt security listed on exchange. They can be collateralised or uncollateralised (fully exposed to counterparty risk).
 - ETCs are similar to ETFs and track the performance of commodities through either a physical replication approach (storage – especially for precious metals) or through a futures contract replication technique. ETCs are fully collateralised secured debt securities.
- Commodity-linked medium-term notes (MTNs) are linked to either the price of a single commodity, a basket of commodities, or a commodity index. These are structured products issued by investment banks to investors who are attracted to commodities but prefer the fixed income form of assets (coupon interest payment and principal repayment at maturity), just as ETNs. The investor also has to bear the full counterparty risk of the issuer in the event of a default. The buyers of these products are normally interested only in the potential returns offered by commodity markets, and do not have any underlying positions to hedge.

The vehicle for investing in financial commodity markets should not be confused with the actual instrument in which a vehicle invests, although markets instruments can also be used

as direct ways to invest in commodities. For example, an institutional investor can directly buy a single commodity swap or a commodity index swap to an investment bank. Alternatively, the institutional investor can buy into a mutual fund or a hedge fund invested in commodities or an ETF tracking the performance of commodities (in that case the fund manager or the hedge fund manager buys the commodity swap to the investment bank). Some fund managers can take the route of building their commodity exposure by buying futures contracts instead, leaving to themselves the task of rolling the futures contracts maturities when they approach expiry.

5.2.1. Growth in size

To compare correctly the size of commodity markets it is important to use the right metrics.

For exchange-traded derivatives: Open Interest is the key variable to measure size. Open interest is the total of all futures and option contracts entered into and not yet offset by any opposite transaction. The aggregate of all long (buy) open interest is equal to the aggregate of all short (sell) open interest. As commodity futures contracts are traded on organised exchanges, data on total open interest for particular commodity futures is available through the exchanges or financial data services providers.

For OTC derivatives: Notional amounts outstanding are the relevant variable to measure size. Nominal or notional amounts outstanding are defined as the gross nominal or notional value of all contract deals which will be settled in the future.

Other exchange data exist like the number of contracts or volume of transactions but are not comparable with the notional amounts outstanding in value for OTC markets and they provide only a fragmented view of the size of these markets.

Ideally in the future, and in particular in the case of OTC markets, useful data to collect should include gross and net notional values, trade count and open interest, broken down by dealers/non-dealers and commercial/non-commercial from participants others than financial intermediaries, this is, the buy side. The data should also be grouped per commodity type, as different underlying commodities exhibit very different characteristics. These data could then be combined with the exchanges data to explore the links between OTC derivatives and their underlying commodities future markets. These data could help regulators to detect and monitor the presence of undesirable underlying market outcomes arising from OTC commodities drivers.

Futures markets

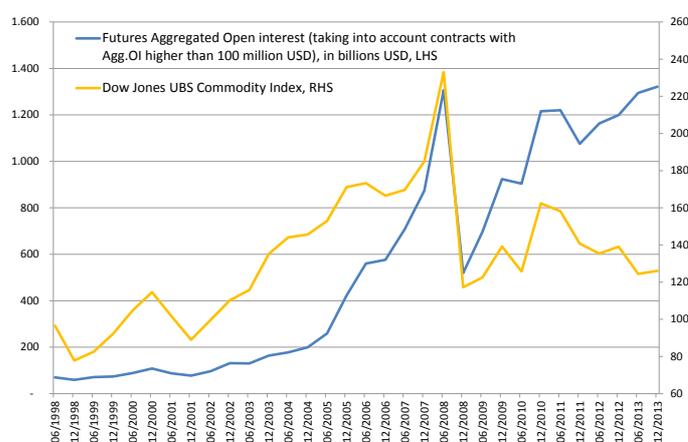
Using open interests as measure of size, the commodity futures market has grown from around \$70 billion in 1998-1999 to \$1307 billion in June 2008 (see Chart 5.1). Prior to the crisis growth was supported by the rise of commodity prices: between June 1998 and June 2008 the Dow Jones-UBS Commodity Index²¹⁹ increased by 141%. The drop of total open

²¹⁹ The Dow Jones-UBS Commodity Index (DJ-UBSCI) is a broadly diversified index that allows investors to track commodity futures through a single, simple measure. It is one of the two main commodity markets

interest during the second half of 2008, from \$1307 billion to \$519 billion in Dec 2008 (-60%) was in tune with the evolution of commodity prices (for the same period the DJ-UBS Commodity Index fell 50%) and suggests a large value effect at the time.

Interestingly, since then, the aggregated open interest has totally recovered to reach \$1349 billion in Dec 2013, while the DJ-UBS Commodity Index stayed at the same level.²²⁰ The increase of open interest from 2008 until 2012 beyond the increase in the commodity index could be explained by the run out of financial markets at the beginning of the crisis accompanied by the increase of liquidity provided by central banks. Nevertheless, the change in the positive correlation between these two variables since 2012 is mostly explained by the “futuresisation” phenomena (see next section).

Chart 5.1. Evolution of future open interest versus DJ UBS Commodity Index



Source: Bloomberg, EC calculation. Note: The chart above computes, for commodity futures markets, the worldwide sum of the aggregated (all maturities for any given contract) open interests in USD, taking into account only contracts with aggregated open interests in excess of USD 100 million in Dec 2013.

When looking at the breakdown per commodity and per region (Table 5.1), US exchanges currently hold the lion's share of the total aggregated open interest. This is especially true for energy refined products (gasoline, heating oil, RBOB gasoline, etc.) and natural gas, where the shares of US exchanges are 73% and 89.1% respectively. US exchanges also hold also a

benchmark, the other one being the Standard & Poor's Goldman Sachs Commodity Index (S&P GSCI). The DJ-UBSCI is composed of commodities traded on U.S. exchanges, with the exception of aluminium, nickel and zinc, which trade on the London Metal Exchange (LME). For more information see <http://www.djindexes.com/commodity/>

²²⁰ These figures are in line with the trend and figures reported by the industry. See for example J.P.Morgan, Global Commodities Research (3 January 2012), "Commodity Investment Flow Monitor" page 8 reporting the listed open interest of 43 commodity futures markets from 2000 to Dec 2011. At the end of Dec 2011 the open interest of this set of commodity futures stands at \$ 873 bn and close to the 2008 peak (\$ 975bn). It increases progressively from 2000 (below \$ 100bn) and then strongly up to 2008.

very large share of the aggregated open interest for agricultural commodities such as soybean²²¹, corn and wheat (61.7%, 88.4% and 75.8% respectively).

European futures exchanges exhibit sizeable market shares in crude oil (Brent crude oil and WTI crude oil futures contracts from ICE Futures Europe exchange²²²), with 53.7% market share, and industrial metals through the London Metal Exchange.

Table 5.1. Breakdown of futures open interests by type of commodity and geography of the trade

Commodity Sector	Commodity Sub-Sector	Aggregated Futures Open Interest (\$ bn)	US Exchanges (\$ bn)	US Exchanges (World share in %)	European Exchanges (\$ bn)	European Exchanges (World share in %)	Chinese Exchanges (\$ bn)	Chinese Exchanges (World share in %)
ENERGY	Crude Oil	424,0	194,2	45,8%	227,8	53,7%		
	Refined Products	188,2	137,4	73,0%	48,4	25,7%	0,3	0,2%
	Natural Gas	130,7	116,4	89,1%	14,2	10,8%		
	Electricity	48,6	7,1	14,6%	38,4	79,1%		
	Coal	43,3	15,0	34,6%	13,6	31,5%	14,7	34,0%
	Total Energy	834,8	470,0	56,3%	342,4	41,0%	15,1	1,8%
METALS	Industrial Metals	154,3	13,9	9,0%	69,5	45,0%	67,3	43,6%
	Gold	58,8	46,6	79,2%			14,5	24,6%
	Other Precious Metals	28,7	19,8	69,3%			7,4	25,8%
	Total Metals	241,7	80,3	33,2%	69,5	28,8%	89,2	36,9%
AGRICULTURE	Soybean	101,1	62,4	61,7%			33,7	33,3%
	Corn	28,6	25,3	88,4%	0,4	1,4%	1,4	4,9%
	Wheat	26,3	19,9	75,8%	4,1	15,6%	1,4	5,4%
	Other Grains	16,6	0,4	2,4%	1,7	10,2%	9,1	54,4%
	Sugar	23,7	15,1	63,5%	1,7	7,0%	6,6	27,8%
	Cocoa	12,2	5,9	48,1%	6,3	51,9%		
	Coffee	8,3	6,6	79,2%	1,6	19,5%		
	Other Foodstuff	17,4	2,7	15,6%			7,0	40,1%
	Fibers (Cotton...)	8,7	6,7	76,9%			1,5	16,9%
	Livestock	30,0	29,8	99,5%				
	Total Agriculture	272,8	174,7	64%	15,8	5,8%	60,6	22,2%
	Total	1.349,4	725,0	53,7%	427,7	31,7%	164,8	12,2%

Source: Bloomberg, European Commission – DG Internal Market's calculation. Note: For commodity futures markets, the worldwide sum of the aggregated (all maturities for any given contract) open interests in USD, taking into account only contracts with aggregated open interests in excess of USD 100 million in Dec 2013.

It is worth noting the increasing size of Chinese exchanges (Shanghai Futures Exchange, Dalian Commodity Exchange and Zhengzhou Commodity Exchange), mainly for metals and agricultural commodities. Their importance has grown rapidly over the last few years and they represent, as of Dec 2013, a global market share of 12.2% (by aggregated open interest).

OTC markets

²²¹ The aggregated open interest for soybean is for the soybean complex, i.e. including futures contracts for soybean, soybean oil and soybean meal.

²²² Established in 1981 as the International Petroleum Exchange of London (IPE), and acquired by ICE in 2001, ICE Futures Europe is the largest regulated energy futures exchange in Europe, and the second largest in the world. Its Global benchmark ICE Brent Crude is relied upon to price two-thirds of the world's physical oil. It is regulated by the U.K. Financial Conduct Authority, with oversight by the U.S. CFTC for linked contracts. For more information https://www.theice.com/futures_europe.jhtml

According to the BIS²²³, in the run-up to the crisis the size of the OTC commodity markets ballooned reaching \$7783 billion in June 2008²²⁴. The commodity OTC markets size experienced a 30-fold increase in ten years (from \$256 billion in June 1998 to \$7783 billion in June 2008), presenting a considerably larger increase than that of the size of the commodity futures markets mentioned before. This very significant growth in the notional value of OTC commodity derivatives since the mid-2000s corresponds to a period of increased participation by non-commercial traders in commodity markets.

In percentage terms, the burst of the financial crisis was as devastating to the commodity OTC markets as it was to their futures counterparts. The notional amounts outstanding of OTC forwards and swaps decreased 66% during the second half of 2008 while the fall was 60% for the aggregated commodity futures open interest. Remarkably, contrary to commodity futures markets, OTC commodity markets have continued to shrink post-crisis and the size difference between both is now at a 15 year low (see Chart 5.2).

While in the run-up to the crisis the OTC commodity markets became significantly larger than the commodity futures markets (6 times larger by June 2008), their relative size has been converging recently. This is due not only to the growth of the futures markets but also to the simultaneous contraction of the OTC markets post-crisis, which suggests that a shift from OTC to equivalent exchange-traded transactions is taking place. We explore one of the drivers of this market development in the next section.

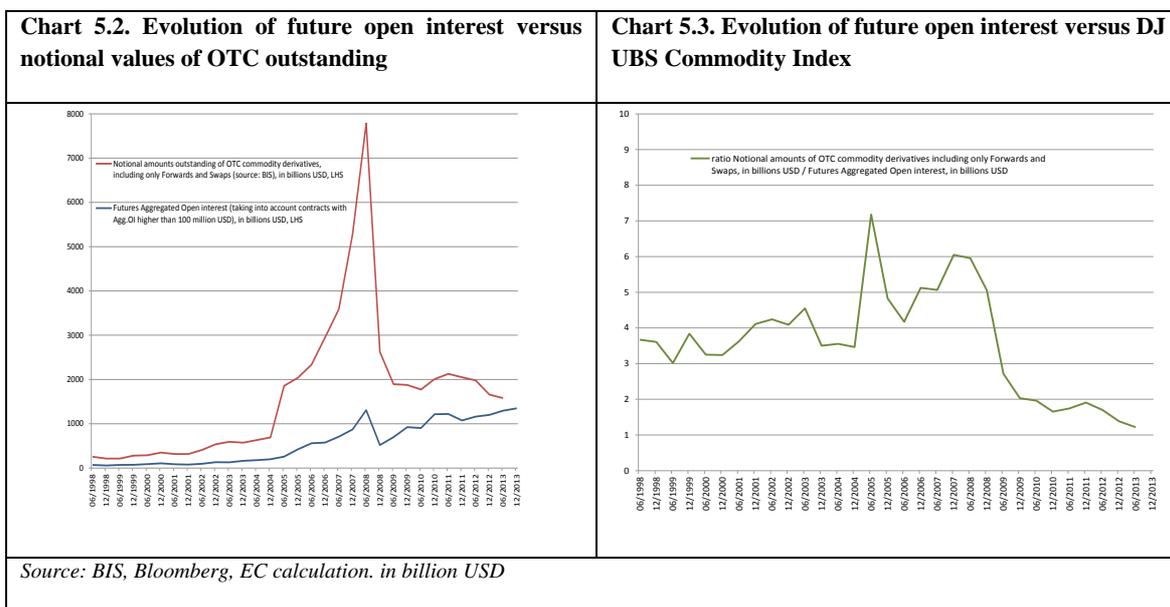


Table 5.2. Financial Commodity Markets

²²³ <http://www.bis.org/statistics/derstats.htm>

²²⁴ Notional amounts outstanding of OTC commodity derivatives, including only forwards and swaps, i.e. excluding options. Notional amounts outstanding of OTC commodity derivatives forwards and swaps represent a comparable metrics to aggregated open interest for futures contracts.

<i>(in \$ bn)</i>	Exchange-traded		Over-The-Counter		Total
	Futures		Forwards & Swaps		
Jun 1998	70	(21%)	256	(79%)	325
Jun 2005	259	(12%)	1.857	(88%)	2.116
Jun 2008	1.307	(14%)	7.783	(86%)	9.089
Jun 2011	1.220	(36%)	2.129	(64%)	3.349
Jun 2013	1.295	(45%)	1.579	(55%)	2.874

Source: Bloomberg, European Commission, BIS, in billion USD

Futurisation

As described in the previous section, exchange-traded commodity markets have renewed their growth in the aftermath of the crisis while OTC markets have shrunk (see Charts 5.2 and 5.3). This market development happened with no support from commodity prices (DJ-UBS Commodity Index up only 6% from Dec 2008 to Jun 2013) and suggests that some of the OTC derivatives market moved to exchange-traded futures. In line with the G20 commitments of 2009 on the regulation of OTC derivative markets, whereby all standardized swaps should be traded on exchanges or electronic platforms and cleared through central counterparties by the end of 2012, a set of global regulatory proposals has been developed (see chapter 3 for further details). In reaction to the emerging regulatory landscape, commodity exchanges have organised for a swift conversion of already cleared OTC swap contracts into economically equivalent futures contracts.²²⁵ Consequently many commercial entities found it unnecessary to apply for swap dealer regime avoid certain Dodd-Frank regulatory requirements. This market shift has been precautionary market behaviour that anticipates global regulatory changes - facilitated by the **"swaps to futures" migration** plans put in place by the commodity. As a consequence, market participants are using futures to replicate the risk allocation functions that OTC swaps play in the market in a development called "futurisation". This replication works by using a series of futures equal to the times the swap have to make a monetary exchange and with the same duration. So for example a swap that has 4 point in time exchange of cash will evolve into 4 futures each of it with the a different maturity mirroring the life cycle of the swap.

Noticeably, as the changes to the regulation do not target physical end-users of derivatives, market participants can continue to use uncleared bilateral OTC swaps, potentially tailored to very specific needs, to hedge genuine exposure to commodity risk (in line with the Dodd-Frank act's exemption for commercial end-users).

5.2.2. Growth in complexity and scope

Technological progress

²²⁵ For more information on the "Futures transition" or "Swaps to Futures" development and a list of ICE's cleared swap and option products listed on ICE Futures U.S. and ICE Futures Europe see for example https://www.theice.com/s2f_products.jhtml

Structural changes in commodity markets, notably in terms of technology but also in terms of international standard agreements established by the market, have significantly impacted their organisation, supported their growth, increased their sophistication and extended their scope.

The bespoke nature of certain commodity transactions, a historical lack of automation as well as the fact that commodity markets were until the turn of the millennium rather out-of-fashion compared to other markets (equity markets notably) resulted in these markets long resisting innovation.

However, the supporting fundamental trends of the recent years and the participation of financial institutions in the sector stimulated a number of important **technological and market standards agreements developments**. Technological developments, such as **modern infrastructure technology** and **‘electronification’ of trading**, have been drivers of growth and have increased the geographical dimension of commodity markets and commodity transactions. These changes have also substantially modified the commodities market microstructure. In parallel, market participants have grown in number and sophistication, and so have instruments, infrastructures, techniques and strategies as will be described later.²²⁶

Technological changes have been particularly numerous as exchanges favoured them as a way to compete with each other. With the trend of liberalisation of exchanges in the 1990s, commodity exchanges moved away from their original role of public utility and started competing to increase the volume transactions and enhance the appeal of exchange-traded products. Another area of the business development for exchanges has been to extend and create services linked to the trading of commodity derivatives (clearing, execution facilities, settlement systems, etc.), again with a view to increasing the volume and ease of transactions. **New market auto regulation such as** standardised trading terms for exchange-traded derivatives and the standards developed by ISDA for OTC transactions²²⁷ have facilitated the ease and growth of transactions on both market settings. As a consequence, and in order to safeguard commodity markets' integrity, the impact of ongoing legal and technological developments needs to be properly monitored and addressed by supervisors and regulators.

A changing mix of market participants

It can be argued that the growth in sophistication and reach of commodity transactions is directly linked to the behaviour of market participants as well as their role in commodity markets. Again, as for technological and market innovation, commodity markets' fundamentals of the last fifteen years have supported the growth of commodity market participants in general.

Aside from the traditional participants such as commodity producers and consumers, growth opportunities have presented themselves to commodity exchanges (increased volume of

²²⁶ For example some advances in market access and order routing have bred new trading practices like high frequency trading.

²²⁷ <http://www2.isda.org/asset-classes/energy-developing-products/>

transactions, development of new or improved trading-related services) that can offer vehicles such as ETFs for retail investors, institutional investors (pension funds, private banks, insurance companies, assets managers, sovereign wealth funds) and to commodity trading firms.

Commodity trading firms, which have traditionally owned commodity transportation and storage facilities and offered intermediary services (physical and financial) to commodity producers and end-users, have profited enormously from the increase in global trade. In 2011 the top five commodity trading houses generated revenues of more than \$765 billion (see table 5.3). Opportunistically, during the commodity boom, many commodity trading firms bought commodity production and transformation capacities, especially in the metals and energy sectors and have now become major commodity producers.

Table 5.3. Key trading companies by total revenues, in billion USD, 2003 vs. 2011

		Ownership	Country	Total Assets		Total Revenues		2003-11 CAGR
				2003	2011	2003	2011	
1	Vitol	Private	Netherlands	na	na	61*	297	22%
2	Glencore	Public	Switzerland	59,90**	86,16	142,34**	186,15	-
3	Trafigura	Private	Netherlands	na	na	na	121,5	-
4	Noble group	Public	Hong Kong	1,07	17,43	4,28	80,73	44%
5	Gunvor International	Private	Cyprus	na	na	na	80	-
6	Mercuria	Private	Switzerland	na	na	na	75	-
7	Marubeni	Public	Japan	41	65	75,2	55,63	-
8	Xstrata	Public	Switzerland-UK	10	74,83	3,47	33,88	33%
9	Mearquard & Bahls AG	Private	Germany	0,78	5,63	5,44	25,84	22%
10	System Capital	Private	Ukraine	na	28,45	na	19,55	-

Source: CEPS (Centre for European Policy Studies) "Price formation in commodities markets: Financialisation and beyond" – Sept 2013

Financial intermediaries are also called "Sell-side" These can be dealers and brokers, who make markets and match trades on OTC commodity derivatives. They also deal and make markets in exchange-listed derivatives. Dealers can manage their own exposure by pooling opposite positions from different clients and trading with each other (inter-dealer trading). The largest dealers in the market are investment banks, who tend to dominate the sell-side of the market.

These participants have been quick to respond to the new environment and have championed themselves in servicing the other market participants. They have provided access to credit, sell-side trading and hedging services to commodity producers, users and commodity trading firms alike. They have also been the main architects of the "financialisation" of commodity transactions²²⁸ and consequently have provided investors with commodity investment vehicles structured through OTC derivatives contracts.²²⁹ It has been argued by financial intermediaries that in order to provide trading and hedging services, and despite the

²²⁸ See section 2.3.2 after

²²⁹ See Table 5.2 for a list of commodity derivatives markets instruments and investment vehicles.

extremely low rate of physical delivery²³⁰ they needed the ability to physically settle commodity positions, i.e. to take the delivery of the product that underlies the contract. Thus, some of the financial institutions active in commodity markets have acquired significant assets in the fields of commodity storage, commodity transportation and logistics, as well as directly in production resources.²³¹

Remarkably, business media reports are the main source of information regarding financial intermediaries' forays into physical commodity activities. "*Contrary to what one might expect, there is no meaningful public disclosure of banking organizations' assets and activities related to physical commodities and energy.*"²³² Another way of finding information on banks holdings or ownership of firms that deal with physical commodities is by researching directly in the annual accounts of the main banks involved in these activities. For example, **Morgan Stanley** owns: 6 power plants (3 in Europe, 3 in the US), a fleet of roughly 100 vessels (through ownership control of Heidmar), several fuel and gas assets (through Transmontaigne Inc. and Heidmar).

However, this type of bank business might be advocated to end rapidly, as recent news²³³ state that the Fed has been reviewing banks' ownership of physical commodities and that it is asking for public input on whether to put restrictions on banks' trading and warehousing of physical commodities amid lawmaker scrutiny of potential market manipulation. In that sense, recent news state that JP Morgan is currently selling its physical commodity business to Mercuria for \$3.5 billion²³⁴, while Royal Bank of Scotland and Nomura have already quit the full commodity business due to higher costs of capital in the aftermath of the financial crisis.

Chart 5.4. Commodities Future Brokerage and OTC derivatives: Business, Clients and Functions

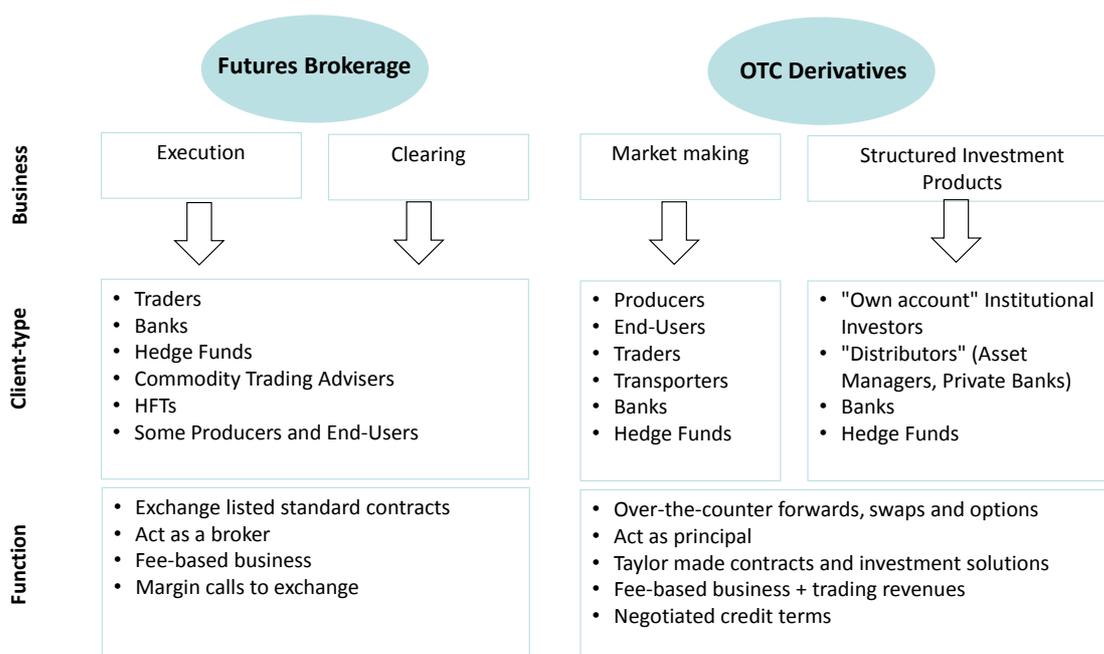
²³⁰ Only 1-2% of futures contracts are settled through physical delivery at maturity.

²³¹ On the growth of banks into physical commodity production, transportation and storage activities, its legal base and the risks it creates see Saule T.Omarova (24 November 2012), "The Merchants of Wall Street: Banking, Commerce, and Commodities", Minnesota Law Review, Vol. 98, 2013

²³² Saule T.Omarova (24 November 2012), "The Merchants of Wall Street: Banking, Commerce, and Commodities", Minnesota Law Review, Vol. 98, 2013 p293.

²³³ "Fed Weighs Surcharge on Banks' Physical Commodity Businesses" Jan 14, 2014 WSJ.

²³⁴ "Macquarie eyeing JPMorgan's physical commodities unit" January 16, 2014 The Australian.



Source: European Commission

Financial intermediaries have also managed to re-invent the commodity markets as a new "asset class" with no generation of revenue stream *per se*²³⁵ but diversification properties and negative correlation of returns with some other asset classes. This has contributed to the growth of new financial instruments (mutual funds, exchange-traded funds, commodity structured products, etc.), allowing private investors to gain exposure to commodity prices' developments. As a consequence asset management companies have expanded their involvement in commodity markets.

Therefore, as described in Chart 5.4., financial intermediaries, usually investment banks, can act as pure intermediaries in the brokerage of futures activity (executing and clearing futures for clients but not taking on credit and market risk) or act as principals (transacting swaps and options with clients – market making and taking on counterparty risk) in the OTC space.

5.2.3. Growth in purposes

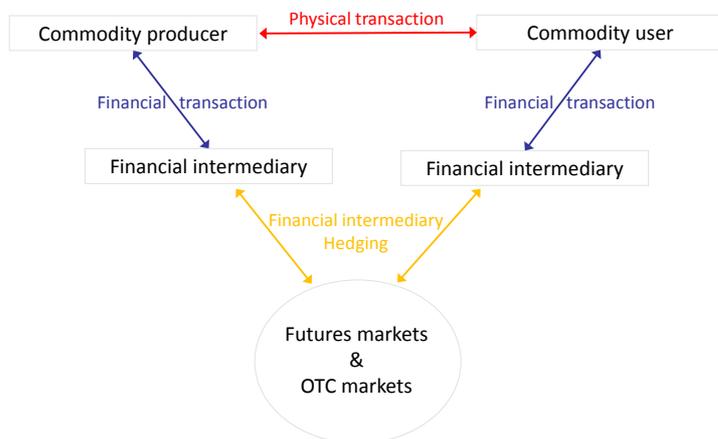
Hedging, transferring and managing risk

Historically commodity derivatives played an important role in managing risks involved in trading physical commodities on the spot markets. By using derivatives, commodity producers, physical commodity traders and end-users could transfer, for a price, to other market participants, undesired risks attached to their physical commodity business activity. Amongst these risks stand out: **price risk** (risk of being exposed to price trends by holding too much or too little of the commodity); **transportation risk** (set of risks involved with the transportation of a commodity after the delivery point of the exchange); and transaction-

²³⁵ To be compared with the revenue streams of equities (dividends), fixed income instruments (interest), real estate (rents). At the noticeable exception of gold which can be lent.

specific risks like for example the **product risk** (risk the commodity delivered present different characteristics than the one agreed by the parties to the contract). Hedging a risk requires finding a party willing to take the opposite risk. This is most clearly the case when producers, who wish to have certain prices, trade with consumers who also wish to have certain price. In that sense the financial industry argues that speculators and arbitrageurs manage the risk that commodity producers and traders wish to hedge.

Chart 5.5. Hedging participants in Commodities markets



Investing in commodities with no hedging purposes): Financialisation

Financialisation is the term used to indicate the phenomenon of significant capital inflows from financial market investors into the commodity "asset class" through commodity investment products.

As mentioned previously, from the beginning of the 2000s, and with the support of the commodity boom, financial intermediaries have been swift to re-invent commodities into a new "asset class". Timing was especially convenient following the burst of the technology / internet bubble and the retreat of global stock markets at the time. To allow investors "to enter the commodity asset class" the financial industry provided them with a series of innovative investment vehicles in different formats to accommodate the needs of a large spectrum of investors: commodity index swaps, mutual funds, Exchange Traded Products ETPs and commodity linked medium-term notes MTNs.

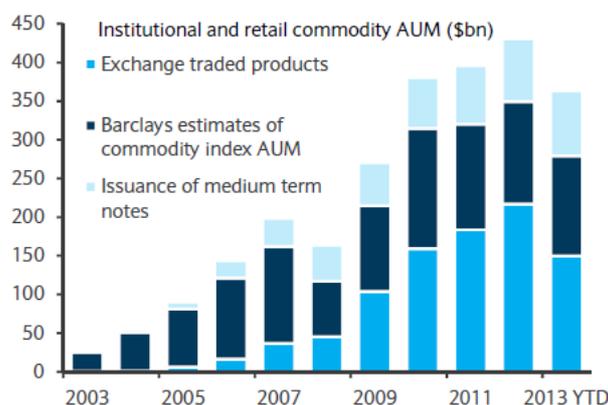
The inflow of capital to commodity derivative markets has increased over the last few years in response to high liquidity, low yields on safe assets, positive fundamental background and promotion efforts by financial intermediaries even though return on commodity investments have been positively correlated with several other financial assets, notably equities. According to Barclays Commodities Research, total commodity assets under management were \$363 billion in August 2013²³⁶, off their peak of \$458 billion registered in April 2011,

²³⁶ Source Barclays Commodities Research (1 October 2013), "The commodity investor: Still stop-go for commodities"

but at a much higher level than before the recent financial crisis (see Chart 5.6). Total commodity assets under management have grown strongly since 2003 where they represented below \$25 billion.

ETPs have experienced a fast since 2005 and in 2013 they represented almost 50% of the commodity assets under management (Chart 5.6). ETPs represent, especially for its ETFs sub-category, a more flexible, cost-effective and transparent way to invest in commodities.

Chart 5.6. Total commodity assets under management by type, 2003-2013, in billion USD



Source: Barclays Commodities Research Bloomberg, MTN-i, ETP issuer data

The impact of this investment in the price of the underlying commodity is mixed as it could generate a bandwagon effect but also a stabilizing effect. A Bandwagon effect describes interactions of demand and preference. The bandwagon effect arises when people's preference for a commodity increases as the number of people buying it increases. This interaction potentially disturbs the normal results of the theory of supply and demand, which assumes that investors make buying decisions solely based on price and their own personal preference. On the other hand, a stabilizing effect related to this type of investment, is the phenomenon whereby a rise in the spot price relative to its long run equilibrium generates expectations of a price decline in the future, leading market participants to sell or short the commodity today and thereby dampen the price increase today.²³⁷

Not for hedging investment could be divided into three rational financial strategies, portfolio diversification strategy, carry-trade or inflation-hedge strategy and pure speculation.

1. Diversification strategy

A negative correlation between commodity and equity prices has historically been generally expected. Other things being equal, if equity prices are expressed in terms of discounted value of future dividends and if prices of inputs in the production process (energy, metals, raw materials) increase, firms should see their profits and dividends decrease. This is clearly the case for most companies in industrial, chemical, consumer discretionary, consumer staples and materials' sectors. In contrast, for a commodity producing company, an increase

²³⁷ Frankel 2013

in commodity prices increases its profits / dividends, other things being equal. Given this supposed overall negative correlation commodities were seen as a countercyclical investment and a source of stability for a financial portfolio.

Somehow this strategy became really main-stream at the end of 2008 and it was said to be the first cause for the financialisation process of commodities. But once everybody uses this diversification strategy, its counter-cyclic and stabilising properties could decrease in effectiveness.

2. Inflation-hedge or carry trade strategy

In their role of inflation hedge, metals and energy commodities could be subject to the so called “carry trade strategy”. This term was primarily associated with speculation in international fixed-income markets, where the spot price of concern is the price of foreign exchange and the “cost of carry” is the international difference in interest rates. In the commodity context, carry trade means a trade-off between interest rates on the one hand and market participants’ expectations of commodities price changes on the other hand. Historically commodities were perceived to be clear negative carry assets, as they almost always incur storage costs.

Nowadays, due to the low interest rates environment across the globe, commodities carry trade have low opportunity costs and low costs of financing and therefore are attractive to investors. Passive investors, mainly index investors, can be seen as carry traders for commodities. Since 2008, CFTC reports show that one fourth of all the futures and options trades in exchanges are linked to index investment through index dealers. Index dealers provide passive investors, institutional and retail, with a commodity long exposure by selling OTC commodity swaps to investors, and then hedging their exposure by buying futures and options in the exchanges. Current research has evidenced a negative effect of interest rates on the demand for inventories and thereby on commodity prices, and positive effects of expected future price gains on inventory demand and thereby on today’s commodity prices.

3. Speculation

It is, at times, argued and debated that commodities investments are driven only by portfolio diversification requirements or carry-trade strategies, but it seems that some of the inflow is motivated primarily by investors seeking to profit from price volatility of commodities. This type of investment consist on purchases or sell the commodities, whether in physical form, via contracts traded on an exchange or OTC, in anticipation of a financial gain or lose at the time of resale. Like any other financial market, betting on the development of the price of an underlying asset (in that case a commodity) could contribute to liquidity and correct price formation. This type of strategy is blamed of producing excessive volatility in commodity markets, at it could confuse hedge investors and posse risk on the effective function of the markets related to price discovery.

5.3. TYPES OF RISK IN COMMODITY MARKETS AND REGULATORY RESPONSES TO ADDRESS THEM

The growth in size of commodities markets, their increasing complexity with the entry of retail and institutional investors and the new investment strategies mentioned in the previous section, had led to major market risks being detected since the inception of the crisis. The lack of transparency in OTC commodity instruments impacts on the efficiency of the markets due to asymmetry of information and unknown counterparty risks. This lack of transparency also generates uncertainty and contagion risk may lead to systemic problems. On the other hand, the concentration in OTC markets together with the presence of financial institutions in the physical markets has led to concerns on the potential market abuse practices. Furthermore, the concentration of OTC commodity markets and of the commodity markets structure increases the potential impact of counterparty risk.

In 2009 the G20 set up a roadmap to address the systemic risks and opacity of OTC derivatives, including for commodity derivatives. This roadmap provided a regulatory push for OTC transactions to be traded on exchanges rather than negotiated bilaterally, which would allow a reduction of opacity and a better measurement of risks to the financial system, its participants and the overall economy. This is said to be evidenced by the ‘futuresisation’ phenomena described in section 2.1.3. The regulatory initiatives are also aimed at also decreasing counterparty and contagion risks through requirements for clearing of OTC derivatives and reporting to CCPs. The main financial jurisdictions are in the process of implementing the G20 mandate through regulatory measures including; the Dodd-Frank Act in the United States; the European Market Infrastructure Regulation (EMIR) and the updated Market in Financial Instruments Directive (MiFID II) and revised Market Abuse Regulation (MAR) in the EU; and Financial Instruments and Exchange Act (FIEA) in Japan.

Risk #1: Lack of transparency

In the past, OTC commodity transactions were exempt from the regulatory framework governing futures.²³⁸ As these OTC transactions grew in importance and complexity, and regulators and supervisors had no transparency regarding these transactions, it became difficult to measure and understand complex OTC derivatives transactions and the risks involved from a counterparty or systemic point of view. This lack of information was also a limitation for market participants who could consequently not make optimal financial decisions. Issues arising from lack of transparency of OTC transactions are especially acute during times of market stress when swift decisions regarding these transactions need to be taken, as revealed by the financial crisis.

A. Asymmetry of information faced by market participants and regulators

Financial intermediaries have gained important market informational knowledge in OTC commodity markets given their dominant roles as dealers or market makers. This could lead

²³⁸ The exemption of oversight from regulatory framework for OTC transactions was written into law in the Commodity Futures Modernisation Act of 2000

to adverse selection/immoral behaviour that takes advantage of asymmetric information *before* a transaction. In that sense, information asymmetries may impair the rest of participants (buy side sector) ability to evaluate the prices they are offered by dealers and to negotiate effectively to lower dealers' spreads. Thus, impeding correct price discovery.

In addition, by expanding dealers reach to physical commodity business moral hazard/immoral behaviour that takes advantage of asymmetric information after a transaction could appear. The access to information on the physical side and price equilibrium forces (supply, demand, evolution of inventories) in the spot markets allows financial intermediaries to trade and make market in OTC commodity derivatives in a more profitable way.

In the case of regulators, information regarding both the fundamentals of commodity markets and the pricing mechanisms of OTC commodity derivatives is patchy at best. The combined effect of complexity and innovation generates significant asymmetries of information and expertise between public regulators and private actors and exacerbated agency problems which pervade OTC commodity markets. At the same time, information asymmetries in OTC commodity markets left regulators behind the curve as these were not able to appropriately monitor and detect the building risk until 2008 crisis.

For these reasons there is no market incentive for these firms with the informational edge to provide more transparency to other market participants or regulators, on the contrary.

B. Counterparty risks leading to systemic problems

In commodity derivatives markets the risks and effects of default by a party to trade are of a very complex nature. The lack of transparency in OTC commodity markets combined with the uncertainty of the creditworthiness of many financial participants during crisis times could lead to systemic risks.

On the OTC commodity markets side, in providing trading and hedging services to commodity market participants, financial institutions have become trading partners to many transactions. The opacity of these markets for the buy side in uncertain times could lead to panic and contagion deriving from concerns above the creditworthiness of an unknown counterparty. Liquidity concerns affect the perception of investors and may lead to a fast off set of a position or a fire sale that may irrationally affect the prices further.

Both in the physical and financial commodity markets, the physical and in some cases perishable nature of the commodity/underlying, as well as the logistical issues linked to its storage and delivery add to the complexity of the counterparty risks. Besides, as the underlying commodities hedged by the transactions are often used as factors of production in the economy, default on commodity derivatives may directly affect their prices, availability and delivery and therefore directly impact the real economy.

Regulatory response #1 to overcome the risk driven by the lack of transparency

In the US, the Dodd-Frank Act required the Commodity Futures Trading Commission (CFTC) and SEC to establish rules on the functioning and supervision of OTC derivatives markets, including for commodity derivatives.

Concerning transparency issues, measures include requirements for daily public reporting of all cleared derivatives trades, and for non-cleared swaps to be reported to a swap data repository. Requirements for mandatory reporting of trades and trade record retention, including requirements to record complete transaction and position information, and to keep basic business records, including minutes and audit documentation, have also been introduced.

In addition, the US requirements for mandatory clearing of swaps, with the exception of ‘bona fide’ hedging, together with capital and margin requirements (for non-cleared derivatives) and rules on segregation of collateral, should reduce the risks of default by one party extending to other party and leading to potential knock-on effects and systemic risk.

The European Union has also rolled out a series of measures to enhance the functioning and supervision of OTC derivatives markets, including commodity derivatives. EMIR, which entered into force in August 2012, and the updated Markets in Financial Instruments Directive (MiFID II) together with the Market Abuse regulation (MAR), which should enter into application in 2016 aim to provide for more safe, efficient and transparent markets in OTC commodity derivatives in the EU. The Commission proposal for a Regulation on benchmarks currently under negotiation by the co-legislators should also contribute to enhancing the price formation process for commodities price assessments and thus to enhance price formation for commodity derivatives.

The Commission proposal for a Regulation on banking structural reform adopted in January 2014 should also contribute to enhancing market stability in commodity markets by prohibiting banks from engaging in proprietary trading and thus preventing increased speculation in financial instruments, including commodity derivatives, and in physical commodities. In addition, the related Commission proposal on enhancing transparency for securities financing transactions (SFT), adopted in January 2014, ought to enhance transparency for securities financing transactions (including lending or borrowing of commodities) as all SFTs will have to be reported to a trade repository and managers of investment funds will have to provide details to investors on the use of such techniques.

EMIR requires OTC derivatives trades to be reported to trade repositories and those to be accessible to supervisory authorities as well as the reporting of exchange traded derivatives to trade repositories. In addition, under MiFID II trading venues will have to provide the regulator with a complete breakdown of the positions of all market members or participants, including the category and identity of their end-clients. This harmonised and more disaggregated information shall help regulators to detect counterparty and systemic risks and to assess how the role of speculation in these markets curves the information asymmetries.

MiFID II will set a pre and post-trade transparency regime for non-equities, including commodity derivatives. These requirements will be specified in delegated regulation and they will relate mainly to capturing pre-trade bid and offer prices and the depth of trading interests as well as to the “real time” publication of post-trade prices and volumes. Besides, the introduction of a consolidated tape will address the issue of data fragmentation on commodity derivatives. MiFID II will also introduce specific measures for commodity derivatives, such as a position reporting obligation by category of trader. Under it, trading

venues that admit to trading or trade commodity derivatives will, where the numbers of traders and their open positions exceed certain thresholds, be obliged to make public a weekly report with the aggregate positions held by the different categories of traders of commodity derivatives traded on their platforms. Enhanced transparency will assist market participants in making optimal investment decisions thus addressing the previously detected information asymmetry.

To avoid counterparty risk arising for the lack of transparency, EMIR requires OTC derivatives which are eligible (standardised and sufficiently liquid)²³⁹ to **be cleared by central counterparties (CCPs)**²⁴⁰. The higher ability of CCPs to absorb the risk of default and avoid its contagion to other market players is key to protecting market stability and shielding the underlying commodities from price volatility and supply discontinuity derived from default. For derivative contracts which are not eligible and therefore not cleared by a CCP, different risk management techniques are to be applied (such as requirements to hold more capital). Furthermore, as CCPs are to take on additional risks, they are subject to stringent business conducts and harmonised organisational and prudential requirements to ensure their safety – such as internal governance rules, audit checks, greater requirements on capital, etc. Because of the EMIR requirements for central clearing, a situation where the collapse of one market participant causes the collapse of other market participants is less likely to arise²⁴¹, at least through the channel of OTC derivatives and counterparty risks. In addition, and due to the significant interconnectedness between financial assets, physical assets and market participants, EMIR requirements, in reducing the possibility of default of market participants in specific markets, for example the equities market, shall lead to an overall reduction of market stress and contagion in general.

Risk #2: Market concentration

Concentration issues exist related to the sell side or financial institutions (dealers), both with regards to their increased involvement in the OTC commodity markets and in the physical commodities markets.

In OTC commodities derivatives markets a **few major dealers are counterparty in most transactions**. This situation leads to a **high level of interconnection and hence interdependence and systemic risk**.

A. Counterparty risks

²³⁹ When the clearing obligation comes into force ESMA will set out a register of financial instruments eligible for clearing. The criteria to be assessed by ESMA in determining their eligibility (based on their standardisation, volume and liquidity) are set in Art.7 of the Commission Delegated Regulation (EU) No 149/2013 of 19 December 2012; see

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:052:0011:0024:EN:PDF>

²⁴⁰ The mandatory CCP clearing obligation for commodity derivatives will likely come into effect in the second semester of 2014

²⁴¹ For example the default of a financial participant leading to the collapse of a physical market participant, thereby putting the entire financial system at risk

A high degree of market concentration in the OTC commodity derivatives market amplifies the effect of individual counterparty risk to a system-wide level. In such markets, complex inter-linkages and interdependencies between derivative dealers can develop. The effect of one of these key dealers facing financial distress or defaulting altogether could ripple throughout the global OTC derivatives market.

More specifically, when it comes to OTC commodity derivatives, the sector appears to be highly concentrated. According to the consultancy Greenwich Associates, *"Nearly 60% of institutional commodities investors around the world use Goldman Sachs as a dealer for OTC derivatives. Next is J.P. Morgan, which is used as a dealer by 54%, followed by Barclays and Deutsche Bank at 46–47% and Morgan Stanley at 37%. These firms are the 2013 Greenwich Share Leaders in Global Commodities Investors — OTC Derivatives. The 2013 Greenwich Quality Leader in this category is Goldman Sachs."*²⁴²

On the physical commodity markets side, financial institutions influence and concentration are also important issues. The fact that the expansion into physical commodities has been mainly concentrated in the hands of Morgan Stanley, Goldman Sachs, JPMorgan Chase and Barclays raises serious concerns about the effects of a potential failure of any of these large dealers.

B. Damaging trading practices

As mentioned previously, both **commodity trading houses** and financial intermediaries (dealers) have gained important interests across different commodities markets, both in the physical and the financial marketplace, in terms of production, transformation, transportation and storage. These companies trade not only with their own proprietary capital, but also on behalf of other firms or as a direct counterparty to other commodity firms or financial institutions. **Their important use of financial leverage could have systemic implications.**

Theory predicts that investors will rebalance their portfolios in order to exploit any pricing differentials between derivative and underlying asset markets. In addition, there is empirical evidence that derivative prices either lead the movement of underlying asset prices, or that the two prices move together. **This means that price volatility in the OTC market could be transmitted to underlying markets.**

Besides, the fast development of the commodities business for financial institutions raises questions about the implications for competition and operational risks, in particular when the stake held in physical markets may exert dominant or oligopolistic pressure on price in conjunction with activities in financial operations. Aggregate disclosure of physical holdings and ownership stakes to properly oversee market manipulation. Damaging trading practices, such as cornering attempts or regulatory arbitrage, need to be addressed by regulators. Also, the principal–agent problem or agency dilemma concerns the difficulties in motivating one

²⁴² Source "2013 Greenwich Leaders: Commodities OTC Derivatives" - <http://www.greenwich.com/greenwich-research/research-documents/awards/2013/apr/cmd-2013-qsl>

party (the "agent"), to act in the best interests of another (the "principal") rather than in his own interests.

On cornering attempts: in certain occasions market participants attempt to gain sufficient control of a particular commodity to allow for its price to be manipulated. This can be done, for example, by buying up a large number of futures contracts on a commodity and then selling them at a profit after inflating the price. One recent example is the case of Armajaro and the European cocoa market in 2010, where the hedge fund Armajaro Holdings purchased cocoa futures worth 7 per cent of annual global cocoa production driving up its price to the highest level in 33 years.²⁴³

On regulatory arbitrage: OTC commodity transactions have been used to get around certain commodity futures regulations like position limits. Market participants looking to circumvent these regulations would go to dealer banks and purchase a swap contract instead of a futures contract. The functional similarity would be created through the tailoring of the swaps to represent the equivalent exposure as the one which could have been gained through a futures contract. The dealer bank would then hedge "legitimately" the commodity exposure arising from the sale of the swap to a bank client, by buying or selling commodity futures, without falling under certain position limits which would have been applied directly to the bank client according to the category it falls under (commodity producer, hedger i.e. consumer, or speculator).

Principal-Agent problems: there is a need to identify the agency dilemma between the ownership of market infrastructures and of physical, futures or other financial holdings of market participants. For example, sponsored warehouses should be set by exchanges only once the interest of their shareholders in the external market infrastructure are properly disclosed and ultimately managed. One example is that of banks such as JP Morgan and Goldman Sachs being involved in brokerage, warehousing and as shareholders in the LME (the world largest exchange for copper and aluminium), which poses important challenges to the management of conflicts of interest. For example, the FCA has collaborated with the LME in enhancing its warehousing rules. This followed allegations in summer 2013 that Goldman Sachs exploited rules by the LME and encouraged its clients to keep aluminium stored in its warehouses in order to generate rental income and to boost the "spot" price of the metal on global markets. This practice is said to have led to delays in the delivery of the metal of up to 16 months and increased prices for its users and to have originated potentially huge profits for the bank²⁴⁴.

Regulatory response #2 to overcome the problems concentrated market pose to the system

In the US to track concentration issues and systemic risks, requirements for swap-dealers registration, for the mandatory clearing of swaps (with the exception of 'bona fide' hedging)

²⁴³ Farchy, Jack (16 July 2010). "Hedge fund develops taste for chocolate assets". Financial Times. Retrieved 27 July 2010

²⁴⁴ Further information can be found on: <http://uk.reuters.com/article/2013/07/29/uk-fca-lme-idUKBRE96S0GY20130729?feedType=RSS&feedName=domesticNews>

and for cleared swaps to be executed on an exchange or Swap Execution Facility ("SEF") are already in place. As stated above, the CFTC has also proposed to introduce position limits for 28 core physical delivery contracts and their "economically equivalent" commodity derivatives, which hopefully will lead to less concentration and less systemic risks. Concerning the expansion of financial dealers into physical commodities, in the US, the FED is currently reviewing the permits granted from 2003 to 2008 to several investment banks to allow them to own tangible commodity production, transportation and storage facilities. The FED is also consulting currently on whether this would help ensure that physical commodities activities authorized for financial holding companies are conducted in a safe and sound manner and do not pose a threat to financial stability.

In the EU, on market structural concentration and systemic risk, as previously exposed, EMIR requires standardised OTC derivatives to be centrally cleared and MiFID II requires cleared OTC derivatives that are "sufficiently liquid" to trade on trading venues providing for multilateral interaction, i.e. Regulated Markets (RM), Multilateral Trading Facilities ("MTF") or Organised Trading Facilities ("OTF"). MiFID II also empowers supervisors to ban specific products, services or practices in case of threats to investor protection, financial stability or the orderly functioning of markets. In addition, it introduces a harmonised position limits regime across the EU for commodities derivatives traded on trading venues and their OTC economically equivalent contracts.

On the physical side of the deals, the implications of the increased participation of financial players on physical commodity markets should be monitored. Besides, the scope of the market abuse regulation has been enlarged to cover the link between physical and financial markets. In order to address damaging trading practices and Principal-Agent problems, regulation to address market abuse and manipulation and business conduct standards has been introduced in both EU and US regulation of OTC derivatives, including for commodity derivatives.

In the US, under the Dodd-Frank Act, swap dealers and major swap participants are subject to the duty of fair dealing and good faith communication and to the duty to disclose material risks, material incentives or conflicts of interest as well as to additional responsibilities with respect to "Special Entities" (e.g. states, municipalities, pension plans etc.). Derivatives Clearing Organisations are required to have in place structural governance and ownership policies mitigating conflicts of interests, organization and general conduct of business rules, and requirements with respect to: trading and products; surveillance; operations; compliance and financial information; and resource requirements. The proposed introduction of position limits for 28 core physical delivery contracts and their "economically equivalent" commodity derivatives by the CFTC²⁴⁵ should also contribute to enhancing integrity in commodity derivatives markets in the US.

In the EU, EMIR requires CCPs to act fairly, honestly and professionally in the best interests of their clearing members and to effect sound risk management. Besides, financial counterparties are subject to the conduct of business obligations set out in MiFID II

²⁴⁵ <http://dodd-frank.com/cftc-re-proposes-position-limits-on-physical-commodity-swaps/>

including: ensuring that communications are fair, clear and not misleading; and to requirements in respect of record keeping, etc. In addition, MiFID II will provide for reinforced supervisory powers and a harmonised position limits regime for commodity derivatives markets in order to support orderly pricing and prevent market abuse. Under this system, competent authorities will impose limits on persons' positions in accordance with the methodology for calculation set by ESMA. Only positions entered into for hedging purposes by or on behalf of a non-financial entity will be exempt from this position limits regime.

The measures under MiFID II will be complemented by those under the revised Market Abuse regime which, amongst other things, extends its scope to market abuse cases occurring across both commodity and related derivatives markets²⁴⁶. Furthermore, under the new MAR, using derivatives to manipulate the price of the related spot markets or using transactions in the spot markets to manipulate derivatives markets will be clearly prohibited. The proposal also introduces an obligation to cooperate and exchange information between financial regulators and the regulators of spot commodity markets, where they exist. Besides, inside information will include price sensitive information relevant to both the spot and derivatives markets. In addition, the MAR/CSMAD texts clearly prohibit the manipulation of benchmarks, including commodity price assessments used to reference the returns under or to clear commodity derivatives, and makes such a manipulation a criminal offence. In addition, the Commission proposal for a Regulation on benchmarks will contribute to a more transparent and robust setting process for commodity price assessments by price reporting agencies. Thus, this should enhance the price formation process for commodity derivatives as well as physical commodities, as commodity price assessments by PRAs underpin this process for most commodities, as well as the clearing process for many commodity derivatives.

In the case where financial participants are also involved in physical markets (such as Goldman Sachs and Morgan Stanley²⁴⁷) those may have at their disposal information not available to supervisors, such as on delivery or storage issues impacting spot and future commodity prices, and benefit from these information asymmetries in their financial derivatives operations. The reporting obligation aims to help to detect and address asymmetries as supervisors will have transparency on the OTC commodity derivative operations by these market players. The revised MAR prohibits insider dealing and market manipulation, including the interaction between financial and physical markets, and subjects these practices to administrative and criminal sanctions, which should be a deterrent for companies illegally profiting from inside information. Besides, as a result of the introduction of a transparency regime for OTC derivatives and the consolidated tape requirement under MiFID II, information on orders and executed transactions both on trading venues and OTC will be easily accessible to market participants, whether financial or non-financial entities, thereby reducing information asymmetries for market participants.

²⁴⁶ The scope of the market abuse prohibitions (including trades and orders to trade) is extended to instruments on MTFs, on new OTF category and also to OTC transactions.

²⁴⁷ <http://www.bloomberg.com/news/2013-10-01/fed-said-to-review-commodities-at-goldman-morgan-stanley.html>

The implementation of these measures in the EU and the US should help combating excessive speculation and market abuse in financial commodity markets. Recent events, such as the agreement for the sale of JP Morgan's physical commodity business to Mercuria reached in March 2014²⁴⁸, point to a reversal in the trend of large financial players investing in physical commodity markets. This would be driven partly by regulatory pressures worldwide, including the US Federal Reserve's review of banks' activities in physical commodity markets and the new Basel III leverage and capital rules requiring banks to maintain bigger capital cushions against potential losses – which can negatively impact profits in volatile markets such as electricity. Other drivers behind the retreat of banks from physical commodity markets are the falling profits from commodity trading for large banks since 2008²⁴⁹ combined with large risks in physical commodity markets which are not their core business, as well as potential exposure to large fines for market abuse if conflicts of interest are not appropriately managed.

However, whilst regulation exists to avoid market abuse in physical markets for some commodities, such as on wholesale energy trading under REMIT²⁵⁰, the next challenge for regulators could be to ensure integrity and transparency in physical markets for important commodities.

5.4. CONCLUSIONS

Evidence shows that commodity derivatives markets developed considerably in both quantitative and qualitative terms in recent years. This is due to technological, economic and regulatory developments that lead to commodity financial transactions growing on size, complexity and purposes. Besides, financial participants have entered financial and physical commodity markets space, raising concerns about their size, role, and influence in both markets.

The financial crisis revealed, through issues such as excessive price volatility and a large drop in trading on commodity derivative markets, important vulnerabilities and risks in commodity derivatives markets. It also exposed the high concentration and interdependence of commodity markets' assets, participants and structures among themselves and with those of other financial markets leading to counterparty and contagion risks. The difficulty for regulators and supervisors in predicting or effectively responding to these risks evidenced the opacity and growing complexity of these markets. Besides, recent scandals linked to speculation in physical and financial markets for commodities have brought to light the existence of conflicts of interest and asymmetries of information in these markets,

²⁴⁸ Please see FT press report from 19/03/2014 at:

<http://www.ft.com/intl/cms/s/0/4c0894b0-af45-11e3-bea5-00144feab7de.html#axzz2wEL0IZMr>

²⁴⁹ According to a report from London based consultancy coalition cited by the FT, commodity trading income at the world's top ten investment banks has fallen from a peak of more than \$14bn in 2008 to just \$5.5bn in 2012: <http://www.ft.com/intl/cms/s/0/4c0894b0-af45-11e3-bea5-00144feab7de.html#axzz2wEL0IZMr>

²⁵⁰ REMIT: http://acernet.acer.europa.eu/portal/page/portal/ACER_HOME/Activities/REMIT

particularly where financial entities are involved in both the physical and financial markets for commodities.

In the context of the G20, the FSB and IOSCO's work on OTC derivatives markets' reform, including commodity derivatives, policy makers and financial supervisors have responded to the risks posed by new market developments in commodity derivative markets through diverse regulatory initiatives. In the US through the Dodd-Frank Act and in the EU mainly through EMIR, MiFID II and revised MAR.

In the EU, the requirements for mandatory clearing and reporting to CCPs under EMIR will most likely come into force in the second semester of 2014. The requirements under MiFID II on transparency, stronger supervision of commodity derivatives markets, position reporting, position limits and for cleared derivatives to trade on regulated venues are not expected to enter into application until 2016. In the US, although most rules are already in place, some such as the one on position limits are still being implemented.

The overall effect of the regulatory reforms of OTC commodity derivatives in the EU and other jurisdictions needs to be assessed once the whole packages of measures enter into application and enough time has gone by to allow for the compilation of empirical evidence on their effects. However, phenomena such as the 'futurisation trend' point out to potential positive impacts on transparency, reduction of information asymmetries and reduction of counterparty risks of recent regulatory developments

In line with the G20 commitments, regulatory efforts should keep pace with market developments, financial innovation and the increased complexity of commodity derivatives markets, including technological developments. The enhanced transparency provided by the requirements under EMIR and MiFID II should assist in detecting and responding to these developments in an effective way. The requirements under the MAR should help to address conflicts of interest and potential abuse in derivative markets. In addition, the proposal for a Regulation on benchmarks should contribute to a more transparent and robust price formation process for commodity derivatives as well as for physical commodities.

As in other areas of financial markets legislation, ESMA will be instrumental in further elaborating on the single rule book for the commodity derivatives markets in the EU created by MiFID, EMIR and MAR. Besides, although under the G20 mandate the approaches to reform OTC derivative markets are generally convergent, there is still room for closer cooperation among regulators.. This would help to prevent regulatory arbitrage and to provide a global level playing field for commodity derivatives trading.

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