Securities Markets Risk Outlook

2013-14

International Organization of Securities Commissions*

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*The potential systemic risks identified in this Outlook are based on a number of information gathering exercises of the IOSCO Research Department and discussions with the IOSCO Committee on Emerging Risks. The identification and descriptions of risks in this report is based on the judgment of the IOSCO Research Department alone and not of the IOSCO membership.
As such, the assessment of the potential systemic risks in this Outlook should be interpreted as the views of the authors and does not necessarily represent the views of IOSCO committees, task forces or its broader membership. Information and opinions presented in this note have been obtained or derived from sources believed by the authors to be reliable.
For further information please contact the authors via research@iosco.org or visit www.iosco.org/research

Dear Reader,

We are in a period of great challenge and opportunity for securities regulators globally. The markets we regulate are becoming increasingly important for the real economy.

Emerging markets – which typically have less developed securities markets and regulation – have an increasingly important role to play in the global economy.

This Report highlights these – and other – challenges and opportunities. It provides a foundation for IOSCO and its members to develop responses which support confident and informed investors, fair, orderly and efficient markets and early identification and mitigation of emerging and systemic risks.

The Report provides a timely analysis of the impact of macro-financial conditions on global securities markets and draws out several of the risks and pressures that will be confronted in the year ahead. The section on the risks faced in emerging markets is particularly important by highlighting that emerging and high growth economies are not immune to global problems.

The Report has been a cooperative process of IOSCO's Research Department and IOSCO's Committee on Emerging Risks (which brings together economists and researchers from 27 IOSCO members). The Committee and the Research Department are together tasked with informing the IOSCO Board and its general membership about key market trends, risks and vulnerabilities, from a global perspective.

I commend the Report to IOSCO members and the public at large.

Yours faithfully,

Greg Medcraft
Chairman of the Board, IOSCO

Dear reader,

The IOSCO Securities Markets Risk Outlook for 2013-14 is the first published edition of an annual series and is the result of a cooperative process between the Research Department and the IOSCO Committee on Emerging Risks. It is both a rewarding and challenging experience to grapple with and identify some of the pressing issues, new developments and potential future systemic risks to securities markets.

Credit institutions face higher capital requirements, constraining their ability to lend, the world is moving inevitably towards a more market-based, interconnected, financing model. Strong, transparent and appropriately regulated securities markets are therefore essential for the sound functioning of the global economy and efforts to drive its recovery.

The IOSCO Research Department has undertaken extensive market intelligence operations around emerging risks in securities markets, in New York, Washington, London, Frankfurt, Paris and Sydney. Alongside the potential systemic risks presented in this document, new risks have also been flagged which will require careful analysis in the years ahead. Issues like:

> Disorderly resolution of failing entities or products can have severe, disruptive implications for securities markets. The application of coherent national and cross-border frameworks to deal with the resolution of failed financial entities or products is essential.
> Multiple incentive structures operate within the financial markets. More research is needed to understand the nature, impacts and behavioural changes such structures play.
> Dispersed and often weak sanctions regimes with inadequate levels of deterrence for market abuse and risky behaviour can undermine global securities markets and the confidence of investors and firms.
> Small-medium enterprises (SMEs) need access to strong, efficient and integrated markets. It is important to identify possible global barriers that hinder SMEs from drawing funding from securities markets.
> Weak corporate governance of all forms has been a major contributing factor to the current financial crisis. Without sufficient changes to corporate policies and practices, problems are sure to emerge again.
> Cyber-crime in securities markets. As our markets rely increasingly on technological infrastructure, it is imperative that we understand the new types of risks emerging. The IOSCO Research Department has published a first report on this topic, with a focus on the world's exchanges. Further research on this topic is needed.

IOSCO, as the worldwide organization of securities markets regulators, is well positioned to provide leadership in these areas, in addition to the global promotion of fair and efficient markets and financial stability. We intend to try to do so.

Yours faithfully,

David Wright
Secretary General, IOSCO

Dear Reader,

The IOSCO's Securities Markets Risk Outlook for 2013-2014 is an important outcome of IOSCO's work in the identification and analysis of emerging risks. It is the result of a cooperative process between the research department and the Committee on Emerging Risks, made up of senior researchers, chief economists and risk officers of around thirty securities markets regulators, and the *IOSCO Research Department.*

The report highlights important trends, vulnerabilities and risks in securities markets that may be or grow to be of concern from a systemic perspective. The report is published to inform the securities markets community and to stimulate debate on emerging risks amongst economists and policy makers. Given the slow recovery of our financial system since the onset of the financial crisis, continued and bold discussion on emerging risks is extremely important.

The analysis of this report is based on a number of inputs – aiming at constituting a holistic approach to systemic risk identification. These inputs include extensive consultation with experts, industry and other market participants; a survey to regulators, industry and academics; roundtables; and robust data analysis and literature review. Within the IOSCO Committee on Emerging Risks, we worked steadily to facilitate internal discussions on emerging risks across a range of jurisdictions and invited key experts to discuss some of the identified issues further.

Based on these inputs, over the past twelve months, the Research Department of IOSCO, in close cooperation with the Committee on Emerging Risks, has developed this first public edition of the Risk Outlook.

This report should be seen as part of our constant effort to assess emerging risks at an early stage, and by doing so, contribute to enhancing global financial stability.

Yours Faithfully,

Carlos Tavares
Chairman of the IOSCO
Committee on Emerging Risks

Dear reader,

Recent developments demonstrate that emerging markets and advanced economies have become increasingly interconnected – be it from the perspective of growth, financial linkages or impact of regulatory reform.

Hence, greater coordination within the global regulatory community is essential in ensuring that markets continue to be resilient, transparent and efficient even when the environment is in a state of flux. Emerging market regulators face further intricacies in balancing the need to promote market development while ensuring that their regulatory framework is attuned to international standards and best practices.

For effective and timely decisions to be made, it is critical for regulators and other market participants to remain vigilant against emerging risks and their potential impact on systemic stability. The IOSCO Securities Markets Risk Outlook 2013-14 contains valuable discussion and insights on various issues which impact securities markets in advanced and emerging market economies.

At present, an issue of particular importance for emerging markets is the large-scale flows of short-term capital into financial assets, which have an impact on valuation and yields, among others. While cross-border flows facilitate a more efficient global distribution of capital, the resulting concentration of foreign ownership and volatility induced by changes in sentiment could pose risks to the orderly functioning of the markets.

Although many emerging markets have implemented structural reforms that enable them to better manage risks from a potential reversal, efforts to heighten market resilience should be sustained. The inclusion of an analysis on capital flow-related risks in this Outlook is relevant in light of the ongoing broader discussion on flow transparency within IOSCO.

Moving forward, it is vital for regulators to continue to work closely in partnership with market players and other international financial institutions in identifying emerging risks to global securities markets to promote safer, fairer and more efficient markets. I hope that this Risk Outlook provides both regulators and market players with a stronger appreciation of risks affecting both advanced and emerging market economies.

Yours faithfully,

Ranjit Ajit Singh
Vice Chair of the Board and Chair of the Growth and Emerging Markets Committee, IOSCO

ABOUT THIS DOCUMENT

This *IOSCO Securities Market Risk Outlook 2013-14 (*the Outlook) is the first external publication of an annual series of Outlooks that aim to identify and assess potential systemic risks from securities markets. The Outlook is a forward-looking report focusing narrowly on issues relevant to securities markets and whether they are, or could become, a threat to the financial system as a whole.

This Outlook, written by the Research Department of IOSCO, is based on a number of inputs including: data collection and robust analysis, construction of quantitative systemic risk indicators, extensive market intelligence interviews for major financial centres, risk roundtables with prominent members of industry and regulators, a survey on emerging risk to the market, analysis from academia and the regulatory community, input from IOSCO's Committee on Emerging Risks (CER, formerly known as the Standing Committee on Risk and Research) and risk reports and presentations by experts. The Outlook synthesises these inputs to adopt a global and forward-looking approach to understanding risks that could become systemic and to highlight some noteworthy trends and potential vulnerabilities.

The purpose of the annual Risk Outlook series is three fold. First, it is intended to inform the IOSCO Board[1] and other IOSCO members about potential systemic risks to securities markets. The Outlook constitutes one data point to assist national regulators in implementing IOSCO's two new principles on identifying, assessing and mitigating systemic risk (Principle 6), and on reviewing the regulatory perimeter (Principle 7). Second, this series aims to support the global risk identification and mitigation efforts by the Group of Twenty (G20), the Financial Stability Board (FSB), the IMF and other global organisations that are tackling similar issues. Third, in the interests of public disclosure, this annual series presents in a single, accessible document key issues and potential systemic risks currently being discussed by market participants, securities experts and regulators around the globe.

The Outlook represents one aspect of IOSCO's new role in the assessment and mitigation of global systemic risks. It is one of IOSCO's next steps along with the publication of the new mission and goals[2], the new Principles[3] and their assessment methodology[4], the discussion paper on systemic risk[5], and an upcoming report by the IOSCO CER providing guidance on systemic risk identification (anticipated in the fall of 2013).

This *Securities Markets Risk Outlook 2013-14* was prepared by staff of the IOSCO Research Department with the benefit of discussion with and input from members of the Committee on Emerging Risks, under the general direction of David Wright, Secretary General of IOSCO and Carlos Tavares, Chairman of the

1 The IOSCO Board is the governing body of IOSCO and consists of 32 securities markets regulators around the globe. It merges the functions of the former Technical Committee, Executive Committee and Emerging Market Committee Advisory Board.

2 http://www.iosco.org/about/

3 IOSCO, *Objectives and Principles of Securities Regulation*, 2010, Principle 6 and 7
https://www.iosco.org/library/pubdocs/pdf/IOSCOPD323.pdf.

4 IOSCO, *Methodology for Assessing Implementation of the IOSCO Objectives and Principles of Securities Regulation*, 2011.

5 IOSCO *Mitigating Systemic Risk: A Role for Securities Regulators,* February 2011.

Committee on Emerging Risks. We are grateful to Tajinder Singh, Deputy Secretary General and Craig Lewis, Vice Chair of the Committee on Emerging Risks for their general input. We would also like to thank members of IOSCO's Research Department network for providing expert views through the Risk Outlook Survey and on-going market intelligence sessions.

Any comments on the report should be forwarded to research@iosco.org. Website at www.iosco.org/research

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Executive Summary

Introduction

> This IOSCO Securities Markets Risk Outlook has been written during challenging economic and financial times. The recent financial crisis damaged trust in the financial system and led to the failure or disappearance of some major firms; those left have grown even larger. To mitigate future risk, regulatory responses have included, among other initiatives, stronger capital adequacy rules for credit institutions.

> Securities regulators, in conjunction with other financial market regulators, are in the process of implementing measures to manage and mitigate systemic risk. Over-the-counter derivative markets, market-based intermediation and resolution and resolvability frameworks have also come under the regulatory spotlight. This report is a continuation of IOSCO's work on addressing systemic risk, which started with the introduction of new Principles in *IOSCO's Objectives and Principles*.

> This Risk Outlook has been developed jointly by the IOSCO Committee on Emerging Risk and the IOSCO Research Department as a forward looking document that aims to identify new potential systemic risks as they emerge and to provide an overview of some of the major trends and potential vulnerabilities in securities markets. The Outlook does not seek to measure the level or likelihood of these risks manifesting, but rather it provides a basis for national regulators to perform such assessments in their jurisdiction at the regional level.

Notable trends and highlights in securities markets

Bank lending to real economy has been decreasing...

> A number of new regulatory initiatives require banks to hold more capital, which might impede their ability to fund the real economy. After the initial rebound in loan provisions in 2010 and 2011, loans to non-financial corporations and total loan volumes have seen little or negative growth over the past two years. The situation in Europe is especially stark.

...While corporate reliance on securities markets has been increasing despite volatility

> In this context, securities markets may play an increasingly important funding role. For example, the $2.2 trillion in bank loans that was raised in the US and Europe in 2012 was approximately half the amount raised through equity and bond markets. In the US, initial and public offerings of equity have generally trended upwards (increase of 25% since 2007). Outside of the US, offerings have been subject to volatility or declining.

> In terms of corporate debt issuance, US activity has recovered, expected to be up 20% in 2013 compared to 2008. Asian corporate debt issuance is on the ascent, specifically from China, as is the rise in Islamic bond (Sukuk) financing. However, European corporate debt issuances have not recovered since the large fall in 2008.

> Alternative funding vehicles also are important sources of capital, many of which are not subject to regulatory oversight in certain jurisdictions. Examples include supply-chain financing, crowd funding and peer-to-peer lending markets.

...Also reliance on securities markets for bank funding

> The bank funding model relies, in part, on access to securities markets. In addition, securitised products and covered bonds continue to provide reliable funding for banks. For example, securitised products respectively reached almost $600 billion and $350 billion (covered bonds included) in the US and Europe.

Equity markets and fragmentation

> Equity markets experienced significant price appreciation over the last year. Fragmentation across trading venues and the participation of dark pools has increased in many jurisdictions.

High yield bond markets

> The low interest rate environment has allowed firms to issue debt at historically low rates. The market for high yield bond issuances has increased fivefold from $90 billion in 2008 to $450 billion in 2012. Asian bond markets have been particularly active in 2013, likely due to increasing appetite for foreign investors in advanced economies seeking to enhance their yield.

Commodity markets and potential contagion

> Commodities have become increasingly important for securities markets as many financial products are linked to or based on commodity prices and indices, including, among others, futures, mutual funds, structured retail products and exchange-traded funds (ETFs). Commodities may be used to achieve portfolio diversification. However, correlation between commodities and equity markets has increased since the crisis, suggesting a potential for contagion risk.

Changes in [OTC] derivatives markets

> Since the crisis, global regulation has caused [OTC] derivatives markets to undergo important changes. The notional amount outstanding in OTC derivatives grew between 2007 and 2012 by 8% to $633 trillion and derivatives cleared have increased steeply to $173 trillion. The developments vary widely per asset class and per clearing institution.

Capital formation and its effect on securities prices in emerging markets

> Capital flows into Emerging Markets have increased substantially since the financial crisis. Increased flows combined with less developed financial markets have resulted in high relative valuations in some EMEs. In China, the sustainability of credit growth is of particular note.

Impacts of global macroeconomic policy on securities markets

Fiscal and monetary developments

> Low interest rates in developed economies reflect accommodative monetary policies and unconventional measures taken by central banks to support financial institutions. Banks, particularly in countries from the European periphery, have increased their reliance on central bank funding.

> The perception of risk in the financial sector and expectations around public sector finances have become interrelated; bank solvency issues create expectations of new injections of government resources, implying higher imbalances in public sector finances which ultimately could erode sovereign debt quality.

Potential downgrade risk

> Predictable downgrades of sovereign debt have not disrupted bond markets in the past. However, an unexpected downgrade of sovereign debt could change this outlook.

> A downgrade of corporate securities caused by a systemic event may require certain institutional

investors, including, for example, pension funds, to disinvest. This could increase short-term volatility, particularly if the high-yield bond market does not have sufficient capacity to absorb a large sell-off.

Deleveraging in banking and the private sector

> There has been moderate private sector deleveraging in the U.S. and Europe (with the exception of the European periphery). Banks have experienced an increase in non-performing loans and faced stress on their funding models. Some banks have responded by increasing their reliance on secured funding and the use of collateral transformation.

Developments in real estate markets

> Some housing markets experienced devaluations following the financial crisis. Yet, there are still markets where values have continued to increase. These include China, Hong Kong, New Zealand, Canada, Switzerland and Norway. A deceleration of economic activity in these areas may have negative implications on their respective financial sectors.

> The growth in housing prices is an important indicator to assess the associated risks to financial stability, credit supply and, consequently, long-term economic growth. Due to an inherent liquidity transformation problem, open-ended Real Estate Investment Trusts could be subject to liquidity runs.

Looking Forward – Risks to Consider

Risks associated with the low interest rate environment

> Expansionary monetary policies have reduced interest rates to the point that real rates are sometimes negative. While these policies may help stimulate the real economy, spill-over effects may create potential risks for securities markets. It is uncertain when current policies are phased out and interest rates revert to their historical levels.

> In a possible attempt to enhance yields, investors have included structural leverage investments in their portfolios, such as CDOs, CLOs and leveraged REITs.

> This means that financial regulators, including securities markets regulators, may find it informative to continue to monitor the various market segments, identifying potential risks and assessing behaviour of market participants.

Risks associated with collateral management in a stressed funding environment

> Banks are facing capital requirements that mandate their holding of high-quality collateral. Additionally, central banks have been absorbing collateral to provide needed bank funding. More generally, bank holding companies with over the counter (OTC) dealer operations must locate high-quality collateral to meet initial and variation margin requirements for their OTC trades. While the amount of collateral in the system has remained relatively stable, the possibility of the diminishing availability of high-quality collateral could impact pricing.

> In response, banks may use alternative and sometimes innovative practices for providing high-quality collateral. These practices include collateral transformation and optimisation services as well as repo and re-hypothecation. While most transactions are to satisfy bank demand, they are executed in the securities markets.

> When re-hypothecation and collateral transformation practices are both off-balance sheet activities, the lack of disclosure makes it hard to assess how these activities contribute to the risk of the financial system. Furthermore, since this type of secure funding is inherently pro-cyclical, a negative shock to the financial system could be amplified and pose a risk to the stability of the financial system. Securities markets regulators may choose to assess this risk.

Risks in the [OTC] derivatives space

> Over the Counter (OTC) derivatives markets have undergone significant reform since the financial crisis. A major element of this reform involves the mandatory clearing of derivative contracts through central counterparties (CCPs). Accordingly, interna-

tional bodies including IOSCO, the BIS, CPSS and the FSB have set up working groups and taskforces all with the purpose of providing policies for central clearing.

> CCPs are designed to reduce systemic risk in the derivatives market by reducing counterparty risk, but this causes more of the risk burden to be borne by clearing brokers. Shifting risk from bilateral OTC contracts to a single point of infrastructure is a challenging balancing act. Three issues are worthwhile for securities markets regulators to keep track of:

> *The effect of competition among CCPs on collateral.* If competition induces a CCP to accept lesser quality collateral from its members, the likelihood that the posted collateral levels will be sufficient to satisfy member defaults is reduced.

> *Shared risk management model across CCPs.* A staff working paper by the Dutch central bank indicates that similar risk management models are shared amongst CCPs. This working paper states that if CCPs utilise similar risk management models for calculating margin requirements, potential inadequacies in the modelling framework may expose members, and the financial system, to the same model risks.

> *Interconnection.* While CCPs are designed to manage the concentration of risk, they also are interconnected with the banking system. Not only are many major banks members of CCPs, but initial margin collateral collected, particularly cash collateral, in some cases may be deposited back into the bank.

Risks associated with a reversal of capital flows to Emerging Markets

> Emerging Market Economies (EMEs) have experienced significant capital inflows in the post-crisis period, peaking in 2010 at around $1.180 trillion, which was just below the pre-crisis high of $1.240 trillion in 2007. Historically, EME capital inflows were derived from foreign direct investment and bank lending. This trend has changed in the post-crisis period where portfolio equity investment, debt securities and non-bank lending make up a greater fraction of total capital flows.

> This increase can be attributed to a number of factors. The most important may be the current low interest rates in advanced economies relative to higher interest rates in emerging economies. Other attractive features are improved political stability and high economic growth. Securities markets are not equally developed. Financial market depth – the market value of equity, corporate and government debt, and loans – in Emerging Europe and Asia (with the exception of China), Latin America and Middle East/North Africa is low. Significant portfolio inflows combined with low financial market depth may have led to relatively high valuations. This raises the concern that sectors where inflows were concentrated may experience a sudden drop in valuation if capital flows were to reverse even if the country's economic fundamentals did not deteriorate.

> From a securities markets perspective, the development of financial markets and types of flows is an important factor in understanding how systemic risk may spread in the event of a reversal of capital flows to EMEs.

CHAPTER 1

INTRODUCTION

The financial crisis has resulted in a global recession that has caused a number of major firms to fail. Regulatory attempts to restore confidence and mitigate future risk have included, among other initiatives, stronger capital adequacy rules for credit institutions. As capital is used to satisfy heightened regulatory standards, securities markets will become increasingly important. Securities regulators, in conjunction with other financial market regulators, already are in the process of implementing measures to manage and mitigate systemic risk. Over-the-counter derivative markets, market-based intermediation and resolution and resolvability frameworks have also come under the regulatory spotlight.

IOSCO has adopted a new strategic direction, which emphasises the need for securities regulators to seek to identify, monitor and manage systemic risks.[6] A frequently used and broad definition of systemic risk is "*a risk of disruption to financial services that (1) is caused by an impairment of all or parts of the financial system and (2) has the potential to have serious negative consequences for the real economy.*"[7] Systemic risk can arise from sudden catastrophic events, i.e., a macro shock, both exogenously and endogenously sourced; it can also constitute a contagion risk, whereby the collapse of one or more affected institutions or markets is transmitted through interconnections to the broader economy.[8] Furthermore, systemic risk can emerge through a "*build-up of widespread imbalances in the system*"[9], e.g., credit booms, build-up of third party exposures and leverage mismatches as well as through gradual erosion of trust by market participants.[10]

Since securities markets are characterised by rapid changes and financial innovation, securities regulators should keep abreast of new products, business models, activities, participants and the potential systemic risk involved.[11] Assessment of systemic risk at a global level is an integral component of these efforts and, supported by access to comprehensive data sets, can assist in reducing the risk of harm to the financial system and economy. If risks can be identified at an early stage, individual regulators can develop mitigating measures.

With this in mind, IOSCO has established a research function consisting of a Research Department at the General Secretariat and a Committee on Emerging Risks (Formerly Standing Committee on Risk and Research) composed of senior research professionals from around 25 securities markets regulators. This Outlook is the major publication on risk for IOSCO's research function and focuses specifically on the identification of emerging risks, which may potentially be systemic and that are relevant to the securities markets, as well as trends and possible vulnerabilities, by which these potential systemic risks might be heightened.

6 President's Committee of the International Organization of Securities Commissions, *Resolution on IOSCO's Mission, Goals and Priorities*: https://www.iosco.org/library/resolutions/pdf/IOSCORES26.pdf.

7 FSB, IMF and BIS, *Report to G20 Finance Ministers and Governors, Guidance to assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations and Background paper*, October 2009.

8 KC Chakrabarty, "Systemic risk assessment – the cornerstone for the pursuit of financial stability", Inaugural address at *Operationalizing tools for macro-financial surveillance: country experiences*, 3 April 2012. [Find here: http://www.bis.org/review/r120404a.pdf]

9 *Op cit*.

10 IOSCO, *Methodology for Assessing Implementation of the IOSCO Objectives and Principles of Securities Regulation*, 2011 https://www.iosco.org/library/pubdocs/pdf/IOSCOPD359.pdf.

11 *Op. cit.*

Approach of the Outlook

Building on, and supporting the extensive work conducted by IOSCO's Policy Committees, the Outlook looks forward to identify other notable trends and possible vulnerabilities, from a systemic risk perspective. The Outlook does not seek to measure the level or likelihood of these risks, but provides a basis for national regulators to perform such assessments in their own jurisdictions or at the regional level.

To assist in its efforts, the IOSCO Research Department published a Staff Working Paper that presented an overarching systemic risk identification system that could be applied to securities markets.[12] The Committee on Emerging Risks also is in the process of developing guidance around a robust methodology for systemic risk identification and assessment in securities markets.[13]

This Outlook draws from this previous work and employs a top-down and bottom-up approach for the identification of trends, possible vulnerabilities and potential systemic risks:

Top-down: Identification of macro-economic and securities markets trends and potential vulnerabilities based on data collection and analysis; development of quantitative systemic risk indicators; and a survey.

Bottom-up: The selection of risk topics reached through consensus of the CER and IOSCO Research Department and based on data analysis and a thorough consultation with a globally diversified group of experts including regulators, market participants and academia.

The CER will continue to monitor the areas selected for analysis in this report to see how the potential emerging risks evolve in the future.

How to use the Outlook?

The Outlook aims to fill a gap by informing IOSCO members, other organisations with interests similar to those of IOSCO, market participants and the public about trends and potential vulnerabilities in the securities markets, the work of IOSCO in this space and potential systemic risks. This report recognises data limitations and makes recommendations for further research and monitoring efforts around systemic risks.

Individual securities regulators can use this report as an information source for the type of research work needed to assist in the implementation of new IOSCO Principles 6 *(The Regulator should have or contribute to a process to monitor, mitigate and manage systemic risk, appropriate to its mandate)* and 7 *(The Regulator should have or contribute to a process to review the perimeter of regulation regularly).*[14]

12 See IOSCO Research Department, *Systemic Risk Identification in Securities Markets*, Staff Working Paper, 2012 for details.

13 This is in line with: IOSCO, *Mitigating Systemic Risk: A Role for Securities Regulators*, 2011, p. 36, which states *"Initially, IOSCO will have to rely more on a qualitative approach since the data required for a more quantitative approach is lacking. In the future, the availability of data will improve, and more quantitative approaches can be developed, either through the collection of data at a global level through IOSCO's research capacity (i.e. Research Unit) or, to the extent permitted by national law, through its members."*

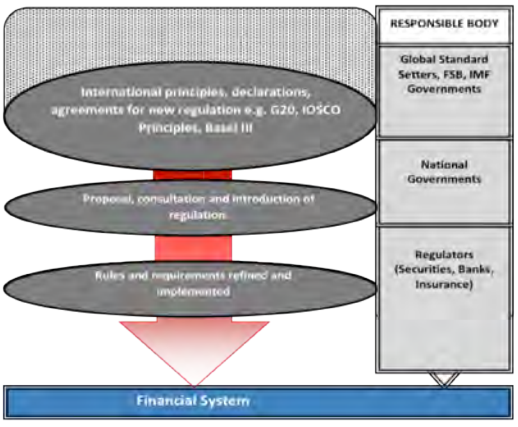
14 IOSCO, *Methodology for Assessing Implementation of the IOSCO Objectives and Principles of Securities Regulation*, 2011. https://www.iosco.org/library/pubdocs/pdf/IOSCOPD359.pdf.

CHAPTER 2

REVIEW OF PAST RISK MITIGATION EFFORTS AND CURRENT STATE OF PLAY

Since the global financial crisis began in 2007, mitigation of its causes has become a prominent task for global standard setters and national and regional governmental regulators. At the global level, governments established the Group of Twenty (G20) and called for regulatory reform of the entire financial sector to prevent the crisis from worsening and possibly reoccurring. Coordination of this large reform agenda was given to the newly created Financial Stability Board (FSB). Other standard setters, such as IOSCO, have been providing new global standards and principles. At the regional and national levels, governments are working on directives, laws and regulations to implement specific reforms (see Figure 1).

Figure 1: Global Regulatory Process



Source: IOSCO Research Department

IOSCO Principles for securities markets

IOSCO introduced eight new principles in the wake of the financial crisis to reflect lessons learned and changes in the regulatory environment. These principles build on the previous 30,[15] which establish high-level global standards on which to base an effective, robust global securities regulatory system. The eight new principles are:

Principle 6: The Regulator should have or contribute to a process to monitor, mitigate and manage systemic risk, appropriate to its mandate;

Principle 7: The Regulator should have or contribute to a process to review the perimeter of regulation regularly;

Principle 8: The Regulator should seek to ensure that conflicts of interest and misalignment of incentives are avoided, eliminated, disclosed or otherwise managed;

Principle 19: Auditors should be subject to adequate levels of oversight;

Principle 20: Auditors should be independent of the issuing entity that they audit;

Principle 22: Credit rating agencies should be subject to adequate levels of oversight. The regulatory system should ensure that credit rating agencies whose ratings are used for regulatory purposes are subject to registration and on-going supervision;

Principle 23: Other entities that offer investors analytical or evaluative services should be subject to

15 The previous 30 principles focus on the regulator; self-regulation; enforcement of securities regulation; cooperation in regulation; issuers; collective investment schemes; market intermediaries; and secondary market. See http://www.iosco.org/library/pubdocs/pdf/IOSCOPD154.pdf.

oversight and regulation appropriate to the impact their activities have on the market or the degree to which the regulatory system relies on them; and

Principle 28: Regulation should ensure that hedge funds and/or hedge funds managers/advisers are subject to appropriate oversight.

Work of IOSCO Policy Committees

In addition to the above mentioned principles, IOSCO, on its own and jointly with other global standards setters and in close coordination with the G20 and the FSB, has developed recommendations, frameworks and reports related to mitigating two issues that rose to prominence during the crisis, namely shadow banking (market-based intermediation) and derivatives (see also Box 1):

> *Securitisation and shadow banking:* IOSCO recommendations on MMFs (2012); IOSCO recommendations on securitisation (2012); IOSCO Principles on Disclosure requirements for Asset Backed Securities (2012).

> *OTC derivatives:* IOSCO-BCBS Consultative report on Margin Requirements (2013); IOSCO-CPSS Principles for Financial Market Infrastructure (2012); IOSCO-CPSS Assessment methodology and disclosure framework (2012); IOSCO report on Mandatory clearing (2012); IOSCO Report on Derivative Market intermediaries; and ISOCO-CPSS report on Authorities' access to trade repository data (2013).

Furthermore, IOSCO Policy Committees have produced work addressing many main issues related to risk and inefficiency such as (over the last 12 months):

> *Recovery and Resolution:* IOSCO consultative report on Protection of client assets (2013) and ISOCO-CPSS consultative report on Recovery of financial market infrastructures (2013).

> *Credit Rating Agencies:* Revision of IOSCO CRA Code of Conduct; supervisory colleges.

> *Too big to fail:* Identification of non-bank systemically important financial institutions (on-going).

> *Technology:* Technological changes on market integrity and efficiency (2012).

> *Benchmarks:* Principles for Financial Benchmarks (2013).

> *Structured Products and ETFs:* Principles for the Regulation of ETFs (revised 2013); Suitability Standards for Complex Financial Products (2013).

Box 1: Main Standard Setting Focus: Shadow banking and derivatives

Shadow banking (market-based intermediation)

Some have characterised shadow banking as the undertaking of bank-like functions, such as maturity and liquidity transformation, credit intermediation and leverage, by institutions that are outside the regular banking system. These institutions include hedge funds, money market funds, insurance companies, pension funds, custodians (as agents in securities lending transactions involving cash collateral), finance companies and structured-product vehicles. Some often cited examples of shadow banking activities include securitisation, securities lending and repurchase agreements (see for more in-depth analysis Section 4.2 Collateral in a stressed funding environment). Some of these activities are regulated by securities market regulators.

Some of these activities played a role in the most recent crisis. Securitised products, for example asset-backed securities, proved that they can be 'toxic'. IOSCO responded early in the crisis by recommending standards for securitised products and enhanced disclosure.[1] Furthermore, IOSCO proposed standards for hedge funds and urged regulators to cooperate on gathering data on the hedge fund industry.[2]

At the height of the crisis, some money market funds (MMF) in the U.S and in Europe suffered from heavy redemption requests by investors. In the U.S., the Federal Reserve provided backstop funding. In the years since the crisis, national jurisdictions globally have proposed amendments to existing regulations and in some cases enacted new regulations related to MMFs.

Looking back, regulators and standard setters have made important progress in managing the risks of the past crisis and preventing risks, which could materialise into a systemic event in the shadow banking sector, from building-up again. However, not all activities and institutions are regulated or fully understood yet. The shadow banking sector is innovative and can develop new products and services, which might lead to new potential risks.

Derivatives

OTC derivatives markets moved into the spotlight during the crisis with the fall of Lehman Brothers and the bailout of AIG. These firms, and many others, had taken significant positions in the OTC derivatives market but did not fully recognise the associated counterparty credit risk. Additionally, markets lacked transparency, and valuation systems were not always accurate for exotic derivatives. Because of the interconnectedness of financial markets and participants, the shocks that emanated from OTC derivatives spread rapidly during the crisis to other markets.

The regulatory community has taken up extensive work to manage the abovementioned risks. From a global perspective, standards have been set to improve transparency of transactions through trade repositories; to process trading through transparent platforms; clear derivatives through central clearing parties and protect these venues against shocks[5]; and to protect the financial firms that do most of the trading from taking on too much risk by imposing margin and capital requirements. National and regional regulators are making significant progress in implementing these standards and are therefore actively managing systemic risk.[6] Section 4.3 of this report includes an in-depth analysis of the progress on the implementation of the regulatory measures and the risks to the financial system.

1 IOSCO, Unregulated Financial Markets and Products, September 2009; IOSCO, Principles for Ongoing Disclosure for Asset-Backed Securities, February 2012; IOSCO, Disclosure Principles for Public Offerings and Listings of Asset-Backed Securities, April 2010.
2 IOSCO, Hedge funds Oversight, June 2009.
3 Heavy redemption requests were initially largely focused on prime funds servicing institutional clients.
4 IOSCO, Policy Recommendations for Money Market Funds, October 2012.
5 The CPSS-IOSCO principles on financial market infrastructures (FMIs) classes CCPs as FMIs and labels them as "systemically important"". See CPSS-IOSCO, Principles for financial market infrastructures, April 2012 [http://www.bis.org/publ/cpss101a.pdf]].
6 Financial Stability Board, "OTC Derivatives Markets Reforms – Fifth Progress Report on implementation", April 2013, Table 1 outlines a summary on national progress in implementation OTC markets reforms with a majority (15) of G20 jurisdictions adopting or consulting on OTC market reform legislation.

Work of other global standard setters

Banking resolution initiatives not only have been recognised as crucial in promoting stable financial markets and for providing appropriate protection of investors, but also for preventing public funds from being used to backstop failing private institutions.

The Basel Committee for Banking Supervision (BCBS) developed global standards, Basel III, addressing bank capital requirements, stress testing and market liquidity risk. These standards aim to promote forward-looking provisions and achieve macro-prudential goals through creating international standards for banking regulators to mitigate risk – specifically systemic risk from major bank collapse, encouraging harmonisation of instruments, and ensuring quality, transparency and risk coverage of capital base raised and framework. The Basel III standards when fully introduced will include new ways and requirements for calculating loan risk, the introduction of additional capital buffers, a minimum 3% leverage ratio as well as two liquidity ratios to ensure bank liquidity, and capital treatment for bank exposure to CCPs.

Under the aegis of the Financial Stability Board (FSB), decisive steps also have been made to improve the Key Attributes (KAs) of resolution regimes. These KAs define the elements and information that should be available to supervisory authorities of a failing entity. The impact of this regime on securities markets is not clear at this stage. The FSB, CPSS and relevant standard setters, including IOSCO, are still working on:

(I) Sector-specific guidance on how to implement KAs for non-bank financial institutions such as financial market infrastructure, securities intermediaries and investment firms, and

(II) A methodology for identifying systemically important non-bank market intermediaries.

In principle, the efforts made to tackle the "too-big-to-fail" issue should contribute to a more transparent and market-oriented financial system. However, further areas that may need clarification, including:

> Identification of resolution authorities,

> Recovery and resolution planning and assessment,

> Establishment of a comprehensive and common toolkit, and

> A way to achieve enhanced cross-border cooperation and resolution.

On the last point, effective cross-border cooperation is vital to foster joint decision making capabilities and dialogue and to prevent regulatory arbitrage. And areas to consider in the cross-border resolution context may include:

> Adequate loss-absorbency capacity,

> Ensuring that supranational arrangements are in place to simultaneously and equitably apply resolution tools (e.g. bail-in), and

> Legal constraints associated with differing disclosure regimes.

Securities regulators and market participants should continue to expect on-going efforts to strengthen the protection of client assets.

Implementation

Two significant regulatory efforts aimed at mitigating causes of financial crises are the Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) in the US and the European Market Infrastructure Regulation (EMIR), the Alternative Investment Fund Managers Directive (AIFMD) and amendments to MiFID (MiFID II).

DFA aims to protect investors and consumers and promote the stability of the U.S. financial system.[16] DFA includes provisions addressing systemic risk; creating a safe way to liquidate failed financial firms; establishing the Financial Stability Oversight Council (FSOC) to provide comprehensive monitoring of the stability of the U.S. financial system; and imposing transparency and accountability require-

16 The Dodd-Frank Act was enacted "[t]o promote the financial stability of the United States by improving accountability and transparency in the financial system, to end 'too big to fail', to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes." Pub. L. No. 111-203, Preamble.

ments for exotic instruments as well as credit rating agencies. DFA also provides for: (1) registration and comprehensive regulation of swap dealers and major swap participants; (2) imposing mandatory clearing and trade execution requirements on clearable swap contracts; (3) creating rigorous recordkeeping and real-time reporting regimes; and (4) enhanced rulemaking and enforcement authority for regulators with respect to, among others, all registered entities and intermediaries subject to their oversight. DFA requires rulemaking by U.S. authorities for full implementation. The CFTC has now completed the majority of its DFA rulemakings, and the SEC continues to finalize its rules for security-based swaps.

DFA includes provisions that contemplate the imposition of certain mandatory clearing requirements. Under these provisions, the SEC and the CFTC could require certain derivatives to be cleared. Central clearing is a market practice that can result in significant systemic risk mitigation. Central clearing reallocates counterparty risk that was previously borne by each party to a derivative transaction to central counterparties (CCPs). Through multilateral netting, stringent membership standards and sound risk management practices, CCPs are designed to reduce the likelihood that the default of a large derivatives market participant results in the default of some of its counterparties thereby creating a systemic event that transmits to other markets.[17] Title VIII of DFA provides for the designation of certain CCPs as systemically important financial market utilities, and for enhanced risk management standards and supervision for such designated clearing entities.

EMIR follows a commitment made by the G20 in Pittsburgh in relation to OTC derivatives trading (September 2009). This commitment requires mandatory clearing and reporting for OTC derivatives. As to the AIFMD (approved in 2011), it aims to regulate so-called alternative investment managers, such as those that manage less liquid assets. These include hedge funds, real estate funds and private equity funds. In addition, the revised MiFID aims at updating regulations to reflect lessons from financial crisis and other developments that are designed to improve investor protection and enhance market structure. It also addresses the regulations of OTC trades, increased transparency, limits to high frequency trading, addressing non-transparent trading, imposing rules for third-country firms, and harmonising rules across trading platforms and asset classes.

Apart from the above mentioned U.S. and EU laws and directives, many other countries around the world have developed their own acts and laws, following the G20 guidance at a global level.

17 See also Section IV of this report. See e.g. Craig Pirrong, "The Economics of Central Clearing: Theory and Practice," ISDA Discussion Papers Series, No. 1 (2011), at 6 ("Widespread defaults on derivatives contracts may harm more than the counterparties on the defaulted contracts. The losses suffered by the victims of the original defaults may be so severe as to force those victims into financial distress, which harms those who have entered into financial contracts with them—including their creditors, and the counterparties to derivatives on which they owe money. Such a cascade of defaults can result in a systemic financial crisis.").

CHAPTER 3

TRENDS, DEVELOPMENTS AND POTENTIAL VULNERABILITIES

3.1. Notable trends, developments and potential vulnerabilities in securities markets

This Section explores some notable trends and how they could relate to potential emerging risks in securities markets.

[3.1.1] Bank lending to the economy has been decreasing …

A number of new regulatory initiatives require banks to hold more capital, which might limit their ability to fund the real economy. Figure 2 illustrates loan provision in the US and in Europe since 2007. After the initial rebound in loan provisions in 2010 and 2011, loans to non-financial corporations and total loan volumes have seen little or negative growth over the past two years. This might be more relevant in Europe, since historically the economy has depended more on bank lending as opposed to funding through financial markets. Indeed, the total volume of loans made by European banks is 50% below the 2009 crisis level.

It has been suggested that much of this contraction is attributable to bank deleveraging. To examine this conjecture, Table 1 reports tangible asset to tangible common equity ratios for 2011 and 2012. It highlights two things; 1) that deleveraging has been modest across all domiciles; and 2) the rate at which banks are deleveraging varies across geographic regions. In fact, some banks in some countries actually have increased their reliance on leverage (e.g., Germany, Ireland, and Spain).

Table 1: Leverage of domestic Banks, 2012

Tangible assets/tangible common equity for domestic banks

Country	*2011*	*2012*
U.S.	13	11
Japan	23	23
U.K.	24	22
Euro area	26	23
Germany	26	28
Greece	17	15
Ireland	18	24
Italy	20	19
Portugal	17	16
Spain	19	20

Source: IMF Global Financial Stability Report, April 2011, 2012

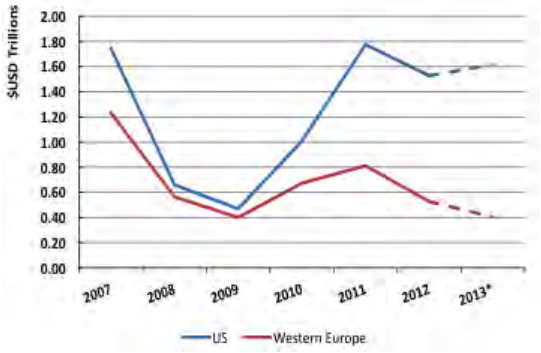
Part of the decrease in lending also could be attributable to the crowding-out effect implied by the continuous expansion of public sector borrowing and to increased corporate sector credit risk (See Figure 2) during the current cyclical phase of the European economy. Furthermore lending is probably reduced because of the lacking demand for lending due to the bad economic environment.

Figure 2: Evolution of bank lending

YoY Change in bank loans to non-financial corporations

Source: Bloomberg, Note: LCY = local currency unit

Total annual bank loans



Source: Bloomberg, estimates IOSCO Research Department
Notes: * 2013 data annualised

There also are indications that this development might reflect a trend in the European periphery to move towards a securities-based model of corporate financing.[18] [19] Corporate debt ratios in Ireland and Portugal have increased (See Figure 6 in 3.1.3-A). By contrast, Italy and Spain have remained flat or decreased their relative reliance on debt.

[3.1.2] ...While corporate reliance on securities markets has been increasing despite volatility

While initial and secondary public offerings of equity (ISPOs) have experienced volatility there is no global trend as can be seen in Figure 3. While in the U.S. ISPOs have been generally trending upwards with an increase of 25% since 2007, in the U.K., normally the European main market for raising capital, ISPOs experienced an 80% drop in 2010 and have been depressed since. In other European countries, ISPOs have decreased by 76% compared to 2007 levels as economic activity in the region continues to be lacklustre. Chinese ISPOs, after an initial increase in 2008 and 2009, have steadily declined since. Although less pronounced, Japan's ISPO activity initially followed a similar path but experienced a slight rebound in 2012.

In an era of low interest rates and declining access to bank funding, corporations have increasingly turned to the securities markets to issue debt. After a steep drop in 2008, corporate debt issuances in the U.S. have recovered; U.S. activity is expected to be up 20% in 2013 compared to 2008. European corporate debt issuances have not recovered since the large fall in 2008.

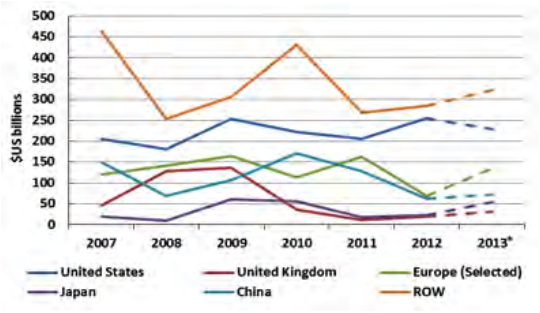
Outside of the U.S. and European debt markets, Asian corporate debt issuance is on the ascent, specifically from China, as is the rise in Islamic bond (Sukuk) financing. Although both these markets are still in their infancy, based on total volumes, both show the largest growth rates in issuances. Corporate Sukuk bond issuance has doubled since 2010. Chinese corporate debt issuances in 2013 are forecast at $600 billion and although still lower than the US and European corporate debt issuances, Asian issuance accounts for over half of the growth in corporate debt issued in the rest of the world (see Figure 3).

18 Analysis by Fitch Rating Agency, cited in Financial Times, 'EU companies turn to bond funding as bank loans shrink', Print Edition, Tuesday July 23, 2013.

19 IMF, *Global Financial Stability Report*, April 2011, 2012 and 2013.

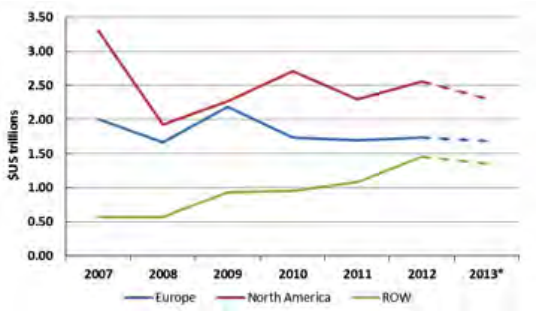
Figure 3: Market-based financing

Total Public Offerings in $ billions



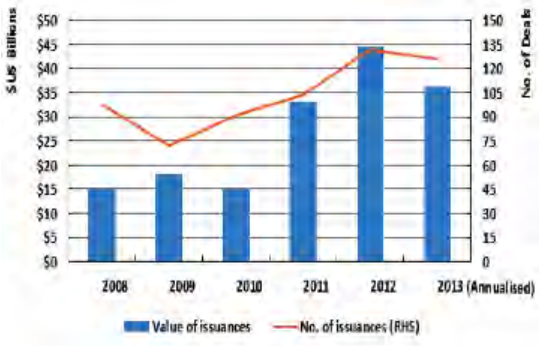
Source: Bloomberg, estimates IOSCO Research Department-
Notes: * 2013 data annualised

Corporate debt issuances in $ trillions (US, Europe, ROW)



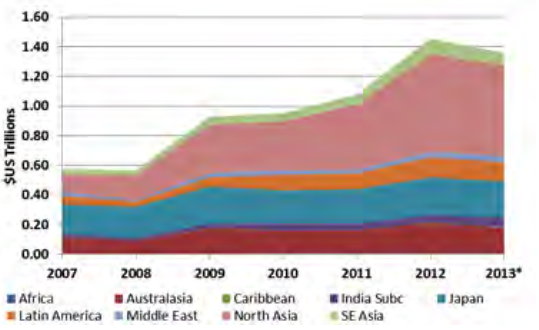
Source: Dealogic, estimates IOSCO Research Department
Notes: * 2013 data annualised

Sukuk (Islamic bonds) issuances in $ billions and number (rhs)



Source: Dealogic, estimates by IOSCO Research Department

Corporate debt issuances in $ trillions: ROW split



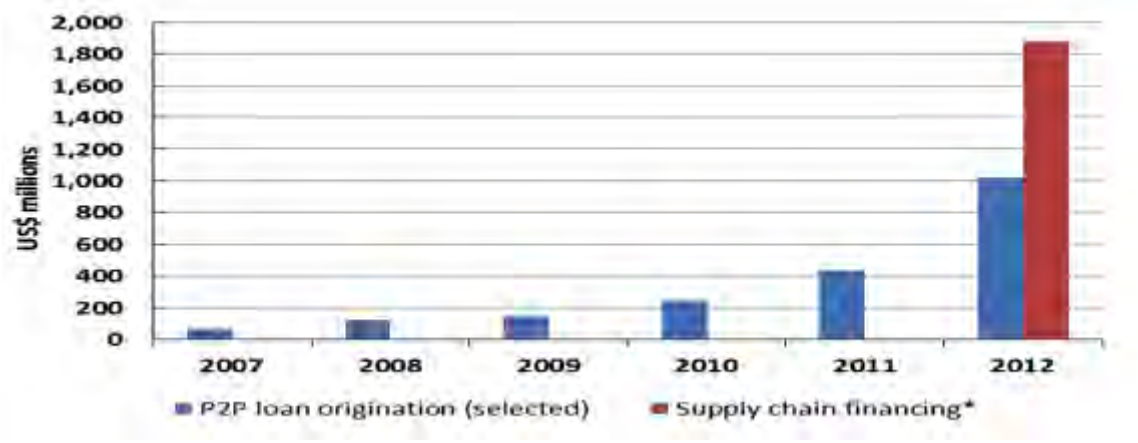
Source: Dealogic, estimates by IOSCO Research Department
Notes: * 2013 data annualised

Financing in securities markets through non-traditional instruments, e.g., structured products and secured debt, has been growing in the recent past, (Section 4.2 covers this development in more detail).

Other developments include increased reliance on self-sourced financing structures, such as supply-chain financing, where a cash-rich firm funds another firm within its supply chain without the intermediation of a bank or a public marketplace. This type of funding seems to occur increasingly between firms of a single production chain – e.g., an engine producer is financed by a car maker.[20]

20 In a survey conducted by Aberdeen group of 145 companies varying in size, 41.7% of respondents indicated that they had a supply-chain financing initiative in place (*Liquidity and Visibility: Foundations for robust supply chain finance,* Mar 2013, Aberdeen Group). While, consultancy group Aite Group, estimates that 60-70% of supply–chain financing is now sourced from outside the traditional banking area. ("*Worldwide bank adoption of supply chain finance*", Dec 2012, Aite Group). Finally, some governments are actively supporting such financing programs, with the U.K.'s department of Business, Innovation and Skills announcing that GBP 10 million had been allocated to a firm to establish a new supply-chain financing platform ("*GBP70 million boost to small business lending*" http://news.bis.gov.uk/Press-Releases/-70-million-boost-to-small-business-lending-689d7.aspx).

Figure 4: Peer-to-peer lending and supply chain financing



Source: Dealogic, estimates by IOSCO Research Department
Notes: * 2013 data annualised

3.1.3] Potential increasing use of securities markets for funding of financial firms

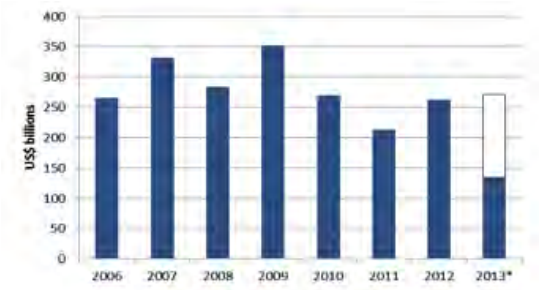
Securities markets have always been an important source of funding for financial firms. As shown in Figure 5, sourcing funds through public equity offerings in 2012 is below the pre-crisis levels of 2007. Bond issuance peaked in 2009 when additional refunding programs were rolled out for banks and 2012 levels are below pre-crisis levels. Bond issuance in Europe in 2012 is comparable to 2007 levels and the Asia-Pacific region has seen an increase relative to 2007. The issuance of covered bonds[21] has increased by a third relative to 2007, but the issuance of securitised products has decreased since the crisis and certain complex securitised products have been labelled "toxic".[22]

21 Covered bonds are collateralised products – bonds backed by cash flows from mortgages or public sector loans. The number is derived from the sum of issuances of securitised products and covered bonds together as shown in Figure 6 and 7.

22 Especially Collateralised Debt Obligations (CDOs) and Residential Mortgage Backed Securities (RMBS)).

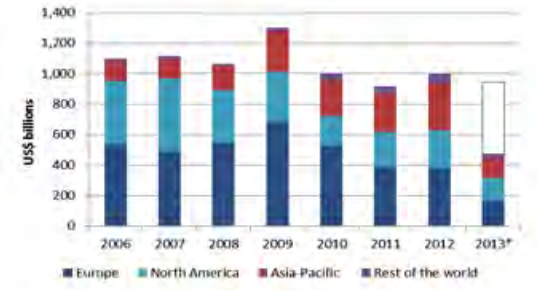
Figure 5: Market-based financing of financial firms

Public Equity Offerings in $billions



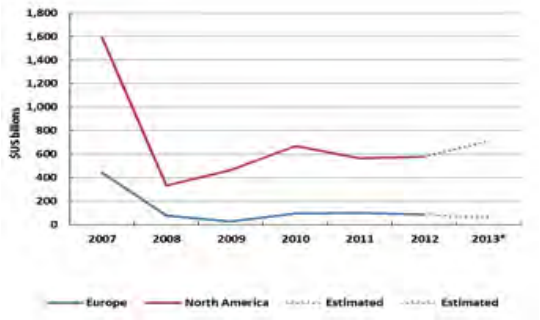
Source: Bloomberg, Note: *2013 annualised figure estimate IOSCO Research Department

Bond Issuance in $millions



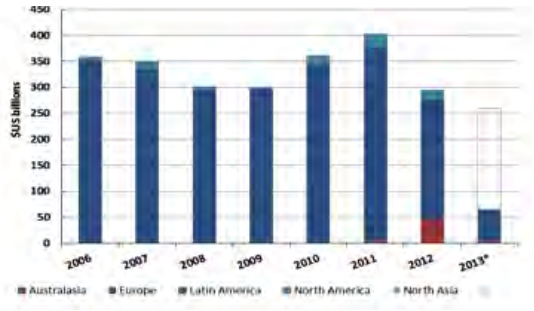
Source: Dealogic, 2013 Note: *2013 annualised figure estimate IOSCO Research Department

Securitised products (ex. Covered bonds) issuances in $ Billion



Source: Dealogic, Note: *2013 annualised figure estimate IOSCO Research Department

Covered bond issuances in $ Billion



Source: Dealogic, Note: *2013 annualised figure estimate IOSCO Research Department

Over the period 2007-2012, banks raised globally $1.7 trillion in new capital through public equity offerings, but banks' total market value of outstanding equity decreased from $6.3 trillion to $5.7 trillion. During the same period, banks raised globally $6.4 trillion through bond issuance (see Figure 5) with European institutions making up the largest portion. In terms of securitised products and covered bonds, globally, firms were able to raise $7.8 trillion between 2007 and 2012.

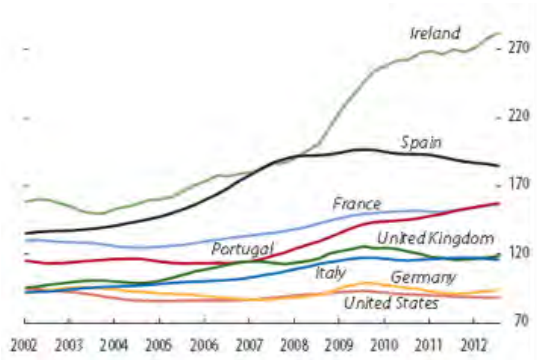
Prior to the crisis, funding through securitisation activities has been much more prevalent in the U.S. compared to Europe, and while both markets saw a dramatic decline during the financial crisis, securitisation activities of European banks stayed at a low level relative to pre-crisis levels with issuance of a total of $87 billion in 2012. However, covered bonds remained a popular vehicle for funding in Europe even through the crisis with around $2 trillion issued between 2007 and 2012.

[3.1.3 - A] Leverage has been increasing in different sectors

As mentioned in 3.1.1, corporate leverage ratios have been increasing in some economies in the European periphery, for example in Portugal and Ireland, despite the decrease in new bank lending (See Figure 6). This development highlights the possibility of greater credit risk in these countries – a problem that could be exacerbated if interest rates increase. Indeed, Figure 7 shows that the percentage of non-performing loans has shown steady increases for countries in the European periphery.

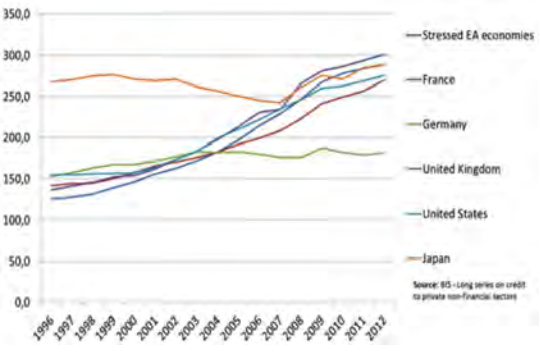
Figure 6: Corporate debt and credit to private financial sector

Corporate Debt in Percentage of GDP (Four-quarter moving average)



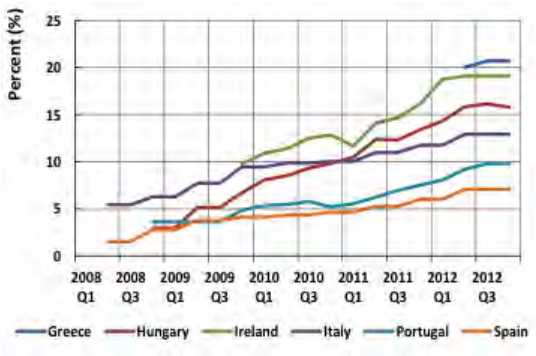
Source: Figure originally published as Figure 1.27B in last April's IMF Financial Stability Report; data from Central bank flow of funds data; and IMF staff estimates.

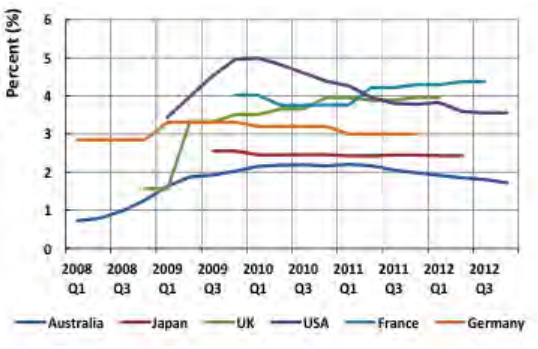
Total credit and domestic bank credit to the private financial sector, general government net debt as % of GDP



Source: IMF, WEO April 2013

Figure 7 : Non-performing loans (NPL) to total gross loans (percentages) of selected countries



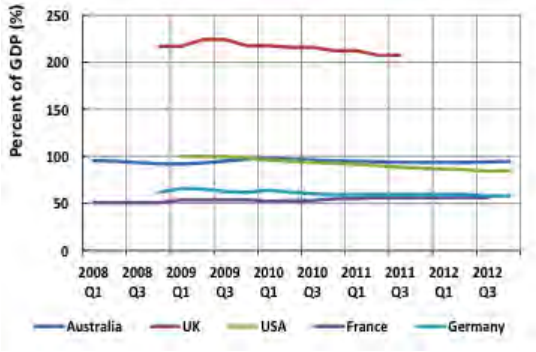


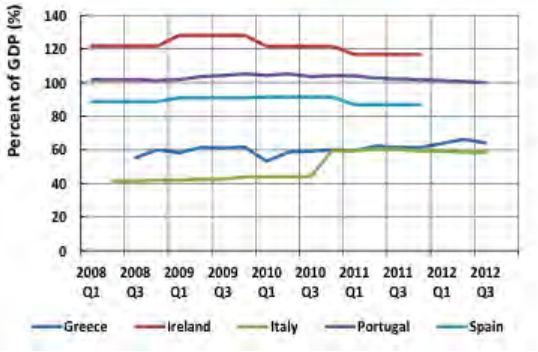
Source: IMF Financial Soundness indicators

At the same time, there has been deleveraging in the household sector in the U.S. and the EU. See Figure 8 which measures deleveraging as the percentage of household debt to GDP. Similarly, the Figure indicates that there has been very little deleveraging in most of the EU periphery. Finally, government debt ratios have continued increasing in most advanced countries.[23]

23 See, e.g. IMF World Economic Outlook dataset, April 2013

Figure 8: Household debt as % of GDP





Source: IMF Soundness Indicators

As mentioned, the situation raises reasonable concerns on the sustainability of private and public debt in several geographic areas. Excess leverage may also lead to declining standards of investment selection as financial distress creates a moral hazard problem that encourages excessive risk taking.

[3.1.4] Equity markets and fragmentation

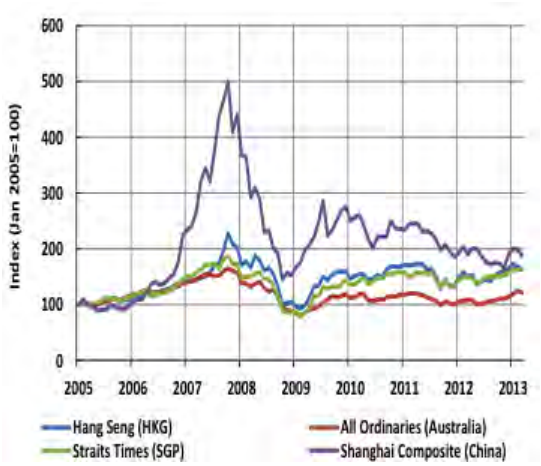
As illustrated in Figure 9, over the 2005 to 2012 period, stock market performance has been mixed. Stock indices in the U.S. and U.K. have experienced very modest returns, while those for Japan and continental Europe have lost value. Although Hong Kong experienced a significant run-up relative to other Asian economies in 2007 that largely reversed by 2009, as a group, Asian stock markets performance also has been modest. In contrast, stock performance for the selected emerging economies in Figure 9 have provided net positive returns over the period 2005-2012, even though all experienced sharp declines during 2008 and 2009.

Figure 9: Equity Market Indices and valuation measures

Equity Market Indices – Major Economies

Source: Bloomberg, IOSCO Research Department

Equity Market Indices – Asian Markets

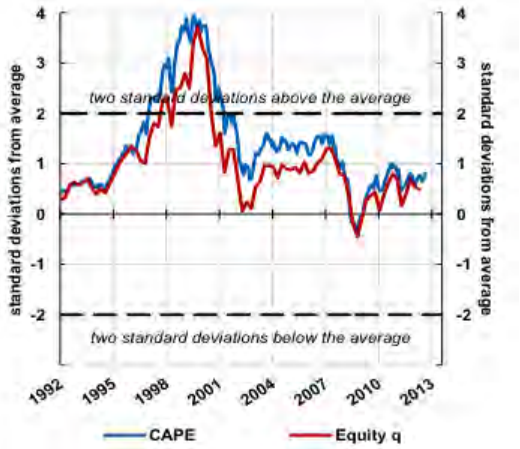


Source: Bloomberg, IOSCO Research Department

Equity Market Indices – Selected emerging markets

Source: Bloomberg, IOSCO Research Department

Measures of US equity market valuation



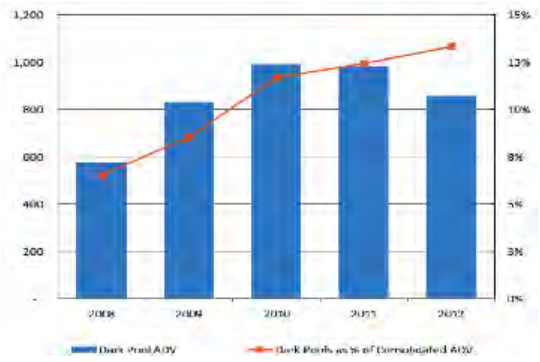
Sources: US Federal Reserve Flow of Funds, R Shiller

Measures of EU equity market valuation

Source: ESMA, IOSCO Research Department

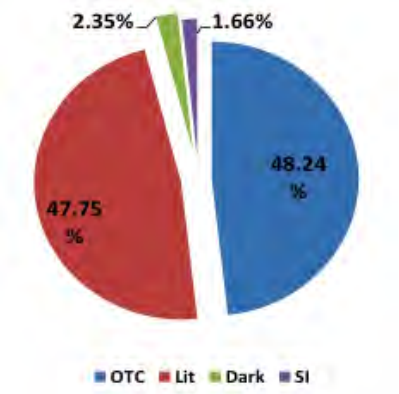
Figure 10: Dark pools and market share

Full-year average daily volume on US dark pools and market share, to December 2012



Source: Rosenblatt Securities

Dark trading as a percentage of total*



Source: Fidessa Note:* major indices include: AEX, BEL 20, CAC 40, DAX, FTSE 100. FTSE 250, FTSE MIB, IBEX, ISEQ, OMX C20, OMX S30, OSLO OBX, PSI 20, SMI

The fragmentation of markets can potentially create monitoring challenges for supervisors.[24] The increasing popularity of dark pools suggests closer attention may need to be paid to whether dark pool venues are appropriately regulated. A possible risk of the growth in dark pool trading, relative to 'lit' markets, is a less efficient price formation process.

[3.1.5] High yield bond issuances

With U.S. Government yields steadily declining since 2005 and investors searching for yield, high yield corporate bond issuances have steadily increased and hit a seven-year "high water" mark in 2012 (see Figure 11).[25] Between 2008 and 2012, high yield bond issuance increased fivefold from $90 billion to $450 billion.

Asian bond markets were more active in 2013 compared to the prior year. One possible reason for this may be increasing appetite from foreign investors in advanced economies – both institutional and retail – looking to enhance yield. From April 2012 to April 2013, Chinese debt markets grew by 34% reaching $129.7 billion,[26] with a large portion of these issuers being property developers.

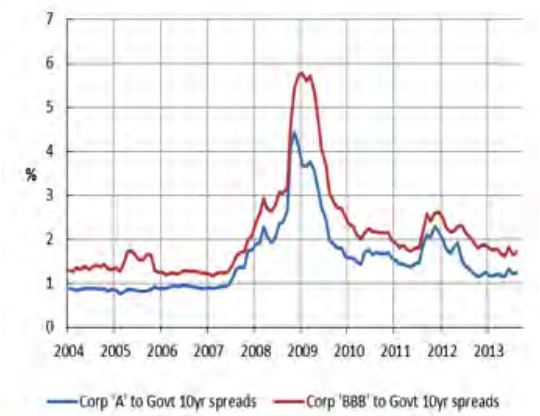
24 IOSCO, *Principles on Dark Liquidity*, July 2011.

25 Dealogic data points out that in the U.S. total high yield bond sales were around $324 billion for 2012 compared to around $144 billion a year leading up to the crisis. According to Bloomberg data, the traditionally small-sized European sub-investment grade segment saw by mid-January 2013 sales of €3.5 billion of high yield debt, more than 10 times what was raised the same period last year.

26 Dealogic.

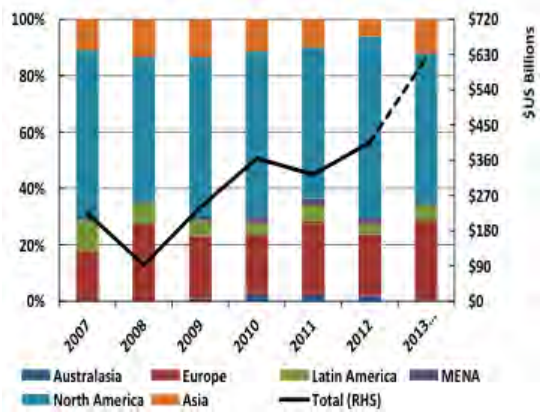
Figure 11: Credit spread and High-yield bond issuance

U.S. Corporate BBB and A spreads over Gov. 10 year spreads



Source: Bloomberg

High-yield corporate bond issuances



Source: Dealogic Note: 2012 annualised estimate

High yield bonds, by their nature, have greater credit risk. If the current interest rate environment were to change and the cost of debt financing rise, firms with higher financial leverage may find it more difficult to refinance high-yield debt at acceptable rates, possibly putting them under financial stress.

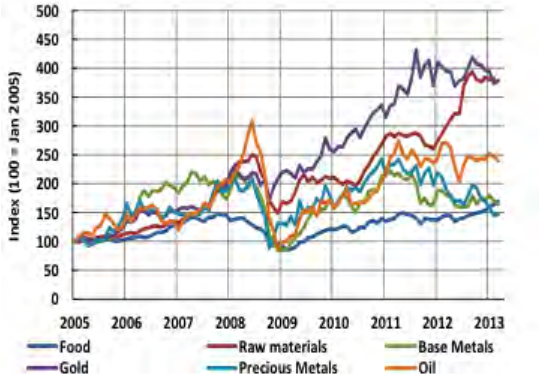
[3.1.6] Commodity markets and potential contagion between markets

Commodity markets are an important asset class for investors. Many financial products are linked to commodity prices and indices, including futures, mutual funds, and structured retail products. One of the reasons is that commodities are imperfectly correlated with equity markets and can be used to diversify risk.

Even accounting for the large price drop in 2008, commodity prices have increased over the 2005-2012 period (see Figure 12). During the last two years, prices have been stable. The only exception is raw materials, which increased steeply during the first half of 2012 before finally levelling in the latter half of the year.

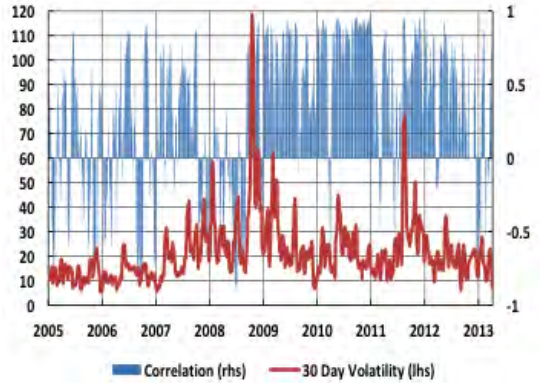
Figure 12: Commodity Markets

Commodity Market Indices



Source: Bloomberg, IOSCO Research Department

Correlations between commodity and equities



Source: Bloomberg, IOSCO Research Department

The 30-day correlations between equity prices and commodities prices in Figure 12 has increased in late 2008 and stayed high until mid-December 2012.[27] The first quarter of 2013 suggests a possible reversal to a correlation pattern as seen prior to the crisis, although it is too early to determine whether it will persist.

[3.1.7] Changes in derivatives markets

Regulatory changes have mandated the increased use of central counterparties (CCPs) (Section 4.3 analyses the changes in derivatives markets in more detail). The total notional amount outstanding of all OTC derivatives contracts has increased with 8% from $585.9 trillion to $632.6 trillion between 2007 and 2012 (see Figure 13). Excluding FX derivatives[28] and adjusting for the double counting in cleared trades, the notional outstanding has fallen by 17% from $475 trillion in 2007 to $392 trillion in 2012.

A decomposition of the figures highlights that the main driver of the fall in the adjusted OTC notional outstanding is the growth in cleared contracts (see Figure 13). In 2012 the value of cleared derivatives trades rose by 213% to $173 trillion, while foreign exchange derivatives rose by 20% to $67.4 trillion over the same time period.

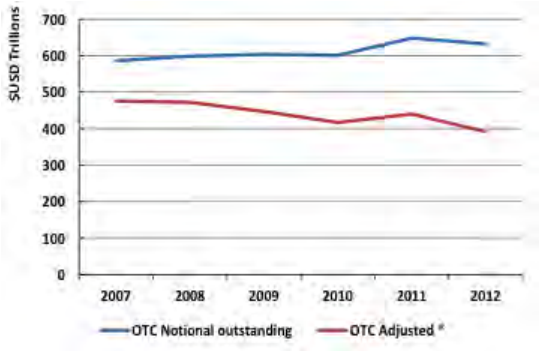
One major advantage of a CCP over a bilateral

27 The correlation was computed between Bloomberg's DJUBS index (a.k.a. Dow Jones-UBS Commodity Index) and S&P 500 index. The volatility indicator is the 30-day Volatility for S&P 500 and is also from Bloomberg. Based on data up to 4th April 2013

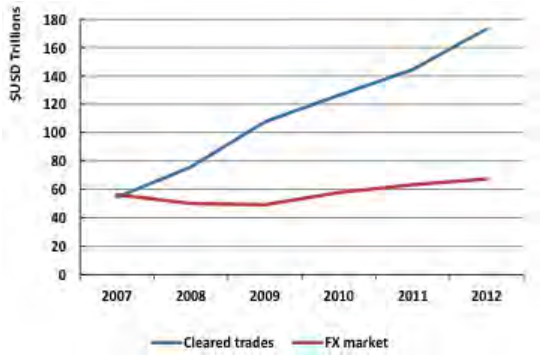
28 FX derivatives are cleared centrally through CLS bank. Furthermore, they have been exempt from margin requirement regulation going forward

Figure 13: OTC notional outstanding and cleared volumes

Gross and adjusted outstanding notional



Cleared OTC and FX volumes



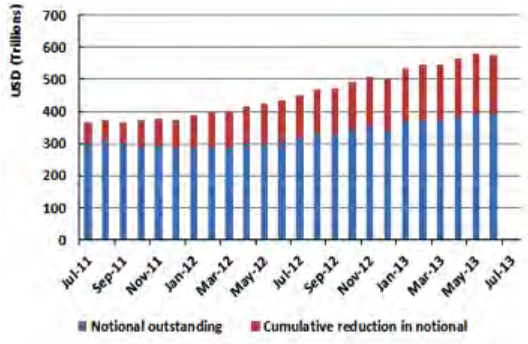
Source: Bank for International Settlements, ISDA
Notes: 1) * Outstanding OTC derivative notional after adjustment for cleared volumes, FX derivatives and double counting

contract is its ability to net interchangeable, standardised contracts.[29] For example, most CDS contracts conform to ISDA standardisation protocols, which accommodate contract netting and compression. Compression is a process where net redundant exposures across counterparties are replaced with one offsetting new contract. One consequence of the move to central clearing is an increase in compression statistics at some of the major CCPs (see Figure 14). For instance, as of June 2013 LCH Clearnet Swapclear had compressed over 1.8 million trades. Compression provides a clearer picture of potential counterparty exposure because the redundant contracts are cancelled.

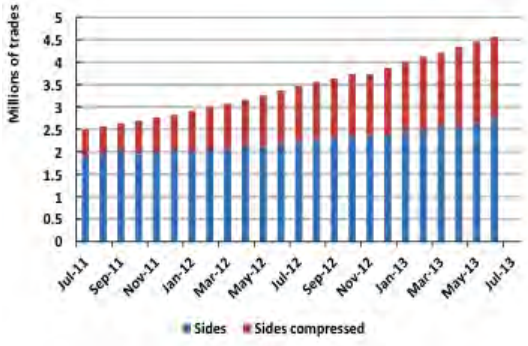
29 Compared to other vanilla OTC products, Interest rate swaps (IRS) are more bespoke in nature and have different contractual features, which limit their fungibility. So, while counterparties can net economic exposure, it is not possible to compress the trades that net redundant exposures across counterparties.

Figure 14: The effects of trade compression

Notional outstanding with compression effects



Trades outstanding with compression effects



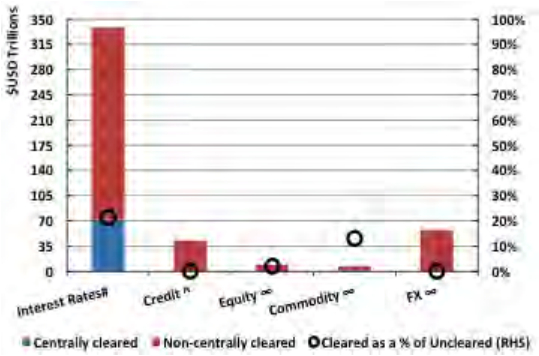
Source: LCH Clearnet Swapclear

As shown in Figure 15, central clearing was not well established in 2007 for many derivative asset classes except for interest rate swaps. By the end of 2012, central clearing of OTC derivatives had been extended to most asset classes. Around 55% of notional outstanding in interest rate derivatives was centrally cleared in 2012. Equity, commodity and foreign exchange derivatives had much smaller percentages.[30] Although gross notional volume of credit derivatives has fallen – partly due to industry initiatives of compression – the proportion of credit derivatives being cleared grew from very small levels in 2007 to around 11% of gross notional volume.

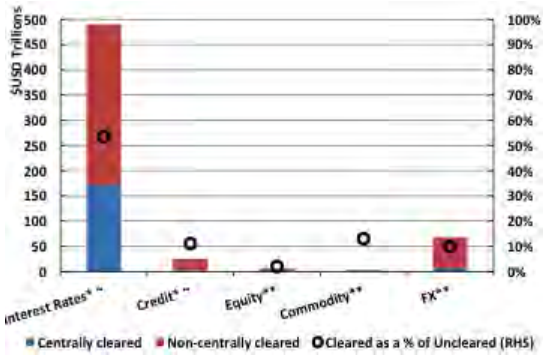
30 However, as pointed out by the FSB, aggregate figures are difficult to produce as CCPs measure clearing activity differently. This is especially true for commodities and equity derivatives.

Figure 15: Centrally cleared and non-centrally cleared trades 2007-2012

2007



2012



Sources: BIS Semi-annual statistical release Dec2012; BCBS WGMR Second consultative document on QIS and margining standards; ISDA OTC Derivatives Market Analysis 2011 & Dec 2012
Note: 1) # Data is at Dec 2007 as reported by ISDA; 2) ^ central clearing for CDS did not start until 2009; 3) ∞ Estimates only based on WGMR percentage data for market clearing (before migration). Figures are likely to be an upper-bound estimate; 4) * Data is at Dec 2012 and obtained from BIS; 2) ** Data is at 2011 and obtained from BCBS WGMR; 3) ~ Data is adjusted for FX and double counting as reported by ISDA

In the year ended December 2012, most CCPs experienced an increase in the amount of business (see Table 2).

Table 2: Notional volumes, growth of trades cleared by selected CCPs, in $billions

Organisation	Region	Product	Dec-11	Dec-12	% Chg.
LCH	EU	IRS	283,000	369,000	30%
Eurex	EU	IRS; CDS & ITRAXX; Equity;	110,784	90,084	-19%
ICE	U.S.	CDS & CDX	12,000	21,000	72%
ICE	EU	CDS & ITRAXX	8,000	12,000	40%
CLS	Global	FX	4,380	4,610	5%
Japan SCC	Asia	CDS	-	3,300	n/a
CME	US	IRS	114	1,600	1040%
Japan SCC	Asia	IRS	-	1,280	n/a
NYSE/ LIFFE Bclear	U.K.	IRS; Equities; Commodities	491	371	-20%
SGX	Asia	IRS	184	251	36%
LCH	EU	CDS & ITRAXX	68	135	99%
LCH	EU	FX	-	115	n/a

Source: IOSCO Research Department based on CME, Singapore Stock Exchange, LCH Clearnet, Eurex, NOS Clearing, International Clearing Exchange, Continuous Link Settlement, NYSE, SCC, the OTCSpace

CCPs are enhancing their capabilities to clear contracts not only in terms of the products available for clearing but also in their functionality. Table 3 shows a worldwide selection of CCPs and the products they clear or plan to clear as of June 2013. For example, CME Clearing Europe plans to launch real-time, open-access clearing for OTC financial derivatives, including interest rate swaps (IRS), foreign exchange (FX) and credit default swaps (CDS). In Asia, plans exist for the establishment of several CCPs.

Table 3: Global availability (actual and planned) of central clearing

Region	Organisation	Interest Rates	CDS	FX	Equities	Commodity	Other
U.S./Canada	CME Clearing	✔	✔	✔	Plan	✔	
	ICE Clear		✔			✔	✔
	SwapClear	✔					
	Clearing House	✔					✔
	CDCC	Plan		Plan	✔		
	OCC				Plan		✔
	NYPC	Plan					
Europe	Eurex	✔	✔		✔	✔	
	Euronext/LIFFE Bclear				✔		
	ICE Clear		✔	Plan		✔	
	LCH Clearnet	✔	✔	✔	✔	✔	✔
	NASDAQ OMX	✔			✔	✔	✔
	NOS Clearing				✔	✔	
	CME Clearing				✔	✔	
	KDPW	Plan		Plan			
Austral-Asia	SGX Asia Clearing	✔		✔		✔	
	ASX	Plan			Plan		
	Hong Kong Ex	Plan		Plan			
	Japan SCC	✔	✔				
	Korea	Plan		Plan			
	CCIL	Plan		✔			
	Shanghai Clearing House	Plan	Plan				
South America	BM&F Bovespa	✔		✔	✔	✔	
	Chile						
Global	CLS			✔			

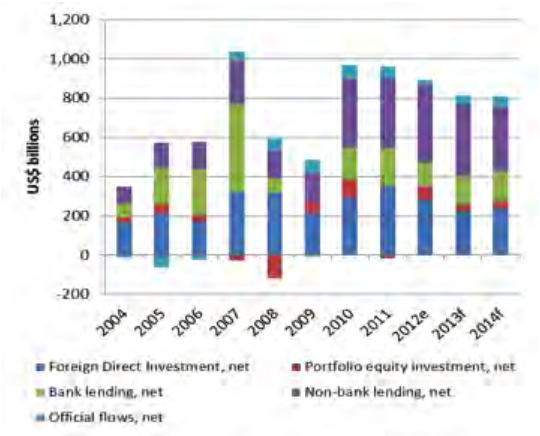
Source: IOSCO Research Department based on CME, Singapore Stock Exchange, LCH Clearnet, Eurex, NOS Clearing, International Clearing Exchange, CLS Group , NYSE, SCC, the OTCSpace; Financial Stability Board
Notes: 1) this is not meant as an exhaustive list of CCPs. 2) CDS represents Credit CDS, iTRAXX and CDX. 3) Other includes Energy, Freighting, and Macroeconomic indicators. 3) List of products cleared correct at the time of writing

[3.1.8] Capital formation and its effect on securities prices in emerging markets

Capital inflows to Emerging Market Economies (EMEs) have increased substantially since the financial crisis (see Figure 16 and Section 4.4 for further discussion). Equity markets in several EMEs have shown strong growth over the last couple of years (see Section 3.1.4. for more detailed description). Relative equity valuations, as measured by price/earnings ratios, are below 10 year averages across emerging market regions (see Figure 16).

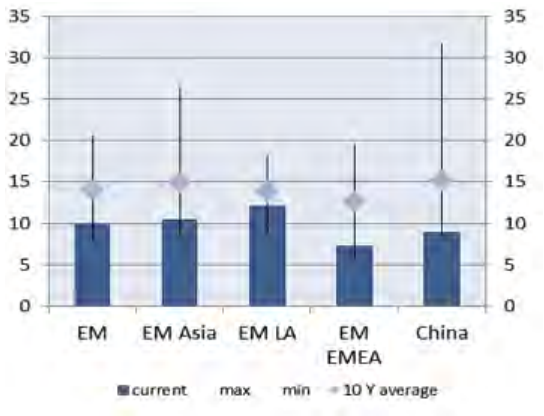
Figure 16: Emerging Market Capital flows and Valuations

Emerging Market Capital inflows



Source: IIF estimates

Stock Assets: Price/Earnings (12-month forward)

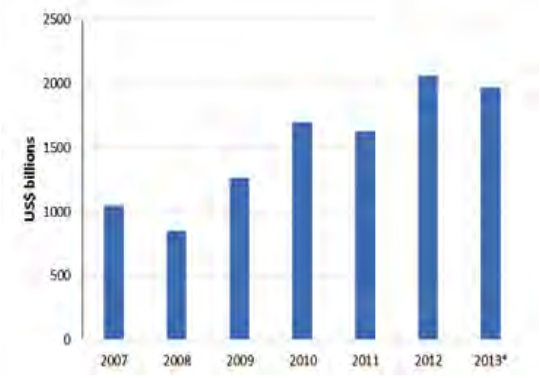


Source: Bloomberg.
1/ based on data from MSCI Indexes of Emerging Markets, between jun/2003-jun/2013

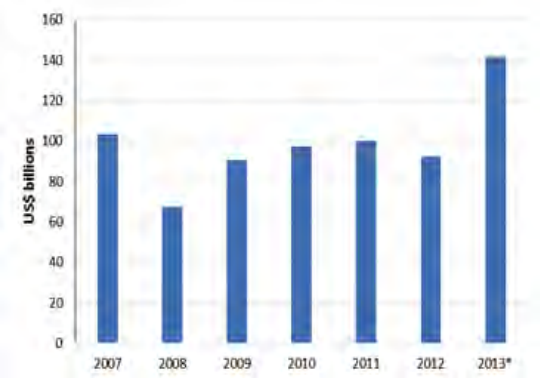
Bond markets in all emerging market regions have seen strong development, especially in Emerging Europe (see Figure 17 and Section 3.1.4 and 4.1 for more details). Total issuance of debt, including sovereign and corporate, has increased from $846 billion in 2008 to around $2 trillion in 2012 and 2013 (estimated). In fact, corporate debt issues have surpassed government debt from 2011 onwards, reaching $900 billion in 2012. Investment grade corporate bond issuance has quadrupled since 2007. High yield corporate bond issuance has been relatively stable since 2007; however, 2013 estimates suggest an expansion in its usage. Based on the first seven months, issuances are expected to reach $140 billion.

Figure 17: Issuance of debt (sovereign, corporate and other)

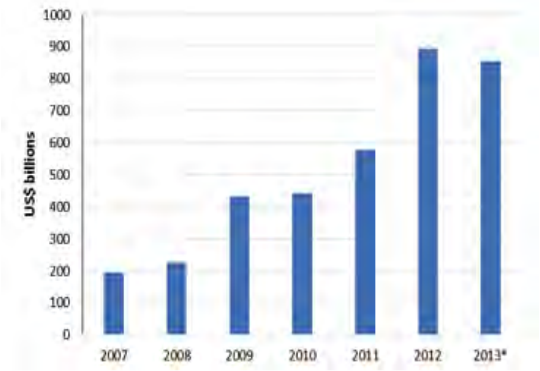
Total issuance



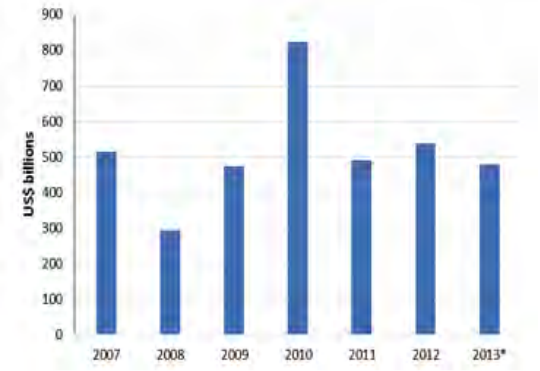
Corporate bond high-yield



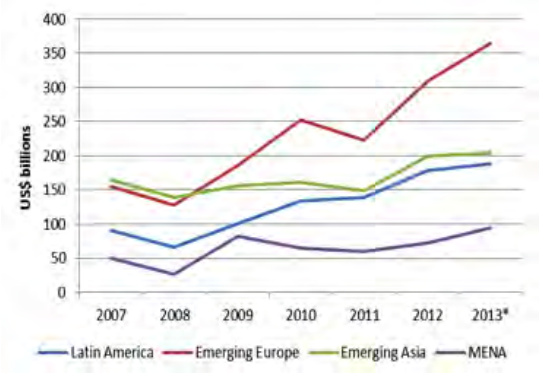
Corporate bond investment grade



Sovereign bonds



Bond issuances, by region



Source: Dealogic Note: Deal Value (proceeds). *2013 figured annualised.

The 10-year EME sovereign bond/U.S. Treasury bond spreads have remained relatively flat (see Figure 18). In a research report, Deutsche Bank identified the sovereign bond markets of China, Malaysia, the Philippines, Thailand and Peru as "warranting a more in-depth look at possible overheating risks." [31]

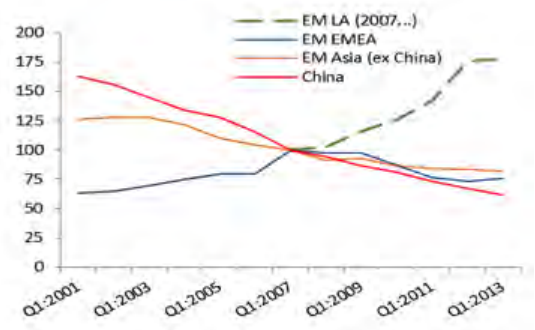
The housing market in most EME regions has tracked the underlying economic growth (see Figure 18 and Section 3.2.5 for more detail).[32] One exception is Latin America where housing prices rose sharply between 2008 and 2012 and affordability diminished, as shown by the increasing price-to-income ratio. Another exception is Hong Kong, where investment inflows from Chinese investors have caused the price index to double since the end of 2008.

31 Deutsche Bank, 'Emerging Markets: Who is vulnerable to overheating?', Research Briefing, March 12 2013. The analysis, based on a signal extraction model using the credit-to-gross domestic product ratios, equity prices deflated by consumer price inflation and the real effective exchange rates, identifies future stress in the banking sector up to three years ahead.

32 For housing markets, ratios of housing prices to income per capita (affordability) and rent can be used. If the house price growth rates significantly overtake income growth rates, a bubble may result since demand will inevitably dry-up.

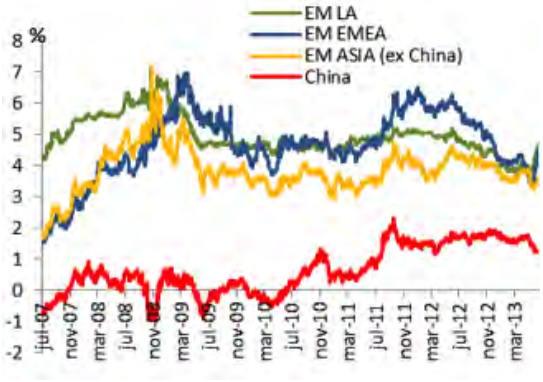
Figure 18: Emerging market key indicators[33,34]

Housing price-to-income ratio



Source: BIS; IMF; Global Property Guide; The Economist. Note: 1/ Simple average of the economies listed: ASIA (ex China) = Korea, Indonesia, Malaysia and Thailand; EMEA = Hungary, Poland, Russia, Turkey and South Africa; LA = Brazil, Colombia and Mexico.

EME sovereign bond spreads over US Treasuries



Source: Bloomberg. Note: 1/ Spreads over 10-year U.S. treasury bond interest rate. Average spread of: ASIA (ex China) = Indonesia, India, Malaysia; EMEA = Hungary, Poland, Russia, Turkey and South Africa; LA = Brazil, Chile, Colombia, Mexico and Peru.

33 It is difficult to estimate the quantity of debt outstanding for the sovereign entities and corporations of emerging market countries. Information is not as readily available as for equity markets: the IMF's International Financial Statistics present only debt owed to the official banking sector, rather than to all sectors (which would include corporations and households), and a considerable amount (possibly as high as 90%) of international lending occurs through offshore, unregulated and immense Eurodollar markets, the exact size of which is unknown.

34 Flows of portfolio investment into debt securities of emerging market countries – including such large markets as Brazil, Korea, Argentina, Hong Kong, China and South Africa – are only a fraction of the inflows to the US, Japan and western Europe.

Furthermore, capital inflows and credit in China have been used primarily to fund infrastructure projects and real-estate.[35] However, despite high levels of economy-wide financing, China's growth rate is slowing. Concerns over China's credit-growth model and credit boom are driving fears over the impacts of eventual potential deflation (see Box 2).

A 2013 report[36] suggests poses that a 'hard landing' for China's growth, defined as a drop below 6% year-on-year growth of GDP, could spill-over to other markets, because China is a major consumer of many commodities.[37] If the Chinese economy were to experience a downturn, it could also affect other equity markets that rely on the Chinese economy, such as the 'neighbouring' markets Hong Kong, Taiwan, Australia and South Korea.[38,39] Regardless, many experts agree on the proven capabilities of the Chinese authorities to handle these challenges.[40]

Box 2: China – Repo rate volatility

In the middle of June 2013, Chinese overnight repo rates and the Shanghai Interbank Offered Rate (SHIBOR) suddenly tripled to around 25%.[41] The People´s Bank of China quickly intervened, injecting 50 billion Yuan ($8.2 billion) into the system. Rates returned to previous levels and in July 2013, China's central bank pledged to adjust banking liquidity to ensure steady credit growth.[42] Nevertheless, this sudden rise in rates may reflect the vulnerability of the Chinese financial system.

The Chinese government pledged a nationwide audit of government debt in order to understand risks stemming from this credit boom. The first audit of local government debt revealed 10.7 trillion Yuan of liabilities.[43]

3.2. Impacts of global macro-economic policy on securities markets

It is important to explore possible risks outside the domain of securities regulators, such as macro-economic risks and spill-overs from the banking sector, and its possible impact on securities markets. Fiscal and monetary developments, potential downgrade risks, deleveraging of the banking sector, global policy uncertainty and movements in real estate markets can affect the functioning of financial markets. This Section will briefly discuss the potential impact of these risks on securities markets.[44]

[3.2.1] Fiscal and monetary developments and impact on securities markets

Interest rates in developed economies are at historically low levels and real interest rates[45] have become negative in the U.S., U.K., Europe, and Japan (implications of this are discussed in more detail in Section 4.1.). The low interest rate levels reflect accommodative monetary policies and the unconventional measures taken by central banks in response to the post-crisis recession and the slow recovery.

Since the crisis, bank reliance on central bank funding, has increased.[46] The US Federal Reserve's balance sheet increased from $894 billion at the end of 2007 to over $2.9 trillion at the end of 2012 (see Figure 19). This rise principally reflects purchases of the Treasury, agency, and agency-guaranteed mortgage-backed securities under the large scale asset purchase programs announced by the Federal Open Markets Committee (FOMC). However, various liquidity facilities wound down significantly over the course of 2009, suggesting that, at least in the US, there is little residual reliance on emergency central bank funding measures.

35 Blackrock Investment Institute, *Braking China without Braking the World*, April 2012.

36 Credit Suisse (2013): "Investors Burden: China in focus as Europe improves"

37 In 2010 China´s share was between 40% and 50% of global consumption of cement, pigs, iron ore, steel, copper, lead, zinc and aluminium. See Blackrock Investment Institute, *Braking China without Braking the World*, April 2012.

38 As analysed in Societe Generale, *What if China lands hard?*, July 2013.

39 E.g. Martin Wolf, *Risk of a hard landing for China*, Financial Times 2 July 2013.

40 See IMF, 'People's Republic of China, 2013 Article IV Consultation', Country Report, July 2013.

41 Bond prices in China also registered high volatility.

42 Thomson Reuters, 'China to keep credit growth steady: Central bank', 14 July 2013: "China's central bank pledged on Sunday to use a mix of policy tools to adjust banking liquidity to ensure steady credit growth, in an apparent bid to soothe market concerns about tighter monetary conditions."

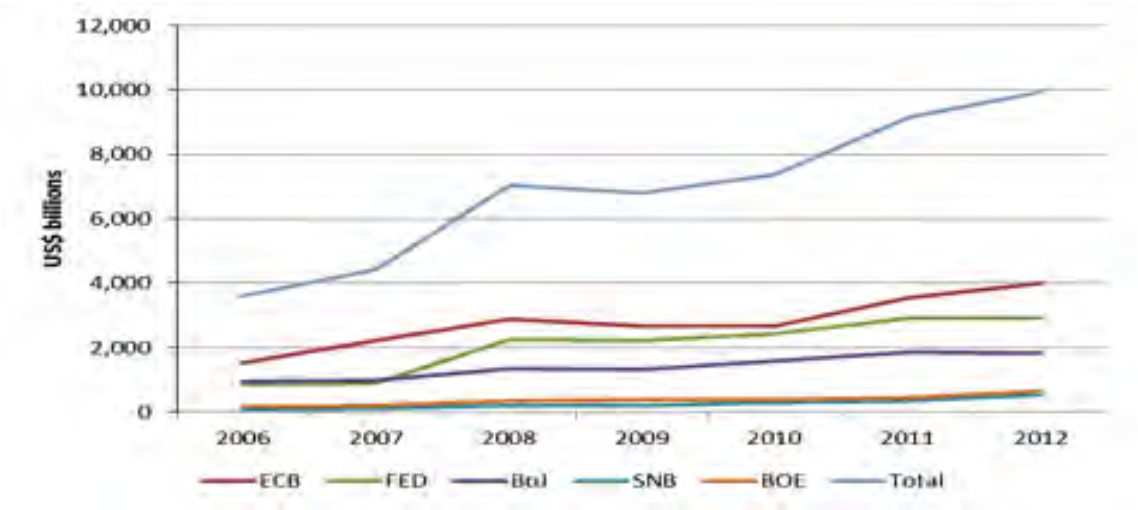
43 Bloomberg news, 'China Orders Government-Debt Audit as Growth Risks Rise', 2013.

44 This Outlook does not assess in-depth, macro-financial and economic risks outside the remit of securities markets´ regulators to avoid overlap or duplication with the work of other global organisations (e.g. the IMF Global Financial Systemic Risk report).

45 Real interest rates are defined as interest rate minus inflation.

46 For a more detailed description of banks´ funding, see Section 3.2.

Figure 19 : Balance sheets of major central banks

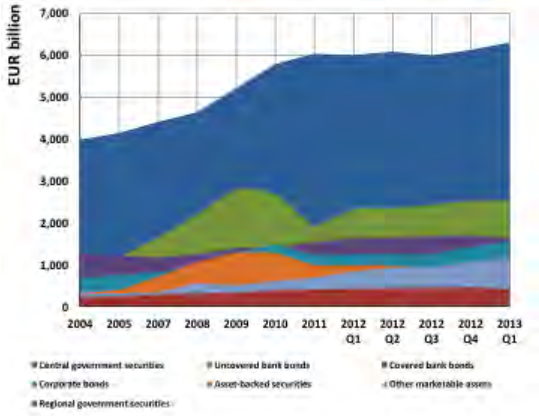


Source: Bloomberg

In Europe, it has been close to four years since the onset of the Eurozone's sovereign debt crisis (see Figure 19). The ECB intervened and expanded its balance sheet from $2.2 trillion at the end of 2007 to $4.0 trillion at the end of 2012 (see Figure 20). The announcement of the Outright Monetary Transaction (OMT) program in September 2012 by the European Central Bank intensified the buying of short-term sovereign debt and helped to calm European markets as debt-to GPD ratios have risen significantly since 2007 (see Figure 20).

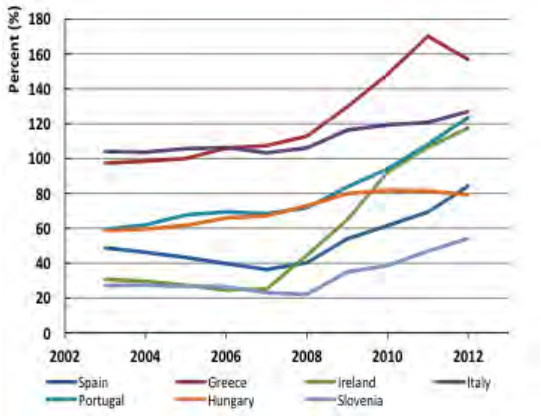
Figure 20: Collateral received by ECB and Sovereign debt-to-GDP ratios

Eligible collateral posted to the ECB



Source: European Central Bank

Debt-to-GDP ratios of selected countries



Source: Bloomberg

The program already has substantially lowered borrowing costs for those countries most affected by the sovereign debt crisis; Portugal and Ireland were able to return to the bond market in 2013 and Greece is planning to return in 2014. Spain has been able to issue sufficient long-term bonds to continue re-financing its debt.

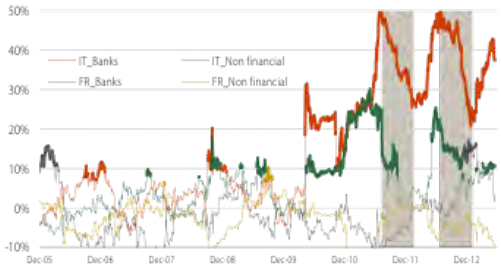
However, expectations about risk in the financial sector and public sector finances have resulted in an information spill over such that changes in the perception of bank solvency changes expectations of new injections of government resources to support these banks. To the extent that market participants anticipate higher imbalances in public sector finances, sovereign debt quality is expected to erode. As such, monitoring and delinking of banking sector risk from sovereign risk is a key objective that should enhance financial stability.

Until late 2009, price movements for sovereigns and banks did not exhibit significant correlation. After the first sovereign debt crisis episode in Greece, however, the correlation increased substantially, particularly in countries like Spain and Italy (see Figure 21).

Figure 21: Correlations between returns on financial firm equity and government debt

Correlation between the return on national public debt and the return on Spanish shares , [1,2]

Correlation between the return on national public debt and the return on Italian and French shares



Source: CNMV

1 See C. Aparicio, "Empirical study on the bans on short selling in Europe in 2011 and 2012", CNMV Quarterly Bulletin, 1Q13.
2 Source: Thomson Datastream and CNMV. (1) The shares are of companies included in the Eurostoxx 300 in September 2012. Equally weighted portfolios are composed containing shares of financial and non-financial companies with prices which take into account recapitalisation of dividends. For each portfolio we performed an OLS estimation, in six-month rolling windows, where the variable on the left-hand side of the equation is the return (log) of the share portfolio and on the right-hand side the return (log) of the Eurostoxx 300 and the return of a portfolio long in domestic debts and short in German debt. The coefficient corresponding to the public debt portfolio is multiplied by the standard deviation of the return of the public debt portfolio in the period and divided by the standard deviation of the return of the share portfolio in the same period. (2) The shaded area indicates the period that the bans on short selling were in force in Spain. (3) For each correlation indicator the line is shown as thick or thin. If the line is thick it means that for the estimation for said period, it cannot be rejected that this correlation measure is significantly different from zero at 10%.

Uncertainties about the long-term stability of the financial sector, especially in Europe can be attributed to two principal risks. First, the financial crisis has imposed severe constraints on the ability of governments to manage their finances, in particular for those in the Eurozone. Second, the banking sector exposure to public debt instruments has increased substantially over the last years. In response, a number of measures have been designed to help mitigate the linkage observed between the banks and the sovereigns in the Eurozone. These include: the Banking Union, the Single Supervisory Mechanism and the Single Resolution Mechanism reinforced by a European Deposit Guarantee Scheme.

[3.2.2] Potential downgrade risks and impact on securities markets

The sovereign debt of various European countries has been downgraded in the wake of the crisis. The reforms of local governments and strong interventions by the ECB have increased stability. Some countries continue to aggressively use debt financing (see Box 3). Although downgrades of sovereign debt ratings were relatively rare in 2012, the downgrades that did occur appear to have been anticipated by market participants resulting in no major price dislocations.

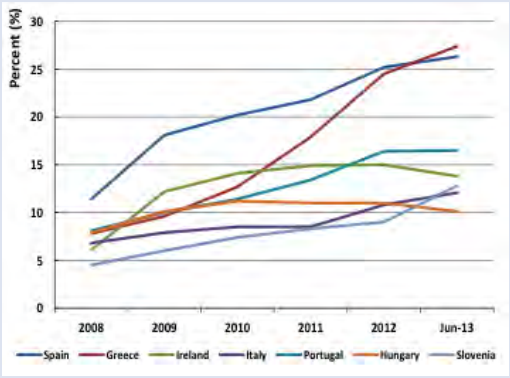
Box 3: Europe´s fragile recovery

Sovereign debt in many euro-zone countries remains higher than the 60% of GDP allowed in the Maastricht-treaty. For example, Italy's debt burden reached 131% of GDP in 2012, and debt in Ireland and Portugal are forecasted to reach at least 123%, and despite a drop of Greek debt in 2011-2012, its burden is at 160% of GDP (see Figure 22). Furthermore, growth in many of the Eurozone countries is weak with high unemployment in many countries, and there are increasing concerns about the solvency of Hungary and Slovenia (see Figure 22). The countries in the EU periphery are also facing diminishing GDP which erodes the deleveraging efforts.

In 2013, in order to engage with these issues and stimulate growth, the European Union signalled that austerity would need to be moderated by EU policy makers, granting exemptions to several European countries to continue running budget deficits in the short run in excess of the 3% mandated under the Maastricht-treaty, so as not to weigh too much on growth perspectives.

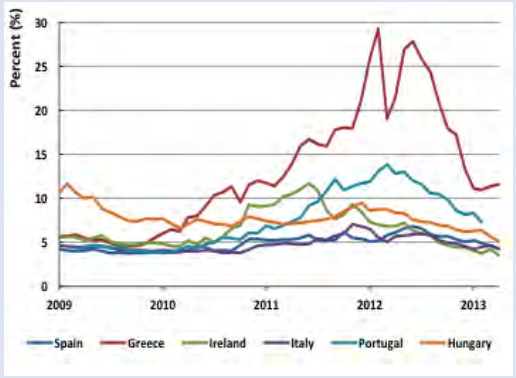
Figure 22: Economic indicators of crisis-affected European countries

Unemployment in selected European countries



Source: Eurostat

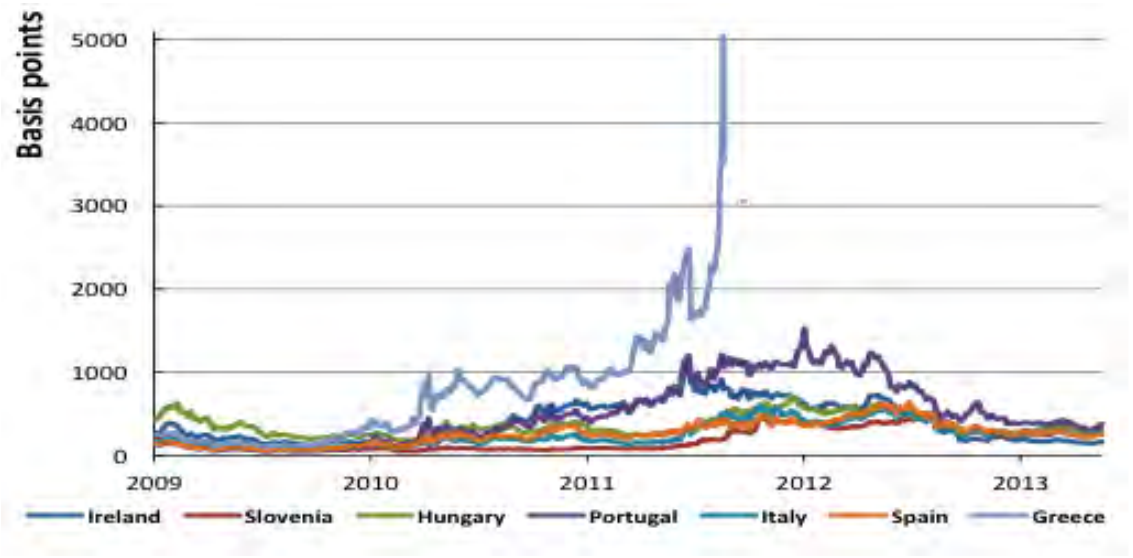
Yields on 10-year sovereign



Source: Dealogic, estimates by IOSCO Research Department

Consistent with our prior observation that financial markets have been significantly stabilised, CDS spreads on European periphery countries are lower in 2012 (see Figure 23). Since the 'selective default' announced by the Greek government, CDS spreads have declined, particularly in the second half of 2012, and are nearing pre-crisis levels in a number of countries.

Figure 23: 5-Year CDS spread of selected countries



Source: Bloomberg

A potential risk associated with sovereign debt is the possibility of a ratings downgrade. If, for example, the sovereign debt of a large European country were downgraded to "below investment grade" status many institutional investors, e.g., pension funds, would be required to disinvest due to legal requirements to only hold investment-grade bonds. A possible implication of such an event could be short-term price pressure and increased volatility caused by demands for liquidity

[3.2.4] Developments in real estate markets and the impact on securities markets

Because much of the crisis-related regulation is rooted in concerns about the housing sector, developments in real estate markets can be important indicators for financial regulators to monitor when assessing associated risks to financial stability, credit supply and, consequently, long-term economic growth.[47] Two potential-contributing factors to the recent financial crisis can be traced to market failures in subprime mortgages and an excessive reliance on wholesale securitisation markets. Accordingly, a rapid acceleration in real estate prices may be a leading indicator of loosening credit standards.[48][49]

Data from securities markets on changing patterns in lender liabilities and funding are important sources of corroborating evidence. Another is the

47 Securities regulators may be able to contribute to detecting and diagnosing these indicators of asset price bubbles due to their real-time access to capital markets data that are likely to reflect significant changes in lenders' business models (such as funding) that would normally underlie building bubble pressure.

48 L. Gambacorta and D. Marques-Ibanez (2011) 'The bank lending channel: Lessons from the crisis' BIS Working Papers, No 345.

49 Studies on past crises in OECD countries have shown growth in real house prices to be a strong leading indicator of financial instability, alongside deterioration in capital or liquidity standards in the banking sector (See, for example, crisis models in R. Barrell, E. P. Davis, D. Karim, and I. Liadze (2010) 'The impact of global imbalances: does the current account balance help to predict banking crises in OECD countries?', NIESR Discussion Paper, no. 351. The evidence on the relationship between house prices and financial crises in crisis early warning system models is less strong (e.g. Rose, A. and M. Spiegel, (2009), 'Cross-Country Causes and Consequences of the 2008 Crisis: Early Warning,' CEPR Discussion Paper 7354.). These findings have been used, and tested further in several assessments of benefits of prudential regulation in the UK and Basel III as a whole (See S. De-Ramon, Iscenko, Z, Osborne, M, Straughan, M and Andrews, P (2012), 'Measuring the impact of prudential policy on the macro economy', FSA Occasional Paper Series No. 42.; Basel Committee of Banking Supervisors (2010), 'An assessment of the long-term impact of stronger capital and liquidity requirements').

entrance of new, non-bank providers of mortgage loans that use wholesale funding to finance the underwriting of mortgage loans. If those loans are then repackaged as securities and sold to investors in periods of rapid housing appreciation, this funding mechanism could contribute to a loosening of overall underwriting standards and the consequent build-up of systemic risk (see Box 4).

Box 4: Real Estate Investment Trusts (REITs)

Collective investment schemes that invest in real estate or securities related to real estate are traditionally used by investors who wish to speculate on housing prices or to diversify portfolio risk. Open ended real estate funds can be subject to liquidity runs because the underlying assets tend to be illiquid.[50] This may cause investors to realise unexpected losses as the funds are required to absorb liquidity discounts to meet redemption requests.

REITs are an increasingly attractive investment alternative in the current low interest rate environment as they pay dividends. Especially REITs in the US that invest in Mortgage Backed Securities (MBS) issued or guaranteed by the U.S. government sponsored agencies Fannie Mae, Freddie Mac and Ginnie Mae They experienced high growth and, at the end of the first quarter of 2013, the largest 14 of these REITs had $365 billion assets under management. They account for a significant proportion of the daily trading volume in agency MBS.[51] Because of REITs' high leverage, usually 6 to 9 times, when interest rates rose in June 2013, their shares experience large price drops. For example, the value of Annaly, the largest and oldest REIT, dropped around 35%.

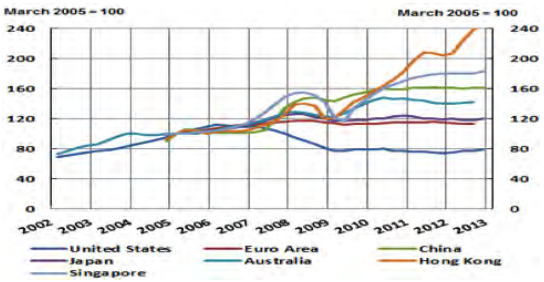
50 The biggest Dutch real estate investment fund Rodamco was forced to close the open-end structure in 1992 as it was unable to pay back the net asset value to investors who wanted to redeem participations, after massive redemptions by ABP, the biggest pension fund, and the illiquidity of the real estate in its portfolio. The value of the fund was determined by secondary market supply and demand, and fell around 35%. See e.g. Werner Bijkerk, "Spoken en dromen", *PropertyNLmagazine*, July 2003. Similar problems occurred in countries such as Germany, France and Austria in the early 2000´s and in 2007-2008.

51 This type of investment strategy is a also a common hedge fund strategy. See e.g. www.annaly.com stockholder supplements.

Following the financial crisis, a number of housing markets experienced capital depreciation (see Figure 24). These include the U.S., Spain, Japan, Denmark, Ireland, Italy, the Netherlands and South Africa. Other markets – including the U.K., France and South Korea – have plateaued or fallen slightly. Singapore and Australia initially experienced rising values following the crisis, which eventually levelled out. Yet, there are markets where housing values have steadily increased. These include China, Hong Kong, New Zealand, Canada, Switzerland and Norway.

Figure 24 : House prices in selected countries

Unemployment in selected European countries



Source: Standard & Poor's, Eurostat, Australian Bureau of Statistics, GlobalPropertyGuide.com

Consider the case of China where the combination of sustained economic growth and credit expansion following the financial crisis has resulted in rising prices for residential property.[52] End of May statistics for year-on-year appreciation are Shanghai 10.2%, Beijing 11.8%, Shenzhen 13.7%, and Guangzhou 15.3% and that trend shows little sign of abating. Given that the Chinese economy has become more levered, a fall in residential property prices, and the consequent deceleration of economic activity and subsequent negative wealth effects, would weigh on an already overstretched financial sector (see Section 3.1.7). This could have global repercussions, given Chinese investments in U.S. and European sovereign debt markets, direct and portfolio investments throughout the world, and Chinese demand for a significant proportion of world trade in raw materials.

52 After a deceleration in prices between 2010 and 2012, prices began rising strongly again in late 2012.

CHAPTER 4

LOOKING FORWARD – NEW RISK AREAS TO CONSIDER

4.1. Risks associated with the low interest rate environment and the search for yield

Expansionary monetary policies have driven interest rates down to historically low and sometimes negative levels in real terms (see section 3.2.1.). While these policies supported the functioning of the global financial system and potentially stimulate the real economy, spillover effects may create potential risks for securities markets. This Section analyses the dynamics in the securities markets driven by low interest rates and the behaviour and search for yield of investors. It also considers the possible implications on securities markets and possible responses by market participants of potential developments[53] of (1) extraordinary policies fade out and interest rates return to normal levels or (2) extraordinary policies go on and interest rates stay low over the long-term.

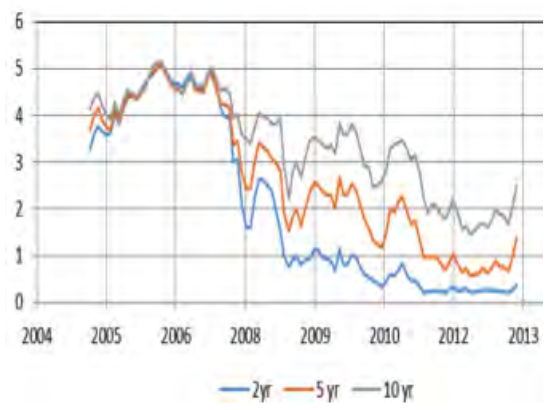
Background

Real interest rates, measured as the nominal interest rate minus the rate of inflation, have been low for many years in the Eurozone, the U.S., the U.K. and Japan; for many the real interest rates has been below 3% (see Figure 25). The main exception was 2009 when rates reflected the possibility of a Eurozone break-up. Since then, real interest rates have fallen and actually became negative in some countries.

53 Both potential developments of markets are scenarios that have been debated amply amongst market participants and regulators. See e.g. BIS, Markets under the spell of monetary easing, *Quarterly Review June 2013*; BIS, Search for yield as rates drop further, *BIS Quarterly Review September 2012*; Bank of England, *Financial Stability Report June 2013*.

Figure 25: Real interest rates and U.S. Treasury yields in percentage

Source: Bloomberg



Source: Bloomberg

In June, the U.S. Federal Reserve announced a potential change in its monetary policy, causing a jump in bond yields (see Figure 25). As a result, global equity and bond markets showed sharp declines in value. The announcement also may have triggered a reversal of capital flows from certain emerging markets (for more detailed analysis see Section 4.4.).

Understanding and Assessing the Risk

Securities that offer higher yields through higher market or credit risk

In an environment of low interest rates, securities market products offering relatively high yields have become popular. When fear in the markets evaporated after 2009, the risk appetite of investors has resulted in a search for yield.[54] Bonds with higher interest rates reflecting a higher risk premium – both sovereign and corporate – faced increasing demand. In the course of 2012 high yield corporate bond issuances hit record levels globally[55] (see Figure 12). Inflows in emerging markets bonds also reached record levels (see Section 4.4).

Bonds yields generally have since been pushed down reflecting lower risk *premia*. In certain parts of the bond market yields have come down very strongly since 2007. An example is the high yield corporate bond market in the US (see Section 3.1.5, Figure 11) where the excess yield over 10 year Government bonds has come down from almost 5.8% in 2007 to 1.8% in mid-2013. Despite the huge fall the risk premium is still above the levels seen in the years before the crisis of approximately 1.3%.

Another example of the search for yield can be found in the credit terms and conditions for newly issued institutional loans and high-yield bonds. These have been loosening.[56] In the US, the proportion of loans issued without financial maintenance covenants, known as covenant-lite loans, has increased substantially since 2008. Even for loans with maintenance covenants, a decline in the average number of covenants indicates looser terms and conditions. In 2012, they represented 30% of all institutional loans and grew to 50% by the end of Q1 2013. These ratios exceed even the pre-crisis high of 27%.[57] In terms of volume, covenant-lite loans were $93.5 billion in April 2013 compared to less than $10 billion in 2008.[58,59]

Further indications of increasing demand for higher yield can be seen in the market for structured products, where a variety of credit instruments such as commercial mortgage-backed securities (CMBS) have been issued. Following the virtual shutdown of the market for asset backed securities after the financial crisis, issuances reached $45 billion in 2012, a 50% increase from their 2011 level.[60]

The search for yield has also been notable in other asset classes. Real estate prices in certain countries show sharp increases and reflect search for yield (see Section 3.2.5).

A sudden adjustment of interest rates returning to average long term would face governments and firms that want to issue bonds with significantly higher costs, which may impede capital formation. At the same time, an increase in interest rates could be accompanied by an improvement in economic conditions. Given the offsetting benefits and cost, it is difficult to predict the net economic impact of different interest rate environments. On the other hand, if interest rates were to stay 'low for long' overvaluation might occur.

Securities and vehicles that incorporate leverage to offer higher yields

Apart from the securities that offer high yields reflecting the higher market and credit risk, the search for yield can also be noted in securities that offer high yields through leverage – and sometimes combined with higher market and credit risks.

54 The Bank of England has analyzed the drivers of the so-called search for yield in depth in Box 1 of its *Financial Stability Report June 2013*

55 Financial Times, 'Record-setting year for corporate debt', 19 December 2012.

56 as highlighted by the Financial Stability Oversight Council in its 2013 annual report

57 Morgan Stanley, S&P LCD.

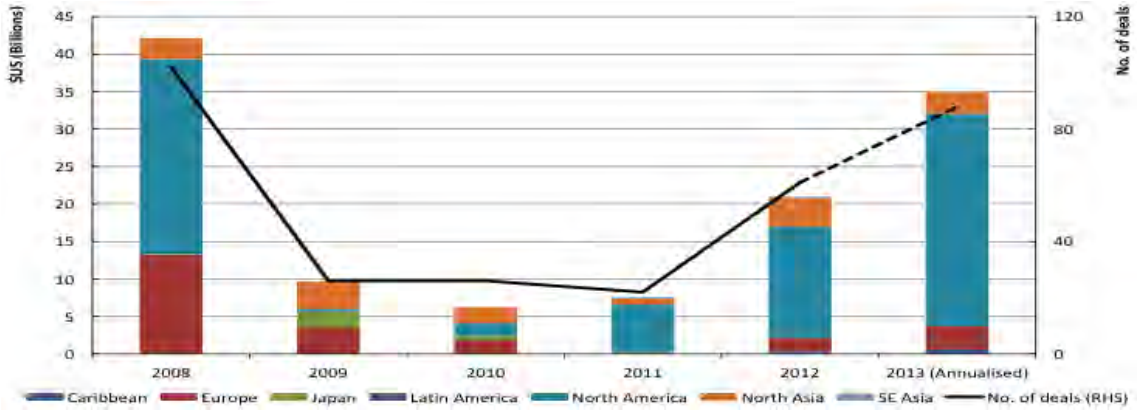
58 In 2007 this figure was $96.6 billion.

59 S&P LCD.

60 Source: Dealogic.

There is newfound demand for Collateralized Debt Obligations (CDOs) including Collateralized Loan Obligations (CLOs). These complex products offer higher yields by adding leverage to market or credit risk. The issuance of CDOs has risen from $6 billion in 2010 to an estimated $35 billion in 2013 being back at pre-crisis levels (See Figure 26). Especially in the US the issuance of CDO´s has surpassed the amount in 2008. Furthermore, market intelligence suggests that demand for structured retail products with leverage and for hedge funds also has grown. Finally, inflows into Real Estate Investment Trusts (REITs) in the U.S. have surged (see Section 3.2.5).

Figure 26: Collateralized Debt Obligations, issuance



Source: Dealogic

Investors have selectively returned to certain types of leveraged investment products. While these instruments may offer higher income in the near term, they are more vulnerable to significant revaluations when credit risk increases.

If normalisation of interest rates occurs this could have adverse impact on the value of these products similar to what has been experienced in the financial crisis where the value of leveraged products was decimated. If interest rates are maintained at this low level for a prolonged period, they may act to hide underlying weakness in credit quality. Prolonging low interest rates could drive up leverage in these products and, in the longer run, cause a bubble.

The investors, their behaviour and varying vulnerabilities

Wholesale investors and retail investors tend to behave differently. Accordingly, different interest rate scenarios imply different impacts across investor types.

Cumulative inflows of mutual funds that invest in bonds (see Figure 27) have become increasingly popular with cumulative inflows of $1.2 trillion ($1 trillion since 2009 alone).

These inflows have been partially allocated to high-yield bond funds (see Figure 27). This could be a concern if investors are unaware of the downside risks in a case of an interest rate shock. The value of bonds can decline sharply in the potential case of steep interest rate increase. In addition, the potential risk that a significant number of investors decide to redeem shares simultaneously after an interest rate shock could result in large price declines and high return volatility in the bond market and in turn significantly stress other markets. Another risk is that dealer bond inventories of high-yield bonds have dropped, further reducing liquidity in an already illiquid market.

The value of an investor's bond portfolio declines with a sudden interest rate shock. The more levered and exposed the investor is the more the value will fall because the investor might need to de-lever, that is sell off bonds, and thereby further stress the bond market. If low interest rates were to persist, a desire for higher yields may cause investors to take on more leverage. Such investment strategies could be a growing risk to the financial sector if it were to become sufficiently large.[61]

If interest rates rise gradually as a part of a solid economic recovery, wholesale investors such as banks, funds and insurance companies may benefit if their net interest margins expand. In such a scenario, most retail investors should benefit as well, as the gradual pace of rate increases should give them time to rethink their asset allocation and to redeploy their assets.

Sophisticated wholesale investors who predominantly invest directly in bonds are aware of the risks and can be expected to manage their bond portfolios appropriately. This characterisation may not necessarily apply to certain pension funds. The IMF reported in its *Global Financial Stability Report*[62] that pension funds increasingly take on more risks in their investments such as investing through hedge funds, which exposes them to leverage especially if the amount of leverage remains opaque to the hedge fund client.

Looking Forward

It is hard to predict when the low interest rate environment will end. However, as stated by the various Central Bank governors, the macro-economic scenario that has to be in place for central banks to begin winding back extraordinary monetary policies is clear: there will need to be solid economic growth with low unemployment and well-anchored inflation expectations.

The Federal Reserve Board of Governors has been the most explicit promoting low interest rates, stating "*In particular, the Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored.*"[63]

This direct communication by central bank governors brings clarity to market participants. It has the potential to highlight the stage of the economic cycle. But it does not provide information about the speed of the interest rate adjustments nor about the mechanism by which the central banks will begin to reverse policies that added liquidity. This means that financial regulators, including securities markets regulators, may find it informative to monitor the various market segments, identifying potential risks and assessing behavior of market participants.

61 Similar to the events of 1994, where bond yields rose quickly.
62 IMF, *Global Financial Stability Report*, April 2013
63 Board of Governors of the Federal Reserve System, Press Release, 19 June 2013.

4.2. Risks associated with collateral management in a stressed funding environment

Collateral management is becoming increasingly important in financial markets[64] because banks face capital requirements[65] that necessitate their holding of high-quality collateral, while central banks absorb collateral from banks in turn for liquidity.[66] At the same time, due to a better understanding of counterparty risk and the introduction of new regulations,[67] financial firms must find high-quality collateral for their over-the-counter derivatives trades (OTC) in order to meet initial margin and variation margin requirements. While the amount of collateral currently in the system remains relatively stable, heightened demands for collateral could result in there being pressure on the availability of collateral.[68]

In response, banks are turning to innovative collateral management solutions to meet requirements to provide high-quality collateral. These practices include collateral transformation services, repo, and re-hypothecation. However, the potentially opaque nature of these activities and their creation of interlinked, leveraged chains between actors may hide potential risk build-up. This Section explores concerns around whether the demand and supply of collateral are in balance, whether collateral is being efficiently channelled to where it is most needed and how certain practices manifesting in this space could contribute to systemic risk.[69]

Background

There are three main drivers of the increased demand for collateral:[70] (1) bank funding, (2) central bank efforts to mitigate the effects of the crisis, and (3) capital and margin requirements to support derivatives transactions.

(1) Bank funding

Obtaining funds through mechanisms such as interbank lending is becoming more difficult for banks.[71] In addition, banks need to locate additional collateral to meet capital requirements introduced through regulatory measures, such as Basel III capital and liquidity requirements. Below, Figure 28 shows a reconstruction of the various pillars of bank funding globally and their estimated changes since the crisis (2007), highlighting the potential stress on bank funding.

64 Collateral includes assets such as stocks and bonds pledged as security for a loan.

65 Basel III Bank capital requirements; Solvency II for Insurers.

66 The quality of collateral being absorbed by Central Banks differs from jurisdiction to jurisdiction. For example in the U.S. only high quality collateral is purchased, whereas in Europe both high and low may be accepted.

67 For example, OTC derivatives and CCP rules.

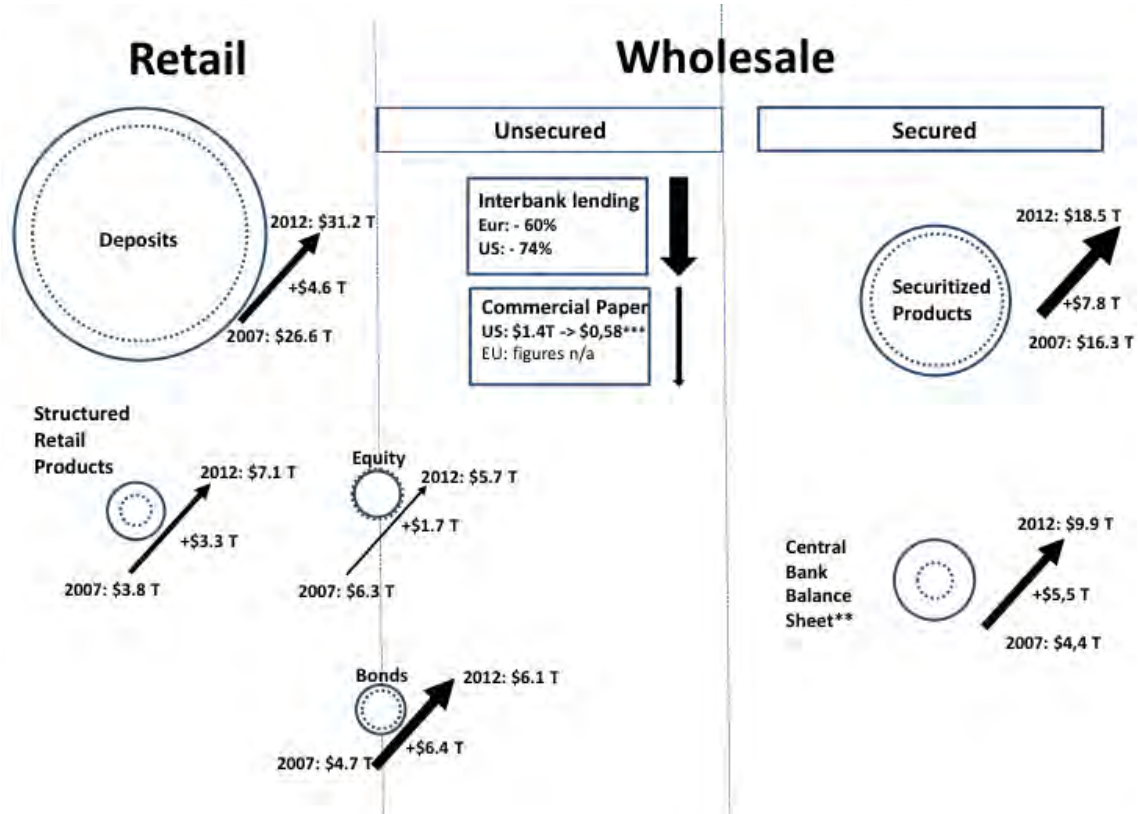
68 According to IMF figures, the amount of available collateral has shrunk from $ 10 trillion in 2007 to $ 6 trillion in recent years. See also Richard Ellis, 'Collateral Transformation: Liquidity and Market Risk Issues', Sapient Global Markets.

69 E.g. Committee on the Global Financial System, Asset encumbrance, financial reform and the demand for collateral assets, CGFS paper 49, May 2013 and A. Hauser, *The Future of Repo: ´too much´ or ´too little´*, June 2013.

70 For an exhaustive overview see e.g. Committee on the Global Financial System, Asset encumbrance, financial reform and the demand for collateral assets, CGFS paper 49, May 2013.

71 See e.g. BIS Working Paper, 'Financial crises and bank funding: recent experience in the euro area', March 2013; McKinsey Working Papers on Risk, 'between deluge and drought: the divided future of European bank-funding markets', number 41, March 2013.

Figure 28: Changes in funding sources of financial firms



Source: Research Department, based on Bloomberg, Dealogic, www.structuredretailproducts.com, OECD, FED

The *wholesale, unsecured, funding* market has experienced sharp reductions in interbank lending and access to commercial paper.[72] For example, interbank lending has declined by 74% in the US[73] and 65% in the Eurozone.[74] At the same time, the amount of outstanding commercial paper decreased from $1.4 trillion in 2007 to $0.58 trillion in 2012.[75] The decline of the unsecured funding market has urged banks to search for other sources of funding.

Equity and bond markets have proven to be a stable source of funding for banks (as mentioned in Section 3.1.2). Between 2007 and 2012 banks have issued $1.7 trillion of new equity capital and $6.4 trillion of bonds. Furthermore, *retail clients* provided funding increasing *deposits* by $4.6 trillion to $31.2 trillion in 2012,[76] and purchasing approximately $3.3 trillion *of structured retail products.*[77]

Secured funding operations that require collateral are important as a funding source for banks. In 2012, the amount outstanding securitised products reached $18.5 trillion globally,[78] making it the second largest funding source after deposits and the largest secured funding source. As mentioned in Section 3.1.2, banks were able to raise $7.8 trillion through securitised products between 2007 and 2012. However the amount of outstanding securitised assets only increased from $16.3 trillion to $18.5 trillion,

72 See BIS, *Annual Report 2012*, Graph VI.6 and D. Domanski, I. Fender and P. McGuire, "Assessing global liquidity", *BIS Quarterly Review*, December 2011.

73 Source: U.S. Federal Reserve Board.

74 Source: ECB Money Market report 2012.

75 Source: U.S. Federal Reserve Board. Measured is commercial paper defined in SEC rule 2a-7 tier-1.

76 Bloomberg: additional deposits of banks in G4: US, Eurozone, Japan, and United Kingdom

77 Estimates of A. Blundell-Wignall in: *An Overview of Hedge Funds and Structured Products: Issues in Leverage and Risk,* OECD 2007 and actual global outstanding at www.structuredretailproducts.com

78 Securitised products include Asset Backed Securities, Mortgage Backed Securities and Covered Bonds. Source: Dealogic.

suggesting that a significant amount of this activity is attributable to refinancing existing liabilities.

(2) Central banks and the use of collateral

In response to reductions in traditional interbank funding and in an attempt to stimulate lending to the real economy, central banks throughout the world have provided funding to banks absorbing an increasing amount of collateral. As shown in the above figure the combined balance sheets of central banks of the US, UK, Eurozone, Japan and Switzerland have increased since 2007 with $5.5 trillion to $9.9 trillion at the end of 2012 (see also Section 3.1.2).[79]

(3) Derivatives markets and the use of collateral

Derivatives markets represent a third segment of the market that faces increasing demands for collateral. Collateral is typically posted as initial margin. This is the case for all exchange traded derivatives such as options and futures. In addition, a growing portion of over-the-counter (OTC) derivatives uses collateral for initial margin. According to ISDA,[80] the percentage of OTC derivatives using collateral has slightly increased from 65% in 2007 to 69% in 2012. The value of collateral has been estimated to have risen from $2.1 trillion to $2.5 trillion.

Pending regulation[81] could mandate the posting of collateral for cleared and non-cleared OTC derivatives. Estimates of additional collateral for the derivatives markets vary widely between $1.6 trillion to $8.7 trillion.[82]

(4) Supply of collateral (secured funding)

According to Markit,[83] the global lendable inventory of assets is currently about $13 trillion of which about $2 trillion is on loan compared to $3.4 trillion in 2008.[84] Some of the owners of these assets participate in the securities lending market in order to generate additional income (see Figure 29).[85] Institutional investors, such as pension and investment funds, insurers and sovereign wealth funds, loaned approximately $1 trillion of securities in 2012. This amount was significantly less than the $1.7 trillion they lent before the crisis. Securities lending by hedge funds in 2012 was $1.3 trillion, down from to $1.7 trillion in 2007.[86]

Repurchase (repo) transactions are similar to securities lending but are generally undertaken for different reasons. For example, repos can be used to cover short term financing needs of banks and broker-dealers. Repos are, in effect, a secured loan. The size of the repo markets of Europe, Japan and the US is estimated at $13 trillion. European repo was €5.6 trillion ($7.3 trillion) in 2012 compared to €6.4 trillion before the crisis. A similar change can be seen in the tri-party repo market. The U.S. reports that levels have shrunk from $2.5 trillion in 2008 to $2.1 trillion in 2012 while the bilateral repo market stayed virtually unchanged at $3.6 trillion.[87]

79 Source: Bloomberg. The Swiss National Bank has increased its balance mainly to maintain the peg of the Swiss Franc with the Euro buying high quality European sovereign bonds. The ECB has predominantly been buying lower quality bonds to prevent widening of spreads of European countries. The US has mainly purchased high quality debt.

80 ISDA, *OTC Derivatives Market Analysis year-end 2012*, June 2013.

81 The pending regulation includes the Dodd-Frank Act and related rules of the CFTC and SEC, and EMIR with subsequent rules of ESMA.

82 The BCBS-IOSCO Working Group on Margin Requirements estimates the additional amount of collateral needed for initial margin for non-centrally cleared derivatives will vary between $0.7 and $1.7 trillion which sum will be phased in as only new contracts will face this requirement. An accurate estimation of a single number is impossible to provide. See e.g. James Sweeney, p. 60 and http://www.treasury.gov/resource-center/data-chart-center/quarterly-refunding/Documents/TBAC_Discussion_Charts_May_2013_r.pdf%20-%20Adobe%20Acrobat%20Pro.pdf.

83 See www.markit.com securities factsheet.

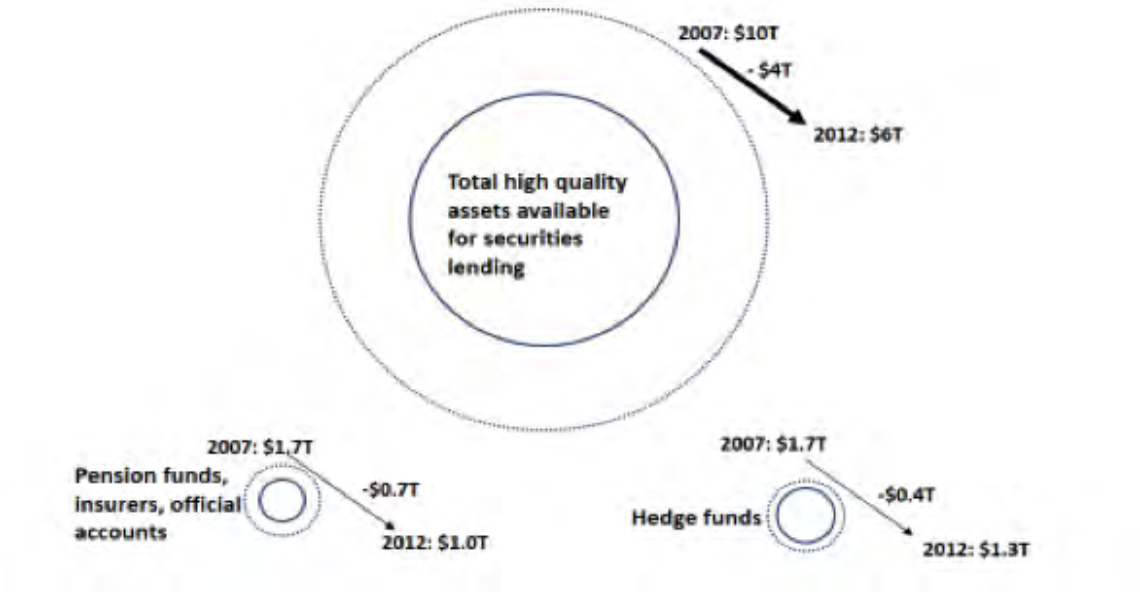
84 Singh, Manmohan, "The (Other) Deleveraging", *IMF Working Paper* 12/179, 2012; M. Singh, "The Changing Collateral Space", *IMF Working Paper 13/25,* 2013; and M.Singh, Demand/Supply of Collateral – a macro picture, *Presentation to ICMA conference 11 June 2013.*

85 Generally, in a securities lending transaction, an entity with an investment portfolio, temporarily transfers securities to a borrower, usually a broker-dealer, on a secured basis (i.e., in exchange for collateral, typically in excess of the market value of the lent securities) subject to an agreement that the borrower will return the borrowed securities to the lender, and the lender will return the collateral to the borrower. The securities lender typically will not lend directly, but will use, and lend through, an intermediary known as a "securities lending agent." The borrower in a lending transaction is typically a broker-dealer that does not retain the borrowed securities, but on-lends them to another entity, such as a hedge fund or other institutional investor, for short selling, covering delivery fails, or similar purposes. When the loan is terminated, the borrower returns the securities to the lender, and the lender returns the collateral to the borrower.

86 M. Singh, "The Changing Collateral Space", *IMF Working Paper January,* 2013, and M.Singh, Demand/Supply of Collateral – a macro picture, *Presentation to ICMA conference 11 June 2013*

87 European figures derived from ICMA, European Repo Surveys and US figures derived from A. Martin, "The US Triparty Repo Market", *NYFRB presentation to ICMA conference 11 June 2013.*

Figure 29: Securities lending main trends 2007 and 2012 in $ trillions



Note: Solid line reflects the size in 2012 and the dotted line reflects size in 2007.
Source: IOSCO Research Department based on M. Singh, RMA and Markit

Understanding the risks

Increased collateral provided to counterparties results in a higher level of collateral encumbrance for financial institutions and raises risks for unsecured creditors, e.g. non-insured depositors and unsecured bond holders. However, since collateral lubricates the funding of banks and therefore is an important feature of the financial system, demand and supply should be balanced. It is hard to predict how equilibrium levels will change as pending regulatory measures are finalised. Although the messages in the press are divergent, market intelligence suggests that the phasing in of certain measures and innovative market practices on collateral management may help smooth the transition phase.

Banks are developing innovative solutions to address the potential squeeze from the implementation of pending regulatory measures on collateral through activities such as repurchase agreements (repo)[88], re-hypothecation[89] and collateral transformation. These activities provide indirect funding to banks while relieving pressure in the system by providing high-quality collateral. A potential risk is that, due to their possible opacity, these practices may hide the accumulation of excessive risks.

Risks associated with the movement of collateral: re-hypothecation[90]

Re-hypothecation or re-use of collateral generally involves a borrower pledging collateral to secure a debt and the creditor re-using the pledged collateral as collateral for further borrowing. In the repo market, the initial borrower keeps ownership of the collateral and can grant a creditor a right to re-hypothecation. Collateral re-hypothecation has the benefit

88 Repo generally involves a bank/investor pledging their securities to a 'lender' in exchange for cash. The borrower agrees to buy-back the securities at a later date and at a higher price. Repo funding is mostly (very) short term. European Repo use has soared from €4.6 trillion in 2008 to €6.2 trillion in 2011 (SIFMA Research). A contrary movement can be seen in the tri-party repo market in the U.S., which shrank from $2.5 trillion in 2008 to $2 trillion currently (BoNY and JPMorgan).

89 As discussed below, re-hypothecation involves banks or brokers re-using assets posted as collateral by their clients for other activities, e.g. relending them out for cash. At a global scale the re-use rate has fallen approximately 3 to 2.6 (see next page) times (M. Singh 2013) which suggests that chains are shortening.

90 According to descriptions provided by ICMA, FSB WS5.

of mobilising pools of collateral across the financial system, thereby reducing financing costs and increasing availability of collateral. Notwithstanding these benefits, there also are risks related to the re-use of collateral in this way.

Re-hypothecation can lead to unsecured client exposures in the collateralised transaction and increased counterparty risk along the collateral chain. For example, following the collapse of Lehman Brothers International Europe, many hedge funds were unsecured creditors in the UK administrative proceedings.

In jurisdictions where re-hypothecated assets are not protected in case of a financial firm's insolvency, re-hypothecation of client assets may increase client uncertainty, which may increase the possibility of a run on a firm, thereby increasing pro-cyclical risk in the system. In some jurisdictions, hedge funds typically allow prime-brokers to re-use their collateral in exchange for cheaper funding.[91]

Potential risks can be summarised as 1) the lack of client asset protection, and 2) potential risk of contagion from unwinding a multi-level series of collateral trades (lengthy collateral chains).

Risks associated with collateral transformation

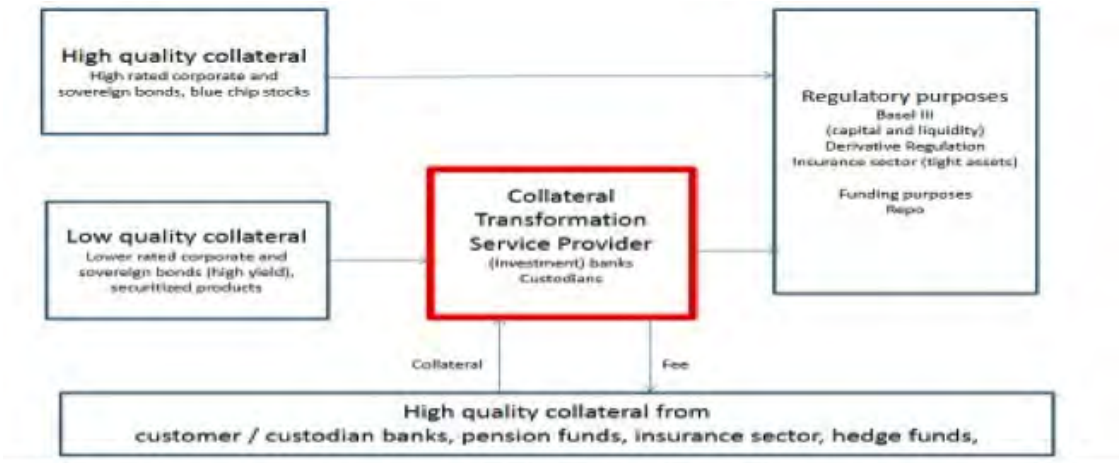
The overall demand for high quality collateral has put the focus on the business of collateral transformation. The FSB defines collateral transformation as a short term transaction whereby two financial institutions exchange lower quality assets (e.g. less liquid and/or lower credit quality) for better quality collateral (or cash) that would be eligible for posting as margins in OTC derivatives transactions (see Figure 30). The aim is to upgrade the quality of the customer's collateral. To obtain this service, the customer pays a fee to the collateral provider and accepts risk management elements that include haircuts and frequent valuation of the transaction.

Typically, transactions have terms that range from overnight to 6 months. The ability to roll over these obligations depends on the financial strength and flexibility of the counterparties. Any stress in the rollover process, for example due to a sudden retrenchment in market liquidity, could negatively impact refunding capacity or even regulatory compliance of certain financial institutions engaged in collateral transformation. A working paper from the BIS notes that "*during the financial crisis… repo funding based on structured products as collateral could not be rolled over, as market participants had lost their trust in the valuation of these products.*" [92]

91 Committee on the Global Financial System, Asset encumbrance, financial reform and the demand for collateral assets, CGFS paper 49, May 2013.

92 BIS, CGFS Papers, 'Asset encumbrance, financial reform and the demand for collateral assets', Working Group of the Committee on the Global Financial System, May 2013.

Figure 30: Collateral transformation process



Source: IOSCO Research Department

The efficient use of collateral for the posting of initial margin for derivatives can mitigate systemic risk. However, the resulting increase in interconnectedness can introduce potential contagion in the case of a systemic shock. For instance, collateral transaction chains can create connections between hedge funds, money market funds, prime brokers, securities dealers and repo market participants. Collateral upgrade transactions between banks improve collateral quality and insurers who are looking for yield enhancement increase interconnectedness in the financial system.

Assessing the risks

While most of the transactions described in this Section are initiated by banks, they are executed in the securities markets. Securities markets regulators together with banking regulators may benefit from monitoring collateral management practices.

In terms of re-use and re-hypothecation, empirical evidence suggests that the length of collateral chains have decreased after the Lehman collapse from about 3 to 2.6 counterparties involved at the end of 2011.[93] However, interconnectedness in the financial system could still amplify systemic risk.[94]

To better understand current collateral management practices, in 2012 the Federal Reserve Board undertook a survey of senior credit officers of financial market participants in the U.S., and concluded that the volume of collateral transformation activity is stable.[95] Similarly, results from the ECB survey of European banks note an increase in the supply of collateral swaps by non-bank counterparties such as insurance companies, investment funds, pension plans and other institutional investment pools.[96]

There are a number of potential risks associated with collateral management. One is that an adverse market event could cause a sharp decline in the quality and prices of the underlying assets. Downgrades in single asset classes, particularly in lower rated assets classes, could require firms to post additional assets as collateral, resulting in unintended costs as assets are redeployed from other parts of their business. Additionally, depending on the choice of valuation models, fluctuation in counterparty ratings or the ratings of the collateral provided could lead to requests for additional collateral to be posted or an increase in the size of haircuts. Especially in stressed markets, firms failing to meet these by nature pro-cyclical requests could engage in fire sales.

Collateral transformation and re-hypothecation services are generally both off-balance sheet activities. As such, there might be no disclosure requirements about the size and exact nature of these activities,[97] making it hard to assess the risks in the financial system stemming from these activities. Opacity presents significant challenges to regulators who must assess the extent to which these practices are used. If practices like collateral transformation become more widespread, it may become increasingly difficult to measure the implicit leverage in the system and where risks are pooling.[98]

Looking forward

Clearing, settlement, and the pricing of collateral transformation requires adequate infrastructure. To minimise operational risks, the collateral transformation processes require common standards. The development and cross-sectorial disclosure of risk management measures like concentration information, asset encumbrance ratios and other useful financial information would improve transparency and aid in enhancing financial stability. Several

93 M. Singh, Demand/Supply of Collateral – a macro picture, *Presentation to ICMA conference 11 June 2013.*
ICMA, European Repo Surveys.

94 IMF, 'Understanding Financial Interconnectedness', October 2010; Janet Yellen, U.S. Federal Reserve, 'Interconnectedness and Systemic Risk: Lessons from the Financial Crisis and Policy Implications', *Speech at the American Economic Association/Finance Association*, California, January 4 2013.

95 See FRB: http://www.federalreserve.gov/econresdata/releases/SCOOS_201212.htm#specialquestions1.

96 ECB, *Survey on credit terms and conditions in euro-denominated securities financing and OTC derivatives markets (SESFOD)*, July 2013.

97 In the U.S., re-hypothecated collateral is disclosed in the publicly available financial statements of broker-dealers (often as a footnote).

98 See also Committee on the Global Financial System, *Asset encumbrance, financial reform and the demand for collateral assets*, CGFS paper 49, May 2013 and BCBS-IOSCO Working Group on Margin Requirements, *Margin requirements for non-centrally-cleared derivatives*, Consultative Paper September 2012 and February 2013.

stakeholders have argued transparency should be enhanced, e.g., through a trade repository.[99]

More information on the size, growth, interconnections and length of chains involved in these activities will be helpful to monitor potential systemic risks. The Financial Stability Board together with IOSCO is currently working on gathering relevant data.[100]

4.3. Risks in the derivatives space

Over-the-Counter (OTC) derivatives markets played a prominent role in the financial crisis and have since undergone significant reform. A major element of this reform involves the mandatory clearing of standardised OTC derivative contracts through central clearing houses or central counter parties (CCPs).[101] As such, CCPs are set to play a critical role in the functioning of the global financial system.[102]

Accordingly, international bodies including IOSCO, the BIS, CPSS and the FSB have set up a number of working groups and taskforces, all with the purpose of providing policies to enhance the reliability and resiliency of CCPs. In April 2012, CPSS-IOSCO released the "*Principles for financial market infrastructures*", which set out 24 principles designed to apply to all systemically important financial market infrastructures.[103] The BCBS-IOSCO Working Group on Margin Requirements is designing policy around margin requirements for uncleared derivatives to provide better incentives for market participants to use central clearing.[104] These policy efforts and regulations are changing how derivatives markets function (see Section 3.1.6). This section focuses on how derivatives markets are evolving in response to these changes.

Background

The crisis highlighted several concerns with non-centrally cleared OTC derivatives markets. These include:

Counterparty credit risk and interconnections. The default of a major market participant could result in "spill over" risk transmitted through OTC contracts, with those effects amplified by leverage. The OTC derivative market is an example where the true exposure to counterparty and operational risk is difficult to accurately assess given the negative externalities of contagion and systemic risk, and sometimes inadequately priced risks for market transactions.[105] [106]

Over-reliance on bilateral netting and offsetting positions. Market participants use bilateral netting to mitigate economic exposure by taking offsetting positions. Because these transactions sometimes involve different counterparties (otherwise they could be compressed), investors may not have fully priced the risks associated with counterparty failure. To better understand the risks associated with OTC derivative transactions, it is necessary to understand net and gross exposures. Other related work should be taken into account.

Lack of transparency. Due to a lack of transparency, regulators and market participants may be unable to accurately gauge any deterioration in the creditworthiness of OTC derivatives counterparties. Furthermore, the inter-linkages that are attributable to market-based intermediation, the actual banking system and the real economy remain masked, ma-

99 See P. Tucker, Shadow banking: thoughts for a possible policy agenda, Speech at the European Commission High Level Conference, Brussels, 27 April 2012.

100 FSB Shadow Banking Work Stream 5 on Securities Lending and Repos.

101 Central counterparty clearing refers to when a single organisation legally interposes itself between counterparties to financial contracts, for the purposes of clearing and settling market transactions. In essence, a CCP becomes the seller to every buyer, and the buyer to every seller.

102 In fact, it has been noted in a report of the BCBS that "… CCPs, and Trade Repositories are systemically important, at least in the jurisdiction where they are located, typically because of their critical roles in the markets they serve"".

103 The CPSS-IOSCO principles on financial market infrastructures (FMIs) classes CCPs as FMIs and labels them as "*systemically important*"". See CPSS-IOSCO, *Principles for financial market infrastructures,* April 2012 [http://www.bis.org/publ/cpss101a.pdf]].

104 For further discussion on international policy efforts, please consult the on-going discussion at the end of this Section.

105 M. Hollanders, "A look at the rapidly changing market infrastructure supporting the OTC derivatives markets," *Journal of Securities Operations and Custody 4(1),* 2011.

106 For example see D. Russo: "OTC Derivatives: financial stability challenges and responses from authorities, *Banque de France Financial Stability Review No.14 July 2010.*

king it difficult to understand the complexity of these markets.

CCPs operating for years[107] within credit markets, commodities markets, futures markets and exchange-traded derivatives markets, have overcome some of these issues. They were functional during the financial crisis and able to accommodate the large positions that Lehman Brothers had in exchange traded and centrally cleared swaps. The margining and default procedures at the CCPs proved robust enough to contain the crisis in these particular products.

In response to the crisis, the Pittsburgh G20 summit launched an ambitious plan to reform the derivatives markets globally: "*All standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest. OTC derivative contracts should be reported to trade repositories.*"[108,109,110] In addition, contracts that were not centrally cleared would face higher capital requirements. The requirement to margin all OTC derivative contracts – either centrally or bi-laterally would provide a mechanism to regulate this activity.

In the United States, the Wall Street Reform and Consumer Protection Act – widely known as the Dodd-Frank Act – is currently being implemented in terms of the OTC derivative commitments, while in the European Union the European Markets Infrastructure Regulation (EMIR) continues to work on their regulatory frameworks. Similar initiatives are currently underway in most G20 countries.[111] There have also been regulatory reforms to move standardised OTC trades onto trading platforms called Swap Exchange Facilities in the U.S. and Organised Trading Facilities in Europe. The effect of these regulatory responses (see Annex A) has been to change counterparty risks on OTC derivatives from bilateral connections to a centralised model with a CCP at its hub (see Figure 31).

107 For example, the London Clearing House was formed in 1888, the CME in 1898. There is evidence to suggest that "the [Dojima] rice market in Osaka [Japan, in the 18th Century] had created clearing houses in order to fulfil the role of a modern CCP by taking over the counterparty risks of the participants to a trade and so undertaking to complete open trades." P Norman, The Risk Controllers (2011) at 56-57.

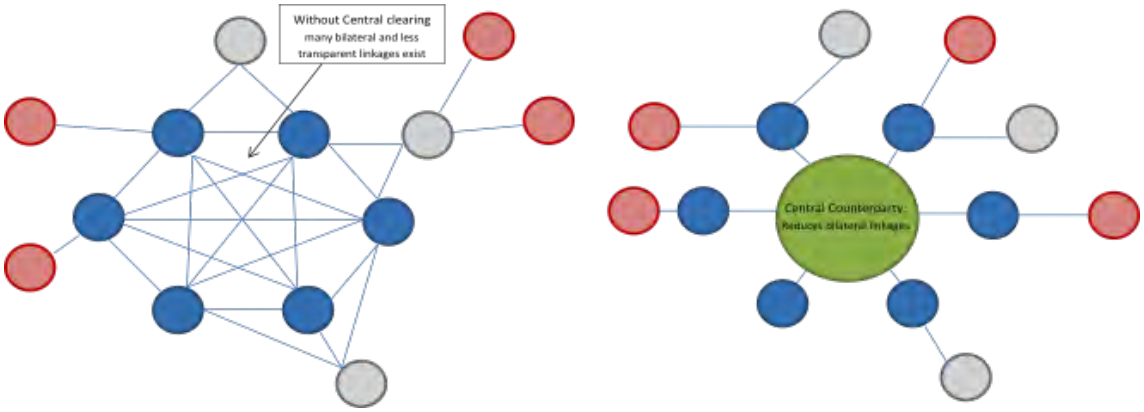
108 Washington meeting of the G20 finance minister provided the first signal as to the intentions of the global policy makers. In their communiqué they state: "Strengthening the resilience and transparency of credit derivatives markets and reducing their systemic risks, including by improving the infrastructure of over-the-counter markets"".

109 G20 Pittsburgh Summit: *Progress Report on the actions to promote Financial Regulatory Reform,* 2009.

110 This commitment is in addition to other G20 commitments around transparency and reporting.

111 Financial Stability Board (April 2013): "*OTC Derivatives Markets Reforms – Fifth Progress Report on implementation*". Table 1 outlines a summary on national progress in implementation OTC markets reforms with a majority (15) of G20 jurisdictions adopting or consulting on OTC market reform legislation.

Figure 31: Collateral transformation process



Source: IOSCO Research Department

The operational benefits of central clearing are well acknowledged and apply across all asset classes. These include:

> Reduced counterparty risk in financial transactions;[112]

> Reduced contagion by providing liquidity, risk mutualisation, and avoidance of wrong-way-risk;[113]

> Elimination of model risk since all counterparties use the CCP's risk model instead of brokers applying their own bespoke models to determine margin requirements. The CCP levels the playing field for all counterparties by independently assessing margin requirements;

> Standardised contracts allows a CCP to apply compression to end user portfolios and reduce the number of contracts outstanding without impacting the economics – again a simplification in operational risk;

> Individual segregation at the CCP level allows end users in the event of clearing member default to port their positions and collateral to another clearing member without disruption. This eliminates potential disruption to the market and makes defaults more manageable; and

> Standardised collateral management practices and multilateral netting reduces the size of individual outstanding obligations.[114] Thus, as market participants novate their derivative contracts onto CCPs, they become more transparent and easier to price.

Understanding the Risks

CCPs are designed to reduce systemic risk in the derivatives market by reducing counterparty risk. CCPs combine each party's open positions and proceed to settle on the netted position delivering significant reductions in gross settlement exposures. Additionally, CCPs require exposures to be collateralised – either through cash collateral or other liquid assets – to mitigate the default risk. This allows CCPs to monitor market risks. To mutualise losses, clearing members contribute to various financial buffers during the normal course of CCP operations that are drawn upon if end user defaults cause a member to fail. These default funds allow for absorbing losses without necessarily impairing the CCP. This practice reduces the likelihood and impact of a systemic event.

This mutualising of risk and its attendant reduction in systemic risk is the principal benefit of CCPs. Making central clearing of standardised OTC contracts mandatory leverages these advantages to maximum effect. To protect clients subject to mandatory clearing it is important that CCPs select a segregation model that provides appropriate customer protection.

Individual segregation is one form of customer protection that allows a participant to remove their margin collateral (port to another clearing member) in the event of a default. This requires that such collateral is not available for risk mutualisation. By providing greater protection to end users, more of the risk burden falls on the clearing members. Although adequate margin and capital requirements mitigate systemic risk, CCPs are a point of concentration – channelling all netted trades through a few nodes. Central clearing presents a challenging balancing act. We next describe a set of potential challenges to the central clearing model:

Competition on collateral

As pointed out by the Bank of England in its Financial Stability Report, accepting lower quality collateral could pose a risk to CCPs and to broader

112 This is because the CCP, via its margining and default procedures, guarantees performance of the contract even if the original counterparty fails many years after the original inception of the contract.

113 Wrong-way-risk is defined as exposure to a counterparty being adversely correlated with the credit quality of that counterparty.

114 S. Cecchetti, J. Gyntelberg and M. Hollanders: "Central counterparties for over-the-counter derivatives, *BIS Quarterly Review September 2009*; D. Heller and N. Vause, "Expansion of central clearing", *BIS Quarterly Review, June 2011*.

financial stability in the medium term.[115,116] Eligible margin collateral is used to secure short-term liquidation risk in case of default. A clearing house, in the event of a default, has to liquidate to make good on counterparty claims. Indeed, CCPs are expected to maintain liquidity arrangements that will allow them to meet their obligations in a timely manner in extreme but plausible market conditions.[117]

It is, therefore, optimal for a CCP to hold high quality collateral assets that can be liquidated at market or a slight discount to market. There is also the possibility that high-quality assets can be sold at premiums during periods of market stress. CCPs are expected to only accept as collateral high-quality and liquid assets, and to establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions.[118] If CCPs were allowed to accept lesser quality collateral, they could be forced to make more frequent margin calls, thus adding to the pro-cyclical nature of disorderly markets.

Similar risk management model across CCPs

If CCPs and systemically important financial institutions base their risk management models on similar assumptions, it creates a standardised environment that makes it possible to compare risks across CCPs. There is concern, however, that model flaws, if applied globally, could amplify systemic risk.

Interconnectedness of CCPs and the banking system

While CCPs are designed to manage the concentration of risk, they also are interconnected – not only through their members but also with the banking system[119] because of collateral management practices and because many of the major CCPs clearing members are large banks (see

Figure 32). It is unclear whether the recent innovations in collateral management pose a risk to the solvency or operational integrity of a CCP in the event of market stress. Further data and information would be needed to obtain a fully informed assessment.

115 Bank of England Financial Stability Report, November 2012, "*Medium terms risks to financial stability*" .

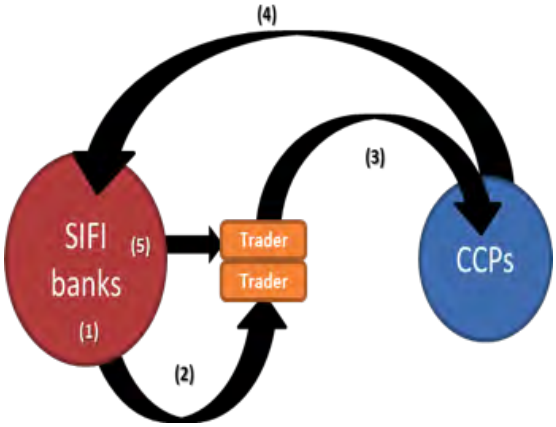
116 Principle 7 (managing liquidity risk) of the CPSS-IOSCO PFMI's states that FMI's should have a robust framework to manage liquidity risks from participants under a number of scenarios. Those scenarios include the default of a member (under plausible market conditions) and the potential liquidity obligations that may place on the CCP. As such, a CCP is required to have liquid resources at its disposal such as cash. Where assets other than cash are accepted, they are to be in forms that are easily saleable or able to be used to secure lines of credit etc.

117 Principle 7 of the PFMIs, suggests a CCP maintains sufficient liquid resources in all relevant currencies, which resources must be committed or, for highly marketable collateral, prearranged and highly reliable, that will enable it to meet all of its obligations on time, with a high degree of confidence under a wide range of potential stress scenarios including the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. See Principle 7, Key Considerations 4 and 5.

118 *See* PFMI Principle 5, Key Considerations 1, 3.

119 JPMorgan Chase, Citigroup, Bank of America and Goldman Sachs - account for 93 percent of all the derivatives activity (data as of March 31, 2013). See http://www.occ.treas.gov/topics/capital-markets/financial markets/trading/derivatives/dq113.pdf. Also, the custodian business is concentrated in a few top players, some of which also act as sell-side (further connectivity risk).

Figure 32: Interconnectedness of CCPs and the banking system



(1) Banks offer collateral management services (which are off the balance sheet).

(2) Traders purchase high quality collateral from banks for fee and/or by exchanging low-quality collateral.

(3) Traders post this high quality collateral on CCPs (owned by banks).

(4) CCPs invest the posted high quality collateral into banks (through deposit, investment in MMFs or reverse repos) during holding period. †

(5) Banks reinvest this high quality collateral deposited, for example to offer collateral management services to clients.

Source: IOSCO Research Department
Notes: † the PFMIs (3.16.4) require that "Investments should be secured by, or be claims on, high-quality obligors to mitigate the credit risk to which the FMI is exposed.

Assessing the Risks

Competition on collateral

The CPSS-IOSCO's PFMI Principles state that CCPs should only accept as collateral liquid assets with low credit and market risks, as well as establish and enforce appropriately conservative haircuts and concentration limits. Section 4.2 highlights the demand for collateral by CCPs. The new European settlement engine, T2S, also will require high quality capital for cash settlements at central securities depositories (CSDs). The U.K. has required foreign brokers to ring fence their capital in U.K. subsidiaries, which has the side-effect of preventing global cross border flows of collateral.

Currently there is significant variation in the types of assets CCPs accept as collateral.

Table 4 summarises the types of collateral that are currently accepted at selected clearing houses and shows that the different asset classes now accepted vary and include lower quality collateral. Regulators will need to be attentive to trends in collateral management to ensure that the collateral CCPs accept – taking into account the nature of the collateral, the risks presented, the haircuts applied, and the concentration limits – comply with the standards established in Principle 5.

Table 4: Global availability (actual and planned) of CCPs and accepted collaterals

LCH	Cash – incl. US$ U.K. Treasury bills, Foreign Government Treasury bills Sterling certificate of Deposits U.K. Gilts Performance bonds	US$ denominated securities for Swapclear Government bonds, Government bonds issued in US$ by FHLB, FNMA and FHLMC, Government guaranteed bonds and CDs
CME Group	Cash Gold Foreign Sovereign bonds U.S. Treasuries and Govt. agencies Specialised collateral programs Bank issued Letters of Credit	Select S&P 500 index stocks Security Deposits Money Market and Mutual Funds Select mortgage backed securities, temporary Liquidity Guarantee Program (TLGP) Securities
CME Clearing Europe	Cash U.S. Treasury bills, notes and bonds Government debt	
ICE Trust	Cash U.S. Government treasuries Sovereign Bonds	Bank issued letters of credit Money Market and Mutual funds
CE Clear Europe	Cash Gold Certificate of Deposit Letters of Credit Tri-party Collateral	Cross Currencies U.K. Gilts and Treasuries U.S. Bonds and Treasuries Foreign Government Treasuries
NASDAQ OMX	Cash Government treasury bills and bonds Commercial paper issued by domestic or mortgage institutions Bonds issued by banks or mortgage institutions	Domestic Commercial banks Certificates of Deposit Shares listed on NASDAQ OMX Nordic/ Oslo Børs main list Guarantees issued by bank in favour of clearing member
SGX Clearing	Cash Gold (bars and certificates) Government securities	Bank Certificates of Deposits Letters of Credit Selected common stocks
Eurex Clearing	Cash Euro Denominated fixed income Selected foreign currency denominated fixed income	Equities Fixed income in CHF

Source: LCH, CME Group, ICE, NASDAQ OMX, SGX, Eurex, PWC; Compiled by IOSCO Research

Increasing systemic risk by similar risk management standards

In line with Principle 5 of the CPSS-IOSCO PFMI's, CCPs should be attentive when managing liquidity and enforcing appropriate haircuts for collateral. They also should use criteria and models to evaluate price risk, liquidity risk etc. of that type of collateral.

A staff working paper of the Dutch central bank (DNB) indicates that similar risk management models are shared amongst CCPs.[120] The common elements include establishing selection criteria for clearing participants, implement risk-based margining, mutualise extra stress test-based risk exposure among clearing participants, and finally use own capital or other financial resources under certain conditions, subject to the replenishment and replacement conditions outlined in Principle 7 of the CPSS-IOSCO PFMI's. However, CCPs are permitted to choose the order in which stand-alone fund and other mutualised financial buffers can be applied to dissipate any remaining losses after the initial margin and other paid-in amounts.

There is a continual need to assess a risk management system in its entirety, and regulators should ensure that it is appropriate for the CCP's business model. Assessments should consider both the CCP's risk management procedures and how the CCP management implements these (Principle 6).

Interconnectedness of CCPs and the banking system

Market intelligence[121] highlights (see Annex A) some cases where collateral is recycled back to clearing members and has provided examples where it is not, strictly due to internal controls within the CCP. The CPSS-IOSCO PFMIs do not provide guidance on this practice in particular. They do, however, require a CCP to have deposit holdings "*at creditworthy commercial banks*" (Principle 7), meaning that CCPs should hold their own assets and those of their participants at supervised and well regulated entities (Principle 16), and any assets that are held in custody are to be protected against claims of a custodian's creditors (Principle 16).

The Principles also recognise that a custodian bank might be a participant in a CCP and offer clearing services to other participants. In that case, "*An FMI should carefully consider all of its relationships with a particular custodian bank to ensure that its overall risk exposure to an individual custodian remains within acceptable concentration limits*" (Principle 16).

Other trends

There is some evidence that CCPs invest cash collateral at longer maturities to provide a better return to members. It is the case, however, that this practice only moves overnight cash into highly liquid securities such as bank bills. If this practice continues, the overall impact is likely to be minimal. Moreover, there is no evidence that CCP soundness has been compromised by such actions. Nonetheless, regulators should be attentive to competitive pressures that may induce standards to slip.

Looking Forward

OTC derivatives are increasingly centrally cleared. Global regulation along with changes in industry practices will further increase this trend. CCPs can help mitigate the risk of a systemic crisis by: 1) reducing bilateral counterparty risk 2) by netting outstanding positions, reducing the gross exposures,[122] and 3) by requiring highly liquid collateral to cover credit and liquidity risk. However, CCPs could become a source of systemic risk in the event of significant market stress because they concentrate risk and financial resources.

How the regulatory environment and changing business operations of CCPs will affect the macro

120 Zhu, S (2011): Is there a race to the bottom in Central counterparty competition?, DNB Occasional paper series Vol.9, No.6.

121 Based on information obtained from Thomas Murray

122 Through multilateral netting, CCPs reduce counterparty risk and through portfolio margining, assist in offsetting exposures across OTC products. According to an IMF Working Paper, this is because "*the margin required to cover the exposure of the portfolio would be smaller under a CCP than margining its individual components, since the prices of the portfolio's components would be correlated and could be offset in a CCP.*" (see IMF Working Paper, 'Collateral, Netting and Systemic Risk in the OTC Derivatives Market', 2009) .

landscape of the financial markets remains unclear. The on-going work of bodies such as IOSCO, CPSS and FSB on recovery and resolution of systemically important financial institutions and financial market infrastructures, as well as the other work discussed in Box 5, is necessary to ensure that the larger financial system could withstand the failure of a large clearing member, a big dealer bank, a large trader or even of a CCP itself. It is important for IOSCO to explore how these events may contribute to systemic risk, and to seek to establish standards that ensure that regulators have sufficient information to supervise the day-to-day actions of CCPs and take appropriate action. Moreover, IOSCO, along with CPSS, should continue to take steps to ensure that sufficient information is disclosed to all members.[123]

Much of the international policy being formulated by organisations such as IOSCO, CPSS, BCBS, and FSB are aimed at tackling these challenges (see Box 5). As the nature of clearing evolves, it will be important to monitor how participants react to regulatory changes.

123 CPSS-IOSCO Disclosure Framework (http://www.bis.org/publ/cpss106.pdf) outlines a template that FMI's are to complete which discloses relevant information to participants, regulators and the general public. Additionally, the Payments Risk Committee (PRC) makes recommendations on improving the transparency of risk management practices of CCPs, which include information on initial margin and collateral structure, investment balances monitoring policy of clearing members and default procedures ("*Recommendations for Supporting Clearing Member Due Diligence of Central Counterparties*" http://www.newyorkfed.org/prc/files/report_130205.pdf)).

Box 5: Work currently being done globally

In 2009, the Leaders of the G-20 committed at the Pittsburgh Summit to ensure that all standardised OTC derivatives contracts are cleared through CCPs by year-end 2012. As such, there has been much international policy work conducted by many national and supranational regulatory and standard setting bodies to ensure an effective implementation of the G20 mandates. What follows below is a summary of the work being currently undertaken.

Based on the Pittsburgh communiqué, the Financial Stability Board's (FSB) OTC Derivatives Working Group (ODWG) was set up to monitor the progress of each country. ODWG publishes progress reports bi-annually, with their most recent report (*"OTC Derivatives Market Reforms Fifth Progress Report on Implementation"*[14]) being published in April 2013. Their sixth report will be submitted to the St. Petersburg Summit in September 2013.

The FSB recommended in its October 2010 Report "*Implementing OTC Derivatives Market Reforms"*[15] that IOSCO, working with other authorities as appropriate, should coordinate the application of central clearing requirements on both a product and a participant level. Additionally, IOSCO was tasked with coordinating any exemptions from the central clearing requirements (for example, pension funds) thereby minimising the potential for regulatory arbitrage as the G-20 commitments on central clearing are implemented.

The FSB's Resolution Steering Group (ReSG), in October 2011 released its "*Key Attributes of Effective Resolution Regimes*" which outlines the core elements necessary to facilitate the effective resolution of financial institutions, so that there is no severe disruption to financial markets or any impact on taxpayers. The document outlines several tools including, but not limited to, resolution authority and powers, funding powers and cross-jurisdictional co-operation that authorities can call upon to resolve financial institutions in an orderly way. This work has been further enhanced by peer-review exercises on the implementation of the Key Attributes (*Thematic review on Resolution regimes*) and methodologies for implementation assessment (Draft as at June 2013).[16]

On the use of CCPs to mitigate counterparty risk, the CPSS-IOSCO *Principles for Financial Markets Infrastructures*[17] *("PFMIs", April 2012)* included updated and strengthened risk management standards applicable to any financial market infrastructures ("FMIs") deemed systemically important, including CCPs. FMIs will be expected to manage, in accordance with the PFMIs, their risks to ensure their safety, thereby promoting financial stability more broadly.

The IOSCO OTC derivatives task force published their "*Requirements for Mandatory Clearing"* in February 2012[18], which included seventeen recommendations and outlines steps that authorities should take to establish effective mechanisms for monitoring compliance with mandatory clearing requirements.

CPSS-IOSCO member jurisdictions are committed to striving to include the PFMIs in their legal and regulatory framework by the end of 2012 and to apply the PFMIs as part of their regulatory, supervisory, and oversight activities as soon as possible. CPSS-IOSCO finalised the disclosure framework and assessment methodology for the PFMIs in December 2012, with the first report on implementation of the PFMIs being due in August 2013. [19] The CPSS and IOSCO members are expected to apply the principles to the relevant FMIs in their jurisdictions to the fullest extent allowed by the legal framework in their jurisdiction.

CPSS-IOSCO recently has been developing guidance on recovery planning of FMIs. FSB also has been developing a document which contributes to the implementation of the Key Attributes in relation to resolution regimes for SIFIs, including FMIs. The CPSS-IOSCO guidance on FMIs recovery has been published for consultation in August 2013,[20] and the FSB documents on FMIs resolution will be published for consultation later this year.

Joint Working Group on CCPs, composed of representatives from relevant BCBS, CPSS, and IOSCO committees, was established in light of the issues identified with the initial approach for calculating capital charges for bank exposures to CCPs clearing derivatives and securities financing transactions. Their paper on a suitable long-term solution will be available for public consultation soon.

14 CPSS-IOSCO Disclosure Framework (http://www.bis.org/publ/cpss106.pdf) outlines a template that FMI's are to complete which discloses relevant information to participants, regulators and the general public. Additionally, the Payments Risk Committee (PRC) makes recommendations on improving the transparency of risk management practices of CCPs, which include information on initial margin and collateral structure, investment balances monitoring policy of clearing members and default procedures ("Recommendations for Supporting Clearing Member Due Diligence of Central Counterparties" http://www.newyorkfed.org/prc/files/report_130205.pdf)).
15 http://www.financialstabilityboard.org/publications/r_130415.pdf.
16 http://www.financialstabilityboard.org/publications/r_101025.pdf.
17 At the time of writing a CPSS-ISOCO draft consultative report on
the recovery of FMI's was in the final stages of approval, with a publication date expected in the autumn of 2013.
18 http://www.bis.org/publ/cpss101a.pdf.
https://www.iosco.org/library/pubdocs/pdf/IOSCOPD374.pdf.
19 http://www.iosco.org/library/pubdocs/pdf/IOSCOPD396.pdf
20 http://www.bis.org/publ/cpss109.htm

4.4. Risks associated with a reversal of capital flows to Emerging Markets

This Section seeks to describe the risks associated with a reversal in cross-border capital flows to Emerging Market Economies (EMEs) in the current post-crisis environment. It is recognized that the other risks highlighted in this Risk Outlook are also applicable to Emerging Markets. For the purposes of this report, emerging market regions are broadly categorised as Emerging Europe, Emerging Asia, Middle-East and Africa and Latin America;[124] specific countries are referenced based on the availability of data. However, it is important to note that economic conditions, as well as infrastructure, development levels and legal and institutional frameworks differ across these regions.[125] This suggests that analysis of risks and their impact may not apply evenly across EMEs.

124 Availability of data influences which countries are considered for each region category.

125 'Global Banking, Global Crises The Role of the Bank Balance-Sheet Channel for the Transmission of Financial Crises', Rudiger Ahrend & Antoine Goujard.

Background

Since the 1980s, EMEs have received large capital inflows that have accommodated their rapid economic growth.[126] While global financial integration and subsequent cross-border capital flows are seen as stimulating growth, these developments also expose global financial firms to contagion risk.[127] 'Sudden stops' or reversals in these flows, due to external or internal factors (or both), can negatively impact dependent corporate and banking sectors, with knock-on effects to the real economy.[128] Historical examples suggest that this is especially true for EMEs, many of which experienced a number of boom-bust cycles (see Figure 33).[129]

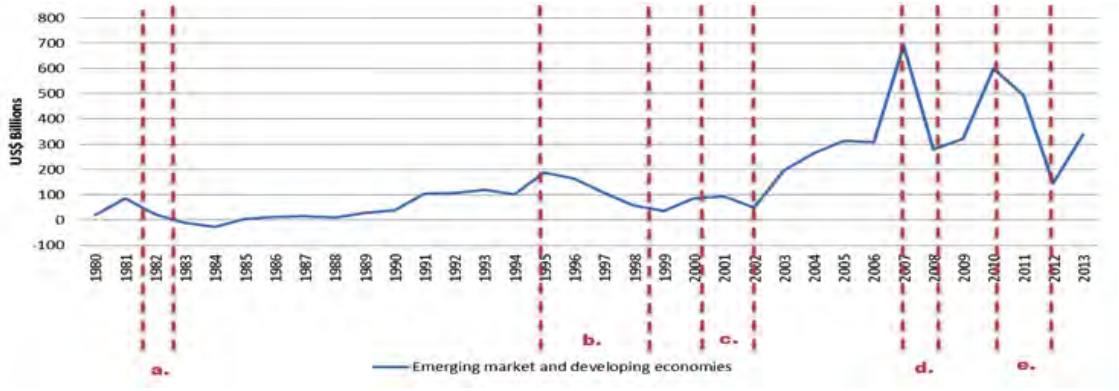
126 'Capital Flows to Emerging Market Economies: A Brave New World?, Shagil Ahmed, Andrei Zlate, Report to Board of Governors of the Federal Reserve System, International Finance Discussion Papers, June 2013.

127 "International capital Mobility: Which Structural Policies Reduce Financial Fragility", OECD Economic Policy Papers, No.02 June 2012.

128 Some examples are Argentina (2001-2002), Turkey (2000-2001), Ecuador (1999), Russia (1998), East Asia (1997), Mexico (1994-1995), and Chile (1982).

129 Douglas Evanoff, George Kaufman & Anastasios G. Malliaris, 'Asset Price Bubbles: Lessons From The Recent Financial Crisis', http://www.worldfinancialreview.com/?p=2200; Ramón Adalid and Carsten Detken – Liquidity shocks and asset price boom/bust cycles. February, 2007. European Central Bank, Working Paper Series.

Figure 33: Private financial flows, net

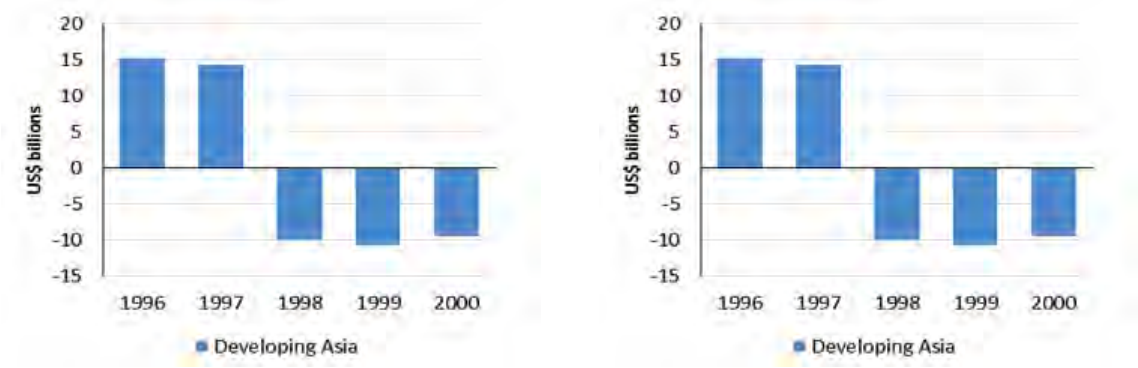


Source: IMF, WEO; Note: a. Chile; b. Russia crisis, Mexican currency crisis and East Asia crisis; c. Argentina crisis and Turkey crisis; d. global financial crisis; e. euro-zone crisis

A number of these bust periods resulted in substantial impacts to the real economies of EMEs. They have tended to follow periods of increased capital inflows, robust economic conditions and low interest rates in advanced economies (AEs). For example, in late 1993 the U.S. Federal Reserve's ended its expansionary monetary policy and federal funds rates increased from 3% to 6% by 1995. Following this, net portfolio investment in Latin American countries, especially Mexico, almost stopped; net portfolio investment in Latin America and the Caribbean fell from $40.2 billion to $5.2 billion over this time period (see Figure 34). Similarly, prior to the 1997 East Asia crisis developing Asian countries experienced positive net private portfolio inflows because historically low interest rates in Japan led to a large 'carry trade'.[130] However, when the crisis hit one part of the region, foreign investors reconsidered their risk exposures to the whole region. They quickly pulled out of all markets and inflows drastically and suddenly reversed in the course of one year (see Figure 34).

130 A currency carry trade or carry trade is a particular investment strategy where an investor sells a currency linked to low interest rates in exchange for currency with a higher interest rate. In so doing, the investor can capture differences between rates. In the case of Japan, investors could borrow Yen, facing a close to zero interest rate, convert it into U.S. dollars and use this money to buy a higher yielding bond.

Figure 34: Net private portfolio flows, $billions



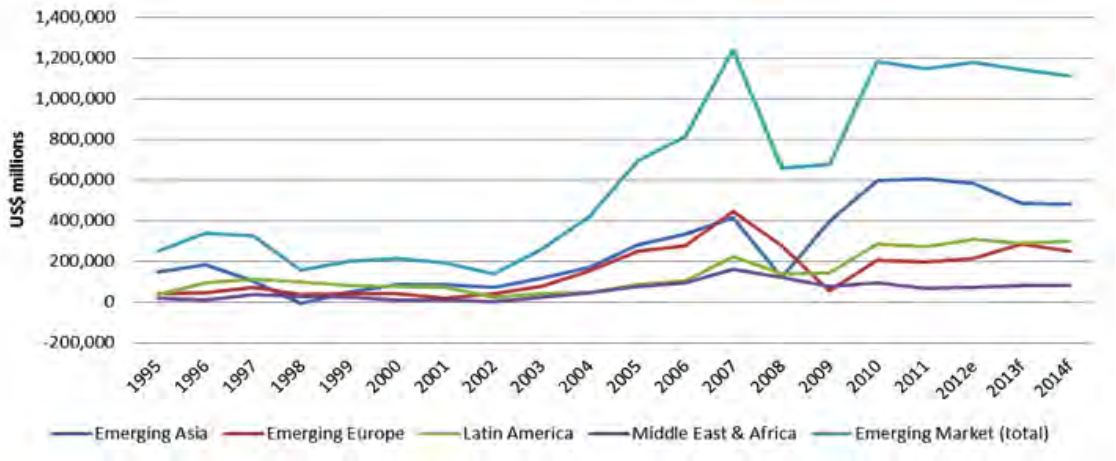
Source: IMF

EMEs as a whole appear to have weathered the brunt of the most recent crisis.[131] Figure 35 shows that after an initial drop during the crisis net private inflows into EMEs have increased since 2009, peaking at around $1.180 trillion in 2010, just below their pre-crisis high of $1.24 trillion in 2007. However, private inflows have not been uniform across all emerging markets. The subsequent revaluation of sovereign risk following the Euro-zone crisis and the deleveraging of European Banks have negatively affected net private inflows into Emerging Europe (flows are around half of their 2007 level).[132] In contrast, Latin America and Emerging Asia have experienced significant recoveries.

131 'Global Banking, Global Crises? The Role of the Bank Balance – Sheet Channel for the Transmission of Financial Crises', Rudiger Ahrend and Antoine Goujard.

132 'Capital Flows to Emerging Market Economies: A Brave New World?, Shagil Ahmed, Andrei Zlate, Report to Board of Governors of the Federal Reserve System, International Finance Discussion Papers, June 2013.

Figure 35 : Net Private Inflows, $trillions



Source: IIF estimates Note: (e) IIF estimate (f) IIF forecast

These increased private inflows can be attributed to a globalised environment of 'pull' and 'push' factors.[133] Push factors include the low interest rate environment in major advanced economies and changing sovereign risk profiles (see Section 4.1). Pull factors include relatively higher interest rates in emerging economies, attractiveness of EMEs as an investment destination and high economic growth.[134,135] At the same time, the expansion of liquidity due to quantitative easing in a number of AEs markets– has allowed capital to flow into emerging markets.

The importance of these "flow" factors depends on general global economic conditions. For example, in the midst of a crisis, changes in expected risk levels may reduce the attractiveness of EMEs as an investment destination and lead to a flight to safety with the flows reversing. Once conditions in AEs stabilise, emerging market growth rates and high yield once again become attractive.[136] A potential risk in the current environment is that another shock (political, economic, social, etc.) may cause capital to reverse flow from EMEs to AEs. A loss of access to international funding would restrict borrowing opportunities in EMEs, possibly causing currency depreciation, rising financing costs and GDP losses.[137]

Understanding the Risks

The historical unpredictability and volatility of capital inflows to EMEs suggests that the risk of net capital outflows is an important consideration for the global regulation of securities markets. There are a number of risks associated with the interaction between AEs and EMEs. These risks are related to a potential spill over into EMEs if there were a systemic shock to AEs. Specifically, trade finance and short-term money markets may become temporarily constrained.

Another risk is that investment opportunities in AEs improve and capital is redirected from EMEs.

133 Leiderman and Reinhart (1993, 1996)).

134 Byrne and Fiess, 2011; IMF, 2011, Ghosh et al., 2012, IIF research note,.

135 'Capital Flows to Emerging Market Economies: A Brave New World?, Shagil Ahmed, Andrei Zlate, Report to Board of Governors of the Federal Reserve System, International Finance Discussion Papers, June 2013.

136 Fratzscher M, (2011), "Capital Flows, Push versus Pull Factors and The Global Financial Crisis", European Central Bank Working Paper Series, No:1364.

137 IMF, Global Financial Stability Report, April 2012: if total net inflows to EMs from 2009-2011 reversed over one quarter, credit growth would decline 2 to 4% and GDP would fall 1.5 to 2% on average.

Although such an event may not disrupt the mechanisms for international trade and finance, individual EMEs that are heavily dependent on capital inflows, may suffer and common-creditor contagion could spread crisis to other EME regions—for example the 1998 Russian crisis and its impact on Brazil.[138]

Given U.S. Federal Reserve Chairman Ben Bernanke's announcement about eventual discontinuation of quantitative easing past 2014, some EMEs are concerned about a reversal of capital flows.[139] Compared to past crises like the Asian financial crisis of 1997, a number of EMEs are better prepared for a reversal of capital inflows and have put in place various controls.[140] Some EMEs, however, may still be vulnerable and given the increasing interconnectedness of the financial system, this could impact the wider global economy.

From a securities markets perspective, the development of financial markets and structure of flows is an important factor in understanding how systemic risk may spread in the event of reversal of capital flows to EMEs. Less developed financial markets could signal a low absorptive capacity of EMEs in the face of increased liquidity, raising their vulnerability to disruption caused by speculative money flows and portfolio investment.

In essence, flows may be concentrated in only a few pools; potentially overheating markets[141] (e.g., real estate/ mortgage market). Any excess liquidity may also be absorbed by the shadow banking system in EMEs; creating additional credit outside regulatory supervision. However, more data is needed to assess the size of shadow banking in EMEs.

The sudden withdrawal of liquidity, due to reversal of capital flows could affect asset prices negatively, even without deterioration of a country's economic fundamentals. Sudden and rapid deflation of prices can have real economic impacts through the wealth effect; deteriorate market confidence and decrease investment and financing.

There are a few other risk factors to consider. These include:

Fixed versus flexible exchange rates

The degree of flexibility in an exchange rate setting regime can affect capital flows into EMEs. This was the case in the emerging market 'capital account crises' in Turkey 1993-94,[142] Mexico 1994-95, and Asia 1997-98. A less flexible exchange rate regime in a rapidly growing economy tends to encourage the accumulation of foreign-currency-denominated borrowing.

If capital inflows necessary for rolling over maturing short-term debt become unavailable, the pressure on the currencies in a less flexible exchange rate system can overwhelm the resources of the central bank. In the Turkey, Mexico and Asia examples above, this led to sharp devaluations, which in turn inflated the local currency value of debts denominated in foreign currency. Thus, if flows were to suddenly reverse, borrowers in EMEs with less flexible exchange rates may struggle to meet their foreign-currency repayment obligations. In contrast, regions with more flexible exchange rate regimes may be less at risk.

Over-reliance on short-term debt and low reserves

Low levels of currency reserves at the central bank will tend to aggravate the impacts of a reversal of capital flows, especially for those EMEs with fixed exchange rates. Over-reliance on short-term debt can also contribute to funding gaps when flows reverse.[143] A reversal of inflows is usually accom-

138 'Global Banking, Global Crises? The Role of the Bank Balance – Sheet Channel for the Transmission of Financial Crises', Rudiger Ahrend and Antoine Goujard.

139 See ThomsonReuters, Standard & Poors, IIF, "Capital Flows to Emerging Market Economies', January 22 2013.

140 The Federal Reserve Board, 'Capital Flows to Emerging Market Economies: A Brave New World', June 2013: " *in response to the sharp rebound in capital flows after the global financial crisis, policymakers allowed some currency appreciation but also intervened in foreign exchange markets to partially stem currency appreciation pressures; several of them introduced some capital controls and macro prudential measures; and they eased somewhat on policy rate increases needed to stabilise their economies*." (pg. 6)

141 Several studies indicate that there is a positive correlation between foreign capital inflows and asset prices, mainly in emerging markets. See the works of Bohn and Tesar, 1996. Brennan and Cao, 1997; Clark and Berko, 1997; Choe, Kho and Stultz, 1999; Kim and Wei, 2002; Froot, O'Connell and Seasholes, 2001; Bekaert, Harvey, and Lumsdaine, 2002; Richards, 2005; Froot and Ramadorai, 2008; Kim and Yang 2009; Guo and Huang, 2010.

142 Dani Rodrik www.hks.harvard.edu/fs/drodrik/

143 'Global Banking, Global Crises? The Role of the Bank Bal-

panied by a forced reduction in domestic demand, as the money needed to finance consumption and investment is no longer available. Those economies with high current account deficits and increasing share of sovereign bonds owned by foreigners (external debt), especially short-term in nature, would be most exposed to a sudden reversal of capital flows.[144] Conversely, EMEs with high foreign exchange holdings and domestic savings could be less exposed as they could use reserves as a buffer and redirect domestic savings to plug any emergent funding gaps in the midst of a capital inflow reversal.

Assessing the Risks

Historically, capital flows to EMEs have mainly been FDI and bank lending.[145] Portfolio equity investment,[146] debt securities and non-bank lending[147] have increased in the post-crisis period (see Figure 36). FDI can generally be viewed as more stable than portfolio investment in equity and debt and non-bank lending because the availability of market-based financing is more sensitive to market conditions and they tend to originate from short-term investors.[148] Nevertheless, the most recent crisis appears to have had the negative affect on FDI and Bank lending.[149]

ance – Sheet Channel for the Transmission of Financial Crises', Rudiger Ahrend and Antoine Goujard.

144 IMF Working Paper, Surging Capital Flows to Emerging Asia: Facts, Impacts and Responses, May 2012: http://www.imf.org/external/pubs/ft/wp/2012/wp12130.pdf.

145 Direct equity investment into domestic structures, equipment and organisations.

146 Equity securities including shares, stocks, depository receipts and direct purchases of shares in local stock markets.

147 Non-bank private creditors e.g. public and publicly guaranteed creditors such as manufacturers, exporters and other suppliers of goods, export credit agency, bank credits covered by guarantee.

148 E. Fernandez-Arias and R Hausmann, Capital Inflows and Crisis: Does the Mix Matter?, OECD, Foreign Direct Investment Versus Other Flows to Latin America, 2001; R. Osei, O Morissey and R Lesink, The Volatility of Capital Inflows: Measures and Trends for Developing Countries, CREDIT Research Paper No 02/20, University of Nottingham, 2002; Deutsche Bundesbank, 'The role of FDI in emerging market economies compared to other forms of financing', Contribution to the CGFS Working Group on FDI in the Financial Sector of Emerging Market Economies, 24 February 2003

149 See 'Handbook of Safeguarding Global Financial Stability', Gerard Caprio, 2012

Figure 36 : Capital flows, Emerging Markets

Source: International debt securities sourced from BIS statistics. 2013 figure based on March data. All other figures from IIF estimates. 2013 figures constitute IIF forecasts.

With the on-going low interest rate environment in AEs investors are looking to alternate investment opportunities that generate higher yields and corporations in EMEs have responded to the increased demand for bonds issued by emerging market sovereigns and companies. In the first five months of 2013, firms issued $153 billion of bonds (compared to $92 billion last year for the same period).[150,151] The volume of investment drove the average yield on investment-grade emerging market bonds to approximately 4.5 percent in May. [152]

At the same time, securities market development in emerging markets is not keeping up with GDP growth. A report by the McKinsey Global Institute notes that the average market values of equity, corporate and government bonds and loans relative to GDP of emerging markets is less than half that of AEs (157% of GDP, compared with 408% of GDP) and "this gap is no longer closing." [153] The share of global financial assets held by emerging markets has grown from 15% in 2008 to 19% in 2012.

Inflows, exchange rates and reliance on foreign debt – a region by region analysis

The impacts of a flow reversal to emerging markets can be amplified when a country relies heavily on capital inflows and foreign debt, has a limited buffer to absorb losses and has rigid exchange rates. Since EMEs vary significantly on these aspects, we provide a region by region analysis.

Emerging Europe (see Annex B, Figure 37): Net private capital inflow to Emerging Europe reached $217 billion in 2012, which was relatively low compared to other EME regions. The majority of these inflows constituted non-bank lending, and while portfolio equity investment grew significantly, FDI dropped. Equity market development in Emerging Europe is low, compared to other emerging market regions with domestic market capitalisation averaging around 25% of GDP across EMEs and 5.5% of US market capitalisation. However, bond issuance is strong, relative to other EME regions. Total issuance amount reached $164 billion in 2012, an increase by 84% since 2007, with investment grade corporate bonds dominating. High-yield corporate bond made up 18% of issuances in 2012 compared to 36% in 2007.[154]

At the same time, many Central European countries have a rigid exchange rate regime, suggesting that they may be more vulnerable to capital flow reversals. This vulnerability is exacerbated by a large current account deficit and significant levels of (short-term) external debt relative to total reserves. Domestic savings across the region is significantly lower than external debt (as a % of GDP), and has trended upwards since the 2007 financial crisis (external debt obligations were nearly 70% of GDP in 2012). Foreign bank claims on Emerging Europe borrowers is positive but still small. Domestic savings represented only 20-30% of GDP in 2011 averaged across the region (see Annex B).

150 Dealogic.

151 Standard Chartered research estimates that over 20% of EM bonds are now held by non-residents.

152 US Treasury bond spreads can indicate pressure on the prices of government bonds.

153 McKinsey Global Institute, 'Financial globalization: Retreat or reset?', March 2013.

154 Estimates for 2013, suggest that high yield issuances will increase to 25% of the total.

Emerging Asia (see Figure 38)**:** Emerging Asia has attracted more foreign capital than other EME regions.[155] This is especially true for equity investments (foreign direct investment and portfolio equity investment), where Asia received almost two thirds of the total flows into EMEs in 2012 ($242 billion of $350 billion). Foreign investors have remained net purchasers of the region's bonds. High yield corporate bond issuance has been stable since 2010. At the same time, international debt securities issuance has been increasing since 2009. The preference for emerging markets' bonds relative to equities is pervasive across Latin America, Emerging Europe and the Middle East.

Emerging Asia has a high capacity to absorb these flows, compared to other emerging market regions. Its equity markets are relatively well-developed with domestic market capitalisation around 56% of that of the US. Domestic market capitalisation relative to GDP in Emerging Asia averaged around 108% over the six years to end-2012. However, most of this capitalisation is in China,[156] Hong Kong and India; Singapore, Taiwan, Malaysia, Thailand and Korea are also relatively large markets. Similar to Emerging Europe, bond issuances are also relatively high compared to other emerging market regions, reaching $189 billion in 2012.[157] For example, bond issuances have increased 125% since 2007. High yield issuance made up only 9% of total issuance in 2012 compared to 15% in 2007.

Most countries in Asia have flexible exchange rates, reducing their vulnerability to capital flow reversals. Across the region, external debt obligations and reliance on short-term debt is small (below 40% of total reserves). Domestic savings levels are relatively high compared to external debt levels (as % of GDP). Nevertheless, in some jurisdictions, current account balances have been deteriorating with negative impacts on their exchange rates and increasing vulnerability to a reversal of capital flows. Foreign bank claims on Emerging Asia borrowers have increased in the last quarter of 2012 but are still lower than the 2010 peak (see Annex B).

Latin America (see Annex B, Figure 39): Net private capital inflows rose significantly in 2010 and have been trending upwards since, reaching $308 billion in 2012. In contrast, portfolio equity investments have been in decline since 2010. An increase in non-bank lending and foreign direct investment has taken up the slack. Financial markets are still reliably small with total market capitalisation in Latin America equalling 13% of US market capitalisation (with the Brazilian market comprising one half). As a proportion of GDP, market capitalisation in Latin America averaged 58% over the six year period ending in 2012. Chile is the standout market, with a market capitalisation that exceeded 100% of GDP. Colombia (72%), Peru (52%), Brazil (51%), Argentina (7%), and Mexico (45%) each have lower levels of financial development as measured by market capitalisation to GDP. Bond issuance reached $158 billion in 2012, increasing by 110% since 2007.[158] High yield issuances made up 11% of total issuance in 2012 (37% in 2007).

Latin American EMEs also tend to have less flexible exchange rates and appear to be, on average, facing small but increasing current account deficits. This increases their vulnerability to a reversal of capital flows. External debt and domestic savings are in balance at around 20-30% of GDP. Short-term debt as a percentage of total reserves varies from EME to EME, with exceptionally high ratios noted in Venezuela (>50%). Foreign bank claims on Latin American borrowers has been decreasing since 2010 but picked up significantly in the last quarter of last year (see Annex B).

Middle East and Africa (see Annex B, Figure 40): Unlike other emerging market regions, the value of net private capital flows to Middle East and Africa have decreased by 92% since the crisis (2007)[154],

155 Net private capital inflows in emerging markets was around $1,180 billion in 2012, with around half of this amount going to Asia ($582.7 billion).

156 China's degree of market capitalisation is relatively low in Asia (45%), the size of its economy means that it is likely to be more capable of absorbing foreign capital than smaller economies with higher proportions of market capitalisation to GDP.

157 Although issuances are estimated to fall in 2013 to $166 billion.

158 In 2013, estimates based on performance so far, suggests bond issuance will equal around $152 billion.

reaching $73 billion in 2012 ($140 billion in 2007). Net inflow of portfolio equity investment has been negative in the last decade, with outflow reaching $16 Billion. FDI dominates the flows but has been steadily decreasing since its peak of $68 Billion in 2008 to $28 billion in 2012.

In the sub-Saharan Arican sub-region, the April 2012 IMF Regional Outlook [155] notes that "although foreign investors had paid increasing attention to these countries since the mid-2000s, the size and development of their financial markets and the cross-border flows they receive remained limited." A number of countries, including South Africa, experienced portfolio capital outflows in 2008, returning to inflows late in 2009. Capital flows across the sub-region mostly take the form of Foreign Direct Investment from Europe. South African investment is also of significant importance in a number of smaller sub-Saharan countries.

Financial market depth is low in the Middle East and North Africa region, with the exception of Jordan (86% of GDP in 2012). In sub-Saharan Africa, financial market depth averages 84% of GDP, with South Africa having especially deep equity markets (236% of GDP in 2012). Total market capitalisation for the Africa region and the Middle East as a percentage of US market capitalisation is 5.0% and 5.2% respectively. Bond issuance is significantly lower compared to other emerging market regions, reaching $74 billion in 2012. However, issuances have increased by 98% since 2007. High yield issuances made up only 3% of total issuances (9% in 2007).

Exchange rate regimes vary significantly across the region. The current account surplus is, on average, high as a percentage of GDP (driven largely by oil revenues) and external debt has been trending downwards since 2007. External debt is, on average, slightly higher than domestic savings (as a % GDP) across the region and reliance on short-term debt as a percentage of total reserves is also relatively low (with the exception of South Africa) (see Annex B).

Overall, the Middle East and Africa region is a heterogeneous group that has its major vulnerabilities driven partly, by exposure to oil revenues, internal political risks, and a heavy reliance on FDI from other jurisdictions.

Looking Forward

Shallow markets will continue to be a concern for emerging markets and policy makers. A report by the FSB notes that any systemic consequences of the relative shallowness of EME capital markets and increased capital inflows[156] may be mitigated through increasing the domestic investor base, addressing market illiquidity and building market infrastructure.

IOSCO Emerging Markets Committee published a report in 2011[157] outlining measures to build corporate bond markets. Continued focus on developing sound and efficient securities markets in EMEs can contribute to overall stability of the regions, including in the face of volatile capital flows.

CHAPTER 5

OTHER RISKS AND POTENTIAL AREAS FOR FUTURE RESEARCH

Given the increasing importance of securities markets in terms of the role they will play in financing the global economy, it can be expected that the nature and importance of risks to securities markets will change over time. It is therefore vital to identify other issues that could become systemic if not resolved. Some over-arching and crosscutting areas for potential exploration are presented in this Section.

Corporate governance

In the view of the Research Department of IOSCO, weak corporate governance may have contributed to the current financial crisis. In order to avoid systematic risks in the future from building up again, financial firms should consider management accountability, corporate procedures and technology investment that are appropriate to their circumstances.

Resolution regimes of financial entities and investment vehicle failure

A coherent framework to deal with the resolution of failed financial holding companies and vehicles is still lacking, weakening market discipline. Also, protecting and recovering client money is very complicated when an institution with global clients fails.

Incentive frameworks in securities markets and the role of sanction regimes

Perverse or poor incentive frameworks, including remuneration and disclosure requirements that fail to avert conflicts of interests, could impede efforts to identify, monitor and mitigate systemic risk. Weak sanctions/detection regimes and regulatory action for market abuse can undermine the long term cleanliness of the securities markets and, ultimately, the confidence of investors and firms.

Global barriers hindering the drawing of capital from securities markets

Small-medium enterprises (SMEs) are the engines for economic growth. Given the growing importance of securities markets as a source of funding, the identification and resolution of barriers that may hinder SMEs from drawing from this capital would add to global financial stability.

IT systems and cyber-attack

Today, most securities markets are traded via interconnected, electronic platforms and thus, trading venues and financial institutions are vulnerable to cyber-attacks. Trading venues and financial institutions are therefore vulnerable to cyber-attacks. Cyber-attacks on securities exchanges have been reported in recent times. While the potential risks associated with such attacks may seem quite low, given the many redundancy, disaster-recovery systems and countermeasures that are in place, a successful attack could have disastrous effects on the real economy, since general disruption to the functioning of markets would hamper proper price formation and secondary trading. Furthermore, widespread confidence in the markets could be affected, potentially

making capital-funding by firms more difficult. The IOSCO Research Department joint staff working paper (with the World Federation of Exchanges), '*Cyber-Crime, Securities Markets and Systemic Risk*' considers these risks further.[159]

Alternative Funding Vehicles – peer-to-peer lending, crowd funding and supply chain financing

With banks being credit constrained due to increased capital requirements, many small borrowers and SMEs are finding it increasingly difficult to obtain funding from traditional sources. In this vacuum, individuals and firms are turning to alternative sources of financing such as "peer-to-peer lending" and "crowd funding", where a firm borrows money from a number of people who typically all invest a small amount of money.[160] In return, the investor often gets "a note" or "a stake" in the firm, or a promise of being paid back at a certain stage with interest.

The demand for and use of alternative funding vehicles such as peer-to-peer lending, crowd funding and supply-chain financing has grown in size over the past few years. Some governments are already actively promoting this type of vehicle to help fund SME's and the real economy.[161] These programs operate in some jurisdictions, in an unregulated environment with potential moral hazard and consumer protection issues. Anecdotal evidence suggests that their size is relatively small, but this represents a form of credit dis-intermediation that could be outside the scope of some regulators. More information on the scope and scale of the practice is needed.

159 http://www.iosco.org/research/pdf/swp/Cyber-Crime-Securities-Markets-and-Systemic-Risk.pdf.

160 There are, however, some global securities regulatory developments in this area (e.g., FCA's approval of Crowd Cube and others, Italy's new crowd funding laws and the US JOBS Act.).

161 Again, the UK department of Business, Innovation and Skills announced that a tranche of GBP 55 million had been allocated to 4 crowd/P2P lenders, with the expressed expectation that the money would "facilitate total lending to SME's by attracting private sector investment alongside government funding".

Annex A: Changes in the Derivatives Markets

Regulatory change across the Atlantic – differences between Dodd Frank and EMIR				
	Clearing on OTC transactions	*Reporting obligations placed on OTC transactions*	*Margin requirements for uncleared OTC*	*Capital requirements for uncleared OTC*
OTC derivative dealers	**EU:** Yes†	**EU:** Yes	**EU:** Yes†	**EU:** Yes†
	US: Yes*	**US:** Yes	**US:** Yes‡	**US:** Yes
Other financial counterparties/ entities	**EU:** Yes†	**EU:** Yes	**EU:** Yes†	**EU**: Yes†
	US: Yes*	**US:** Yes	**US:** Yes if major swap participant or if counterparty a dealer/ major swap participant‡	**US:** No unless major swap participant
Non- counterparties / entities	**EU**: No except for nonfinancial counterparties whose non-hedging positions exceed a clearing threshold	**EU:** Yes	**EU:** No except for non-financial counterparties whose non hedging positions exceed a clearing threshold	**EU:** Banks will be subject to capital requirements under CRD IV (Capital Requirements Directive) which are in line with Basel 3
	US: Yes but non-financial entities may qualify for exemption for transactions hedging commercial risk*	**US:** Yes	**US**: Yes if major swap participant or if counterparty a dealer/ major swap participant‡	**US:** No unless major swap participant

Source: IOSCO Research Department; based on ISDA and Clifford Chance

Notes: * Under the Dodd-Frank Act, derivatives subject to mandatory central clearing generally must also be traded through a swap execution facility, unless one of the parties is a non-financial entity which opts for the clearing exemption.

† Under EMIR, mandatory clearing applies to all derivatives transactions between financial counterparties, non-financial counterparties (whose positions - less sanctioned hedging practices - exceed a predefined threshold) and certain non-EU entities.

‡ The Dodd-Frank Act states that margin requirements are needed for dealers and major swap participants for their uncleared transactions.

Investment Policy of selected CCPs[162]

SIX x-clear

SIX x-clear invests a small proportion of its own assets in equities. The remainder, along with cash contributions from members for required margins, is managed by SIX x-clear. Any cash invested is overnight against repo by 3.30pm and received back by 8.15am the following morning. As of 31 December 2011 CHF 44.8 million was held in GBP at a U.K. based bank, which is also a clearing member. The majority of the cash flows (all the default fund cash plus any surplus cash from margin contributions) is routed to SIX SIS and managed there.

CC&G

CC&G can invest in money market or financial instruments issued by a sovereign state of the EU with an investment-grade credit rating of diff (or above). The minimum credit rating for deposit taking counterparties is A2 (or equivalent) and the maximum amount is limited to €1.5 billion per institution and can be no more than 30% of the total liquidity available to CC&G. Limits apply to the maturity structure of time deposits, e.g., no more than 10% of time deposits can be invested in maturities between 3 to 6 months, although up to 100% can be invested in maturities up to one week.

SGX-DC

Of SGX-DC's own funds of SGD 171 million, 32% had a maturity of less than 6 months, while 68% was 6-12 months. The investments were in the following currencies:

USD	4%
Other	Nil
SGD	96%

SGX-DC placed 79% of its own cash balances with 1 bank (as at the 2012 year end). Of the clearing member's SGD 4.8 billion in cash, approximately 60% - 70% is held in current deposit while the remainder is on 12-month fixed deposit. The investments were in the following currencies:

USD	45%
JPY	45%
SGD	10%

There were no Euros at 30 June 2012. This currency allocation reflects the currency of the underlying contracts that SGX-DC clears, although participants are not required to provide margins in the currency of the contract. SGX-DC takes a 5% haircut on any non-contract currency – it does not hedge the FX exposure. SGX-DC does hedge its own clearing revenues in USD via currency forwards. (Presumably if SGX-DC were to "hedge" the FX exposure arising from clearing members' margins, this would not qualify as a hedge in its own books since these cash funds are off-balance sheet). All cash placements of SGX-DC's own funds are unsecured. It is not known if this is also the case with clearing members' funds. There is no evidence of any repo activity. Clearing members receive an undisclosed portion of interest earned on their cash collateral invested on their behalf by SGX but they do not receive interest on securities lodged as collateral – this is retained by SGX-DC.

ICE Clear Credit

As of 30 September 2012, ICC had $13.06 billion cash deposits from clearing members. The majority of the cash deposits are invested in reverse repos via a third party custodian bank. Under the reverse repos, the clearing house buys US Treasuries and other US securities and then sells them back on the following business day at a predetermined price. None of the counterparties to the reverse repos are clearing members.

ICE Clear Europe

As of 31 December 2011, ICE Clear Europe had $16,586,628,000 cash from clearing members for initial margin and default fund purposes. Of this total cash deposits, $16,020,673,000 was invested in repo with several banks through a third party custodian bank. A further $480,162,000 was directly invested in government bills. In addition, ICE Clear Europe

162 Source: Thomas Murray.

also had its own default fund contribution of $110 million in cash and $141,202,000 cash at bank and in hand. Investment methods of these monies are not reflected in ICE Clear Europe's financial statement.

LCH Clearnet Ltd.

The cash collateral held by LCH.Clearnet Group is invested following internal rules and constraints. Some of these rules and constraints are:

> A minimum rating requirement for credit counterparty

> Limits by type of investment and type of counterparty

> Daily monitoring of the limits (cannot exceed 10% of the bank's regulated capital)

> Collateralisation of the portfolio

> LCH.Clearnet Ltd. has a policy of securing a significant portion of the cash portfolio via:

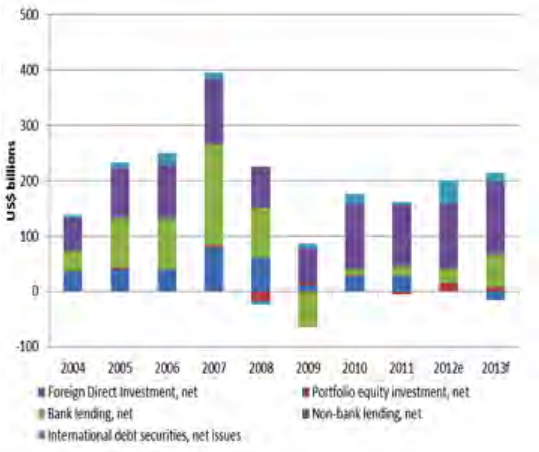
- Direct Investments in quasi-government or government securities
- Tri-Party or bilateral repos

The remaining amount of cash that is not secured is deposited in the money markets on an unsecured short term basis with high quality banking institutions.

Annex B: Emerging Market Economy profiles

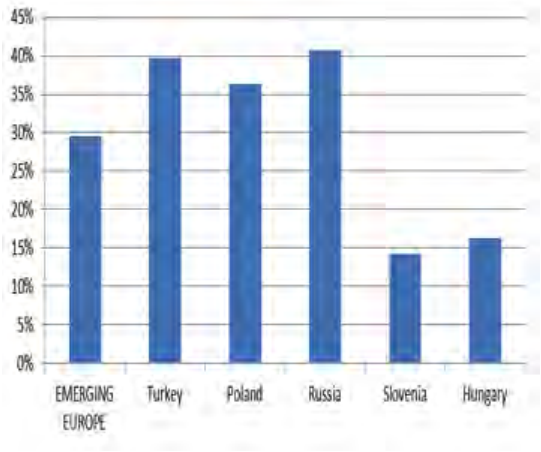
Figure 37: Emerging Europe Profile

Capital inflows, net



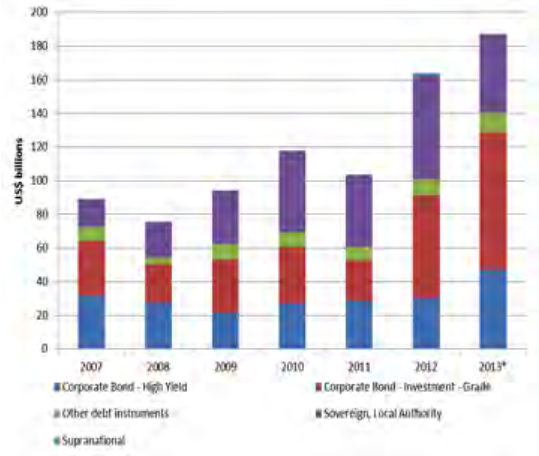
Source: IDS from BIS statistics. 2013 based on March data. All other figures from IIF estimates. 2013 figures constitute IIF forecasts.

Domestic Market Capitalisation (% of GDP)



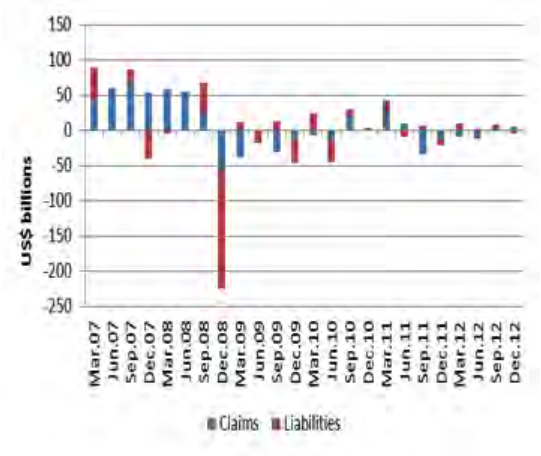
Source: Bloomberg

Bond issuances, breakdown by type



Source: Dealogic Note: other debt includes asset backed and mortgage backed securities, medium term notes, covered bonds, U.S. agency etc.

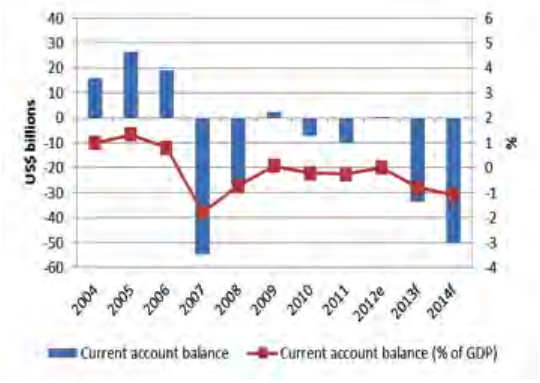
Bank cross-border claims on borrowers in Emerging Europe



Source: BIS locational statistics Note: exchange rate adjusted.

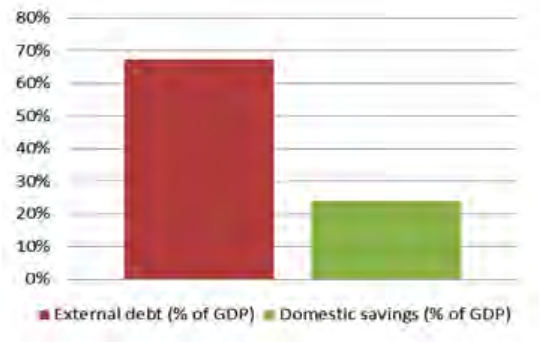
Figure 37: Emerging Europe Profile (continued)

Current account balance



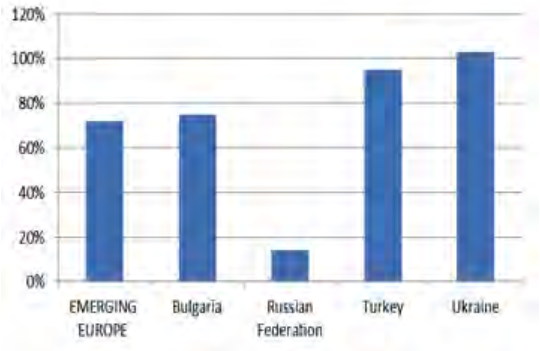
Source: IIF estimates

External Debt and Domestic Savings (% of GDP)



Source: World Bank, IMF
Note: Figures are from 2011 – due to low update frequency of data source.

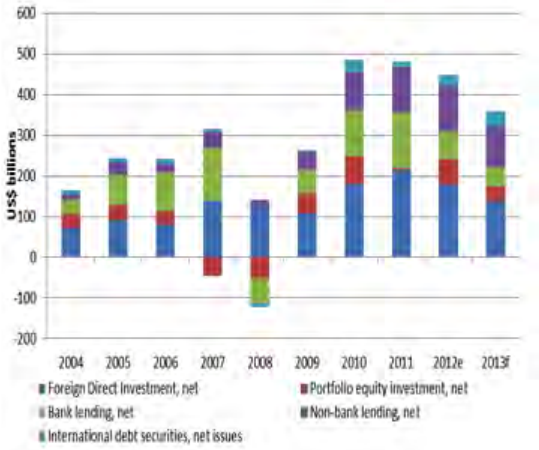
Emerging Europe, short-term debt (% of total reserves)



Source: World Bank

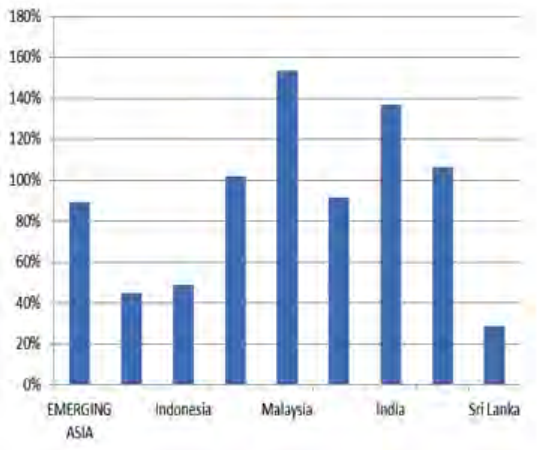
Figure 38: Emerging Asia Profile

Capital inflows, net



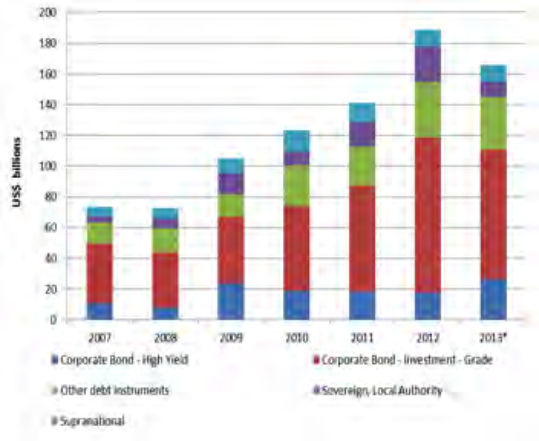
Source: IDS from BIS statistics. 2013 based on March data. All other figures from IIF estimates. 2013 figures constitute IIF forecasts.

Domestic Market Capitalisation (% of GDP)



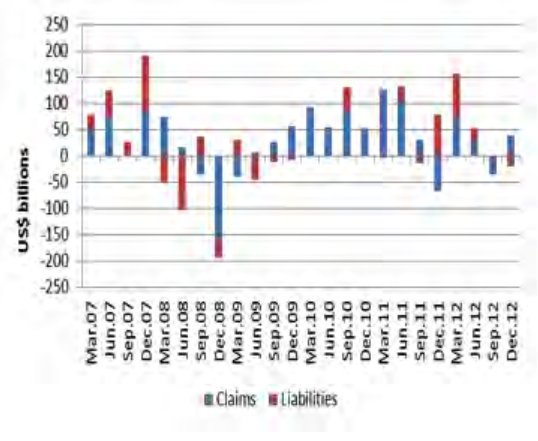
Source: Bloomberg

Bond issuances, breakdown by type



Source: Dealogic

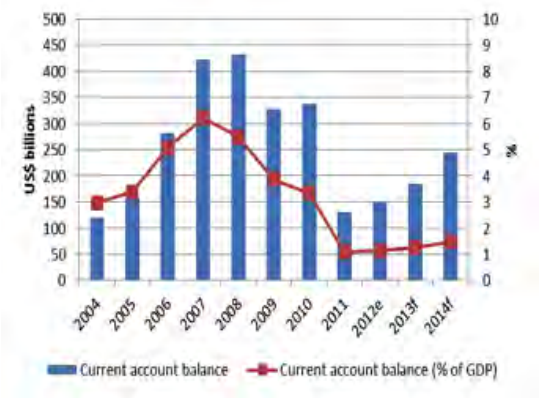
Bank cross-border claims on borrowers in Emerging Asia



Source: BIS locational statistics Note: exchange rate adjusted.

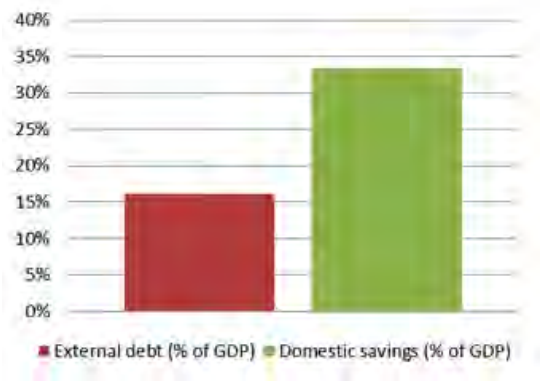
Figure 38: Emerging Asia Profile (continued)

Current account balance



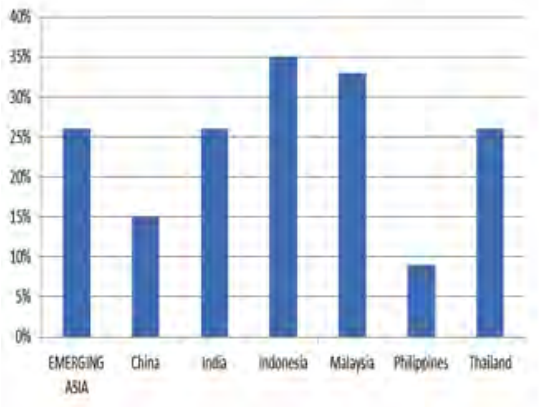
Source: IIF estimates

External Debt and Domestic Savings (% of GDP)



Source: World Bank, IMF
Note: Figures are from 2011 – due to low update frequency of data source.

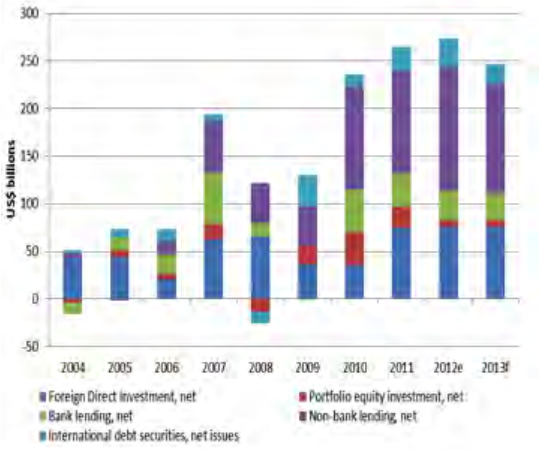
Emerging Asia, short-term debt (% of total reserves)



Source: World Bank

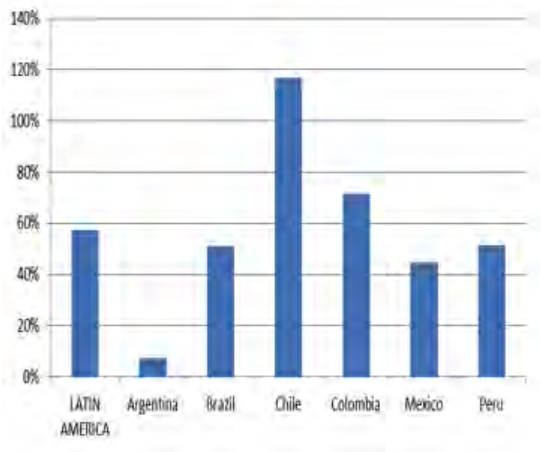
Figure 39: Latin America Profile

Capital inflows, net



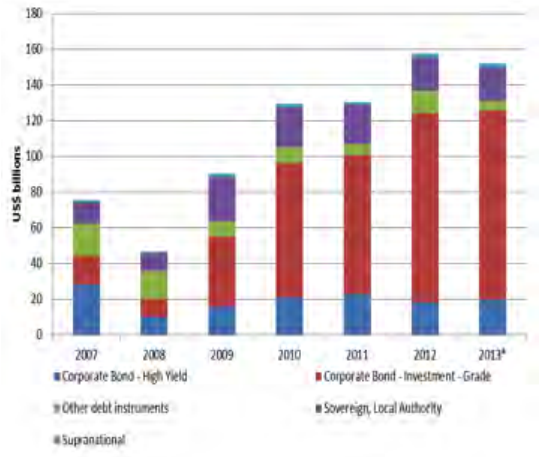
Source: IDS from BIS statistics. 2013 based on March data. All other figures from IIF estimates. 2013 figures constitute IIF forecasts.

Domestic Market Capitalisation (% of GDP)



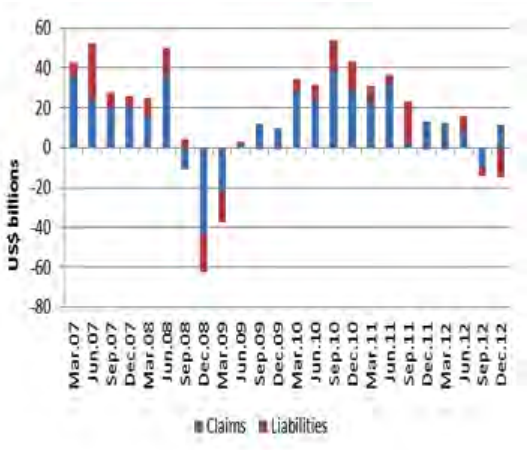
Source: Bloomberg

Bond issuances, breakdown by type



Source: Dealogic

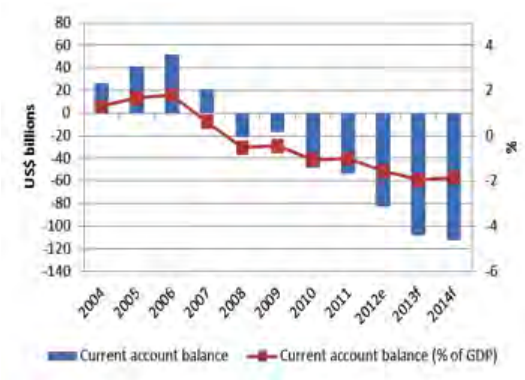
Bank cross-border claims on borrowers in Latin America



Source: BIS locational statistics Note: exchange rate adjusted

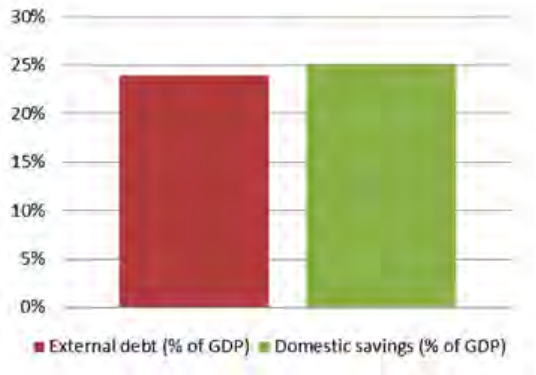
Figure 39: Latin America Profile (continued)

Current account balance



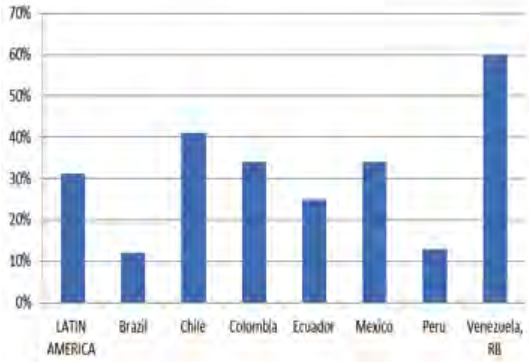
Source: IIF estimates

External Debt and Domestic Savings (% of GDP)



Source: World Bank, IMF
Note: Figures are from 2011 – due to low update frequency of data source.

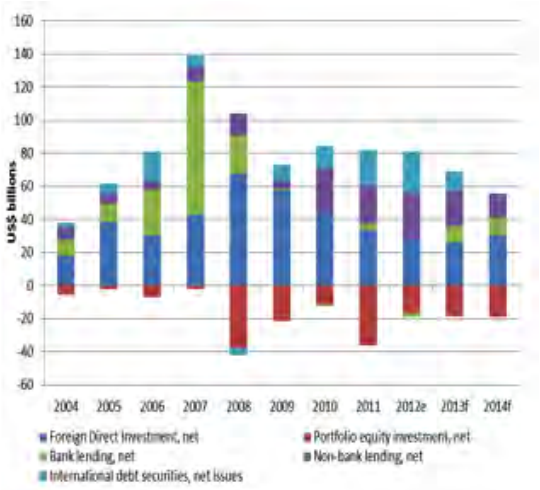
Short-term debt (% of total reserves)



Source: World Bank

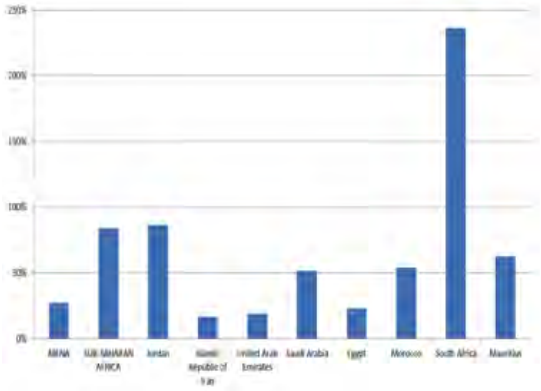
Figure 40: Middle East and Africa*

Capital inflows, net



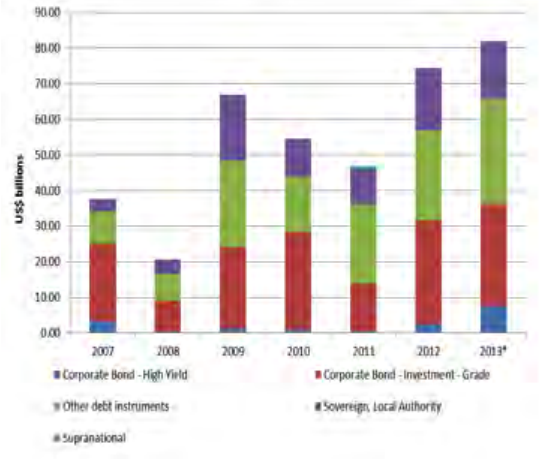
Source: IDS from BIS statistics. 2013 based on March data. All other figures from IIF estimates. 2013 figures constitute IIF forecasts.

Domestic Market Capitalisation (% of GDP) (with selected countries)



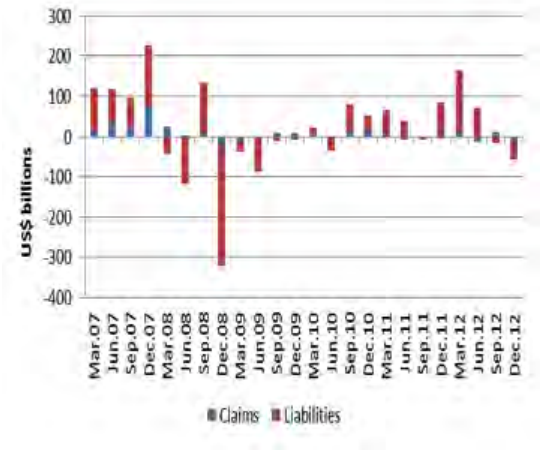
Source: Bloomberg (up till end 2012); Sub-Saharan Africa (up till end 2012) and MENA (developing only) (up till end 2011) from World Bank.

Bond issuance, breakdown by type



Source: Dealogic

Bank cross-border claims on borrowers



Source: BIS locational statistics Note: exchange rate adjusted.

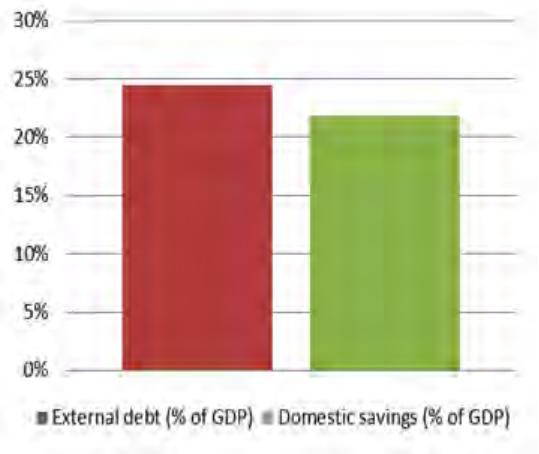
*Due to data gaps, indicators cover countries where comparable data is available.

Figure 40: Middle East and Africa (continued)

Current account balance

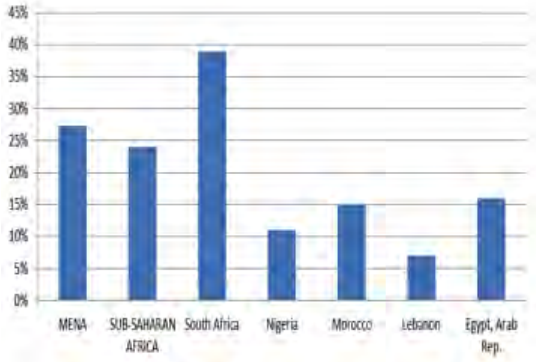
Source: IIF estimates

External Debt and Domestic Savings (% of GDP)



Source: World Bank, IMF
Note: Figures are from 2011 – due to low update frequency of data source.

Short-term debt (% of total reserves) (with selected countries)



Source: World Bank. Note: all data up to end 2012 (with exception

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