

## Chapter 3

# Shifting risks and the search for yield in financial markets

*Policies and regulatory responses to crises tend to roll financial excesses into other sectors or regions. This chapter argues that the response to the 2008 crisis has rolled the risk into the shadow banking and corporate bond sectors. Shadow banks intermediate credit between cash-rich and cash-poor investors in their bid to reuse securities and to gain access directly or synthetically to higher-yield and lower-risk alternative products in a world of low interest rates and rising longevity risk. At the root of the problem are a number of implicit promises that have been made to investors that are unlikely to be met in the absence of structural change and better regulation.*

## Main findings

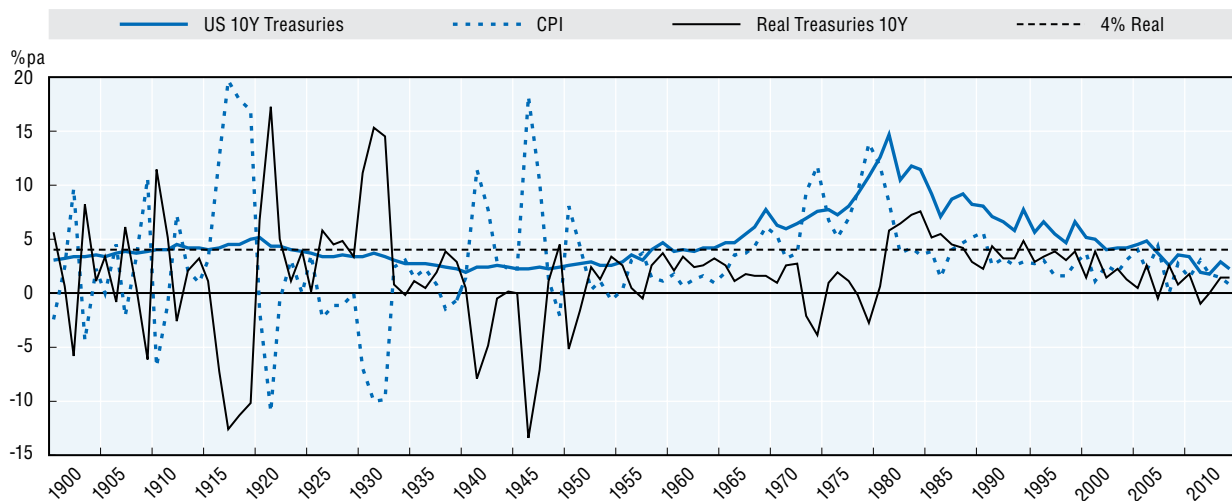
- The global financial system is evolving in a way that means certain ‘promises’ about long-term value creation, pension replacement rates and the safety of the financial system may not in fact be met.
- The rising size of the emerging market ‘dollar bloc’ and its integration into global supply chains is contributing to low inflation and low interest rates. There are signs that restrictions on cross-border flows are rising again. Over-investment and inefficiencies in parts of the global value chains are at the same time undermining the fundamental longer-term value in equities and bonds.
- Over the next five years pension funds are expected to grow 26% from an estimated USD 28.4 trillion in 2014 to USD 35.8 trillion in 2019; insurance companies 33% from an estimated USD 28.2 trillion in 2014 to USD 37.7 trillion in 2019; and mutual funds 38% from an estimated USD 33.4 trillion in 2014 to USD 46.1 trillion in 2019. These funds are naturally cash-short and securities-long—but the need for new products that improve yields has incentivised them to try to ‘unlock’ liquidity to obtain cash to manage margins and collateral needs associated with complex products and to reuse their securities by lending them.
- This occurs at a time when banks are being more constrained via regulation and higher costs are associated with counterparty transactions. The balance of financial system risk is shifting away from regular insured deposit banking towards shadow banking (the intermediation of credit for cash poor institutional investors via broker dealers and custody banks).
- At the same time, company borrowing is shifting away from banks towards non-bank bond issuance in the capital markets. The competition amongst lenders is so strong in the high-yield segment that less covenant protection is being traded for higher yields. This is a form of liquidity illusion (more yield now while illiquidity issues will be apparent only later).
- The competition amongst institutional investors for yield products is so strong that the shadow banking system is also facilitating new complex products that promise: higher yield with lower volatility; or synthetic exposure to underlying illiquid securities but with daily liquidity—another form of liquidity illusion.

## Introduction

A long sequence of manias resulting in crises has characterised the history of financial policies, both in advanced countries and in emerging markets. Each time the monetary policy, fiscal and/or regulatory responses deemed necessary to soften the impact on society have revitalised financial sector confidence and served to ‘roll’ the bubble into some new sector or region later on. Some of these ‘rolling bubbles’ are set out in brief in Box 3.1. This chapter considers the outlook in terms of the risks associated with where the rolling bubble has been pushed since the 2008 financial crisis.

The global financial crisis has resulted in historically unprecedented low short-term interest rates and deflation pressure emanating from the emerging market economy global supply shock. This, together with unconventional quantitative easing (QE), at first was used to support banks when liquidity dried up during the crisis. QE policies have now rotated from the United States (where rates will remain historically low) to Europe and Japan, and emerging market economies (EMEs) are also cutting interest rates and are using exchange rate intervention policy to help keep exchange rates low. Low interest rates can persist for a very long time following a global crisis (see Figure 3.1). Pension funds often aim for a real return of 4% per annum which, for a 2% inflation target, would imply the need to obtain yields of 6% or higher in order to meet future liabilities. In fact United States bond yields above 4% in real terms have occurred on average in only 25 of the past 114 years. From 1933 (when the United States went off gold) real bond yields were below 4% in all but one of the next 42 years and rose above it only temporarily in the Volcker-disinflation 1980s. Low real yields at present may also last for a very long time.

Figure 3.1. **Low interest rates could persist for a long time**



Source: Datastream, Shiller, OECD calculations.

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These policy responses and low interest rates in the face of the current global supply shock have resulted in a strange situation: financial investors see very little risk and are buying into the post-crisis equity recovery and are moving into higher-yield corporate bonds and alternative products; the company sector on the other hand appears to see much more risk and is not investing in innovations, social infrastructure and growth on a scale that will justify the market optimism in the long run. Investment and productivity growth in the private sector is stagnating (see Chapter 2).

### **Promises to meet future liabilities risk being broken**

In many ways, the current building up of risk in financial markets may be traced to three interrelated promises that may be inconsistent with each other:

1. *Corporate borrowing and investment associated with the inclusion of EMEs into global supply chains on an unprecedented scale:* the promise here is that corporate bonds and equities will be underpinned by investment that pays off as a better balance between investment- and consumption-led growth emerges between EMEs and advanced countries.

2. *Pension fund and insurance company liabilities*: the promise here is that pension fund replacement rates and insurance company annuity products will meet client expectations for future income in the face of rising longevity risk and very low interest rates.
3. *Insured deposit bank versus shadow bank risk*: here the promise is that regulatory reform has solved financial system risk and taxpayers will not again have to face the socialisation of losses on a major scale.

#### Box 3.1. The rolling bubbles and busts from the mid-1990s

Most crises occur because excessive exuberance leads to over-investment of some form that is incentivised by regulatory, governance and tax distortions that are accommodated for too long by easy monetary policy. The assumptions built into asset prices become unrealistic. Belated attempts to rein in the market excesses (or some extraneous shock) trigger a collapse that leads to an easing of policy to prevent financial contagion and the story repeats itself, often rolling the problem into some other market.

- The Asian ‘tigers’ were an economic miracle that justified investment and lending without a proper understanding of the governance of the whole process and the distorting policies upon which it was based. Policy in the advanced countries was eased to allay liquidity concerns.
- This easing coincided with technological leaps associated with telecommunications and the internet and talk of a ‘new economy’. The tech boom and bust was again followed by easy monetary policy.
- At the same time, policy in EMEs to stimulate development through financial repression and exchange rate management created strong (though inefficient) state-investment-driven growth. The term ‘BRIC’ was coined and asset allocations to these countries increased. Stock markets soared and resource producing countries and commodity prices were drawn into the boom. Terms like ‘the resource super-cycle’ were coined.
- The global supply shock resulted in low inflation and easy policy to stem the job loss in advanced countries due to the shifting of gravity of world economic activity to EMEs (see Chapter 2). Financial deregulation and easy policy contributed to the banking, derivatives and structured products boom. Leverage rose (aided by the new fee-for-sale approach to mortgage loans), lending volumes soared and housing in various parts of the world became a new phase of over-investment. Counterparty risk rose and the failure to meet collateral calls for derivatives and structured products was the very essence of the banking crisis that followed. Central banks had little choice but to lower rates and provide the missing liquidity through quantitative easing (QE).
- Europe too was an integral part of the tech boom and bust and the financial sector expansion that followed—but superimposed on this was the euro crisis. The one-size-fits all monetary policy over a group of countries whose structures are very different and affected asymmetrically by the pressures of globalisation is economically problematic.

Japan is the classic case of a country that over-invested and borrowed too much in its boom years. The country’s problems were amplified by poor corporate governance structures and it did not deal with bad debt problems in its banking system from the outset. Japan has been in stagnation for a couple of decades.

This chapter analyses the financial market outlook in the context of the consistency or otherwise of these three ‘promises’.

### Problems in the international monetary system

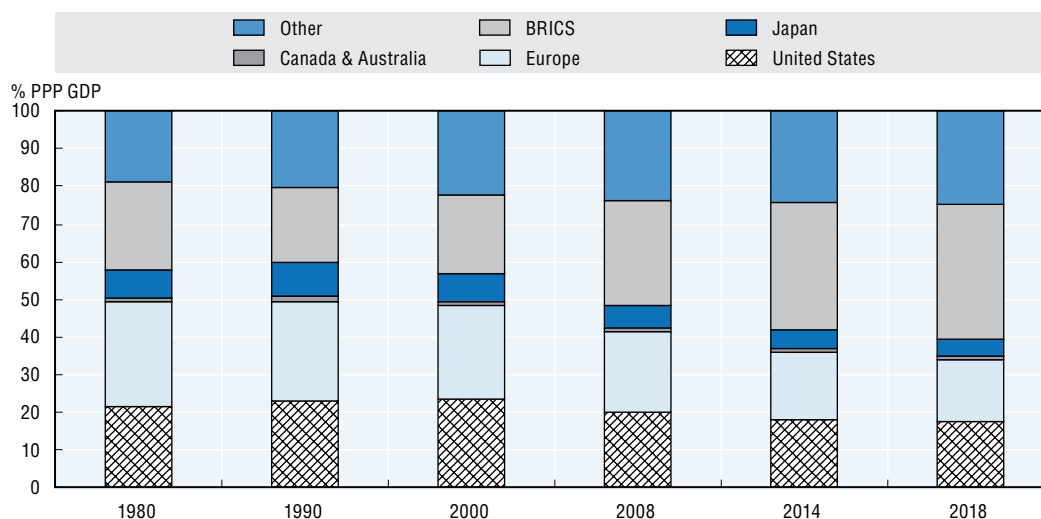
There are a number of views as to why the international financial system swings from crisis to crisis. One held by the former chairman of the Federal Reserve Ben Bernanke is that EMEs have excess savings (a ‘glut’ in China, other Asian countries, and OPEC when oil prices are high) which flow to the United States. Their accumulation of foreign exchange reserves also flows into United States Treasury securities given the reserve currency status of the dollar. These inflows were managed poorly by investors, the financial sector and the authorities, resulting in unwise financial product innovation to meet the demand (Bernanke et al., 2009). A related view is that emerging markets don’t produce enough safe assets and they seek to accumulate reserve currency assets (mainly United States Treasury securities), which drives down yields. Since safe asset prices can’t rise enough (due to the zero rate bound), the flows lead to the manufacture of new alternative assets, the risks of which are under-priced (Caballero and Krishnamurthy, 2009). Still another view is that perceptions of risk in markets are loosely anchored to fundamentals and policy: they are pro-cyclical, and are associated with excessive capital flows and overshooting (White, 2012; Borio, 2014; among others).

While there is truth in all of these views, the OECD Secretariat has focused on the growth of global value chains (supported by tax exemptions in EMEs and labour cost considerations) which, when combined with financial repression policies in EMEs, generated a global supply shock characterised by weakening returns (Chapter 2). Advanced-country profits benefitted, but operational cash flow is often kept offshore and/or given back to shareholders in dividends and buybacks. The problem is less of a savings glut in a traditional balance of payments sense, and more of an issue of over-investment in EMEs: which may occur just as easily in balance of surplus countries like China as in deficit countries like India.<sup>1</sup> ‘Over-investment’ instead refers to declining value creation possibilities (return-on-equity versus the cost-of-equity). Savings and investment are highly correlated in countries that inhibit cross-border flows and which manage their exchange rates. Less efficient EME investment is drawn into global value chains, while at the same time advanced country investment in operational change in the global economy does not substitute for productivity-enhancing investment. Globally, the underlying ‘fundamental’ for bonds and equities is being undermined.

Global value chains result in two-way flow between advanced and emerging countries—foreign direct investment and merger and acquisition flows from each to the other (see Chapter 6)—and the impact of inflows on the exchange rate is resisted in many EMEs by foreign exchange intervention, the proceeds of which are re-invested in safe reserve currency assets (mainly United States Treasury securities). Problems in international finance arise not because of flexible exchange rates but, on the contrary, they are caused in part by the inflexibility of a large bloc of currencies versus the dollar in the face of global structural change. This pushes flows and pressures onto exchange rates that do float more freely and onto other asset prices, both of which will evolve very differently to what would occur in a more consistent global financial system. Two very different approaches to economic management are ‘butting up’ against each other.

The size of the changing shape of the world's top-fifty countries is illustrated in Figure 3.2. In 1980 the economies in the OECD group were around 58% of the world and the BRICS and other EMEs were 42%. By 2014 these shares were almost exactly reversed. These diverging trends are projected to continue. At the same time the expansion of global supply chains discussed in Chapter 2 has shifted the centre of gravity for investment towards EMEs and resulted in more contestable traded goods markets in advanced countries and downward pressure on wages in the affected sectors. Development in EMEs has been facilitated by harnessing national saving and investment, often with a prominent role for state-owned banks, controls on cross-border flows, interest rate ceilings, statutory reserve requirements, ownership restrictions, and the like. This permits governments to bottle up savings, which are often intermediated through state-owned banks, to achieve high levels of investment (see for example the case of China versus the United States in Figure 3.3). This heavy investment in emerging markets more generally contributes to driving down the returns on equity and inhibiting growth (see Huang and Wang, 2010) as illustrated in Chapter 2.<sup>2</sup>

Figure 3.2. **Emerging economies versus Europe, Japan, United States, Canada and Australia**



Note: 'Other' includes the following countries: Algeria; Argentina; Chile; Colombia; Egypt; Hong Kong, China; Indonesia; Iraq; Islamic Republic of Iran; Israel; Kazakhstan; Korea; Malaysia; Mexico; Nigeria; Pakistan; Philippines; Saudi Arabia; Singapore; Sweden; Chinese Taipei; Thailand; Turkey; United Arab Emirates and Venezuela. 'Europe' is European Union 15 and Switzerland. Data for Russia in 1980 and 1990 is taken from Angus Maddison.

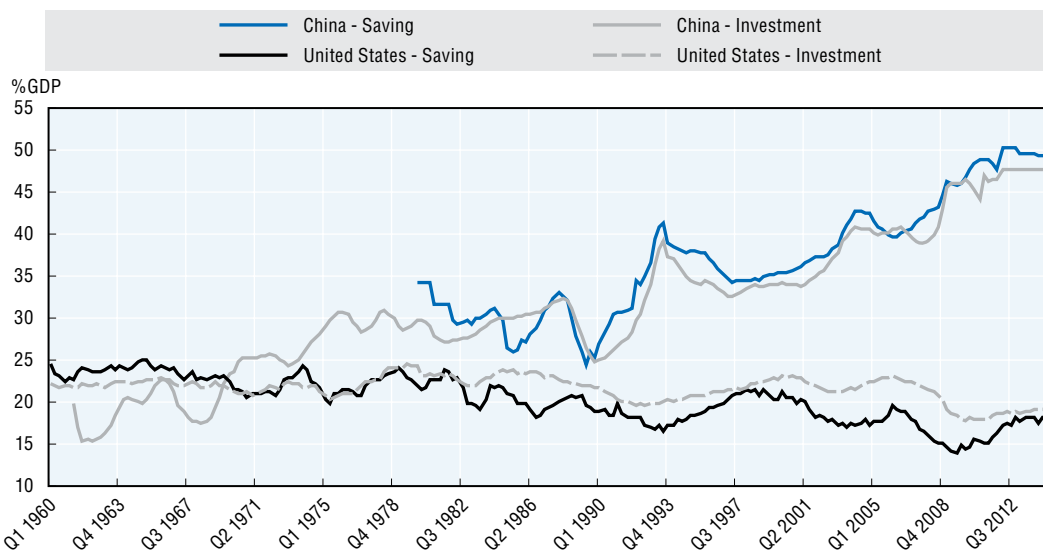
Source: IMF World Economic Outlook Database, [http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx](http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx%20www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx) OECD calculations.

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### **Exchange rate management distorts exchange rates and interest rates**

The extent of exchange market intervention versus the dollar is illustrated in Figure 3.4. This shows the vast holdings of US Treasury securities by non-US countries (mainly governments) which greatly exceed the Federal Reserve's own holdings bought as a part of its QE program (also shown). These holdings in large part reflect the selling of dollar bloc currencies to achieve a weaker exchange rate than that to which a free market would give rise, supported by a variety of controls on cross-border flows.

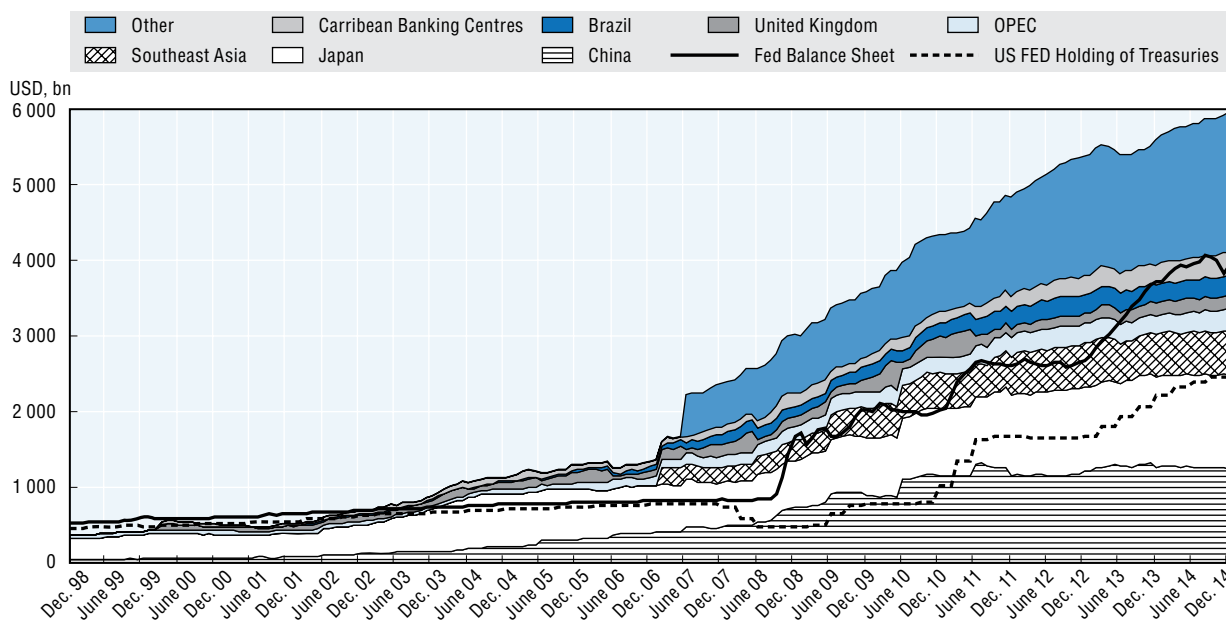
Figure 3.3. **Financial repression: China versus United States national savings and investment**



Source: OECD Quarterly National Accounts Database, [www.oecd-ilibrary.org/economics/data/oecd-national-accounts-statistics\\_na-data-en](http://www.oecd-ilibrary.org/economics/data/oecd-national-accounts-statistics_na-data-en).

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Figure 3.4. **Foreign holdings of United States Treasury securities compared to the United States Federal Reserve holdings**



Source: Datastream, OECD calculations.

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The foreign buying of United States Treasury securities has forced down Treasury yields and encouraged growth in the non-traded goods sector, and notably in finance and housing sectors. These developments began to interact with financial innovations in ways that became dangerous for the financial system in the lead up to the crisis. Foreign buying of United States Treasury securities, along with the Federal Reserve's QE operations, is

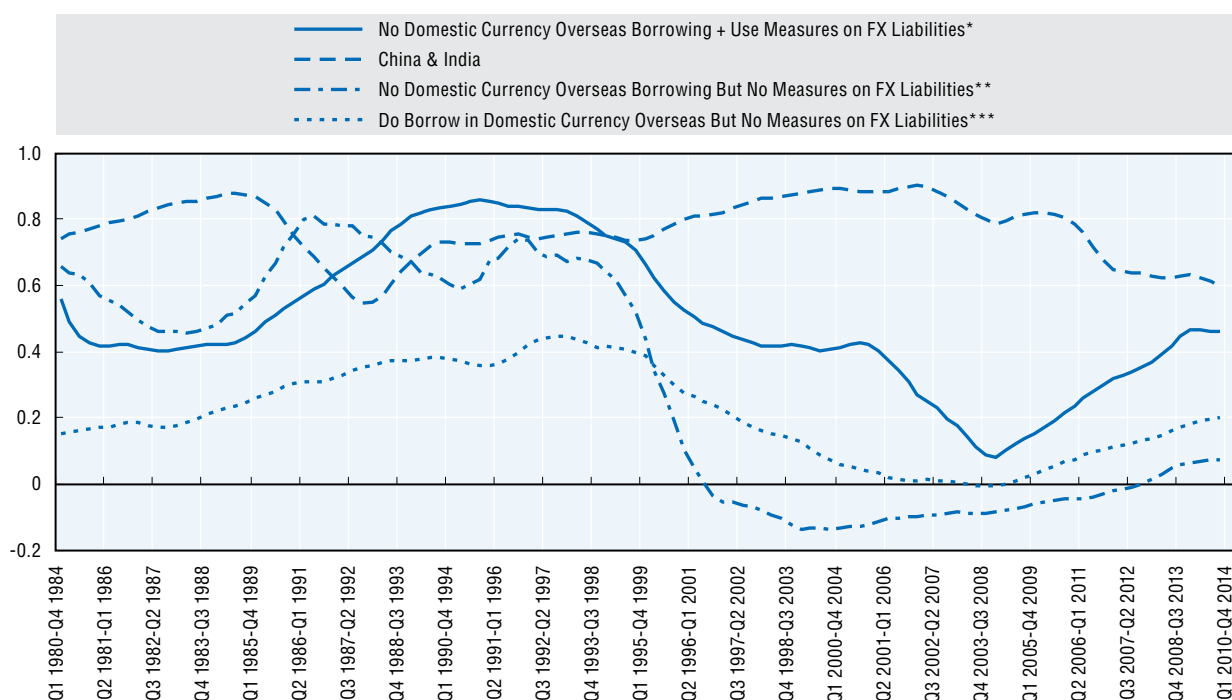
estimated to have reduced the 10-year Treasury yield by some 350 basis points compared to what otherwise would have been the case given low short rates (Blundell-Wignall and Roulet, 2014; references therein). Since the crisis this downward pressure on interest rates around the world has pressured institutional investors to buy higher-yielding corporate bonds of lower quality—a topic taken up below.

### Signs that controls on cross-border flows are rising again

A high correlation between national saving and investment (S-I) is a measure of openness: just as the saving in a state or province of a country is not expected to finance the investment in that state, so it should also be the case between countries with open capital markets (Feldstein and Horioka, 1980; Feldstein and Bacchetta, 1991; Helliwell and McKittrick, 1999).

These S-I correlations are shown in Figure 3.5 for four groups of countries classified according to their openness and also the liquidity of their markets.

Figure 3.5. **Five-year rolling savings-investment correlations**




\* Korea, Argentina, Russia, Chile, Mexico, Brazil, Iceland, Thailand, Columbia, Peru.

\*\* Estonia, Poland, Hungary, Israel, Denmark, Sweden Norway, Czech R., Australia, Philippines, Malaysia.

\*\*\* United States, Japan, Canada, United Kingdom, most of Europe, South Africa, Saudi Arabia.

Source: OECD calculations.

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The interface between financial policies in emerging and advanced economies since the crisis has led to new sets of issues and risks for financial markets. Not only are countries managing their exchange rates to improve their net export position versus other countries (which cannot work for everyone since net exports globally sum to zero), but the use of restrictions on cross-border flows is picking up in emerging countries that had previously moved in the direction of more openness—just as China has actually been moving steadily towards introducing a sequencing of flexibility measures<sup>3</sup>. These policies



risk a re-emergence of external imbalance problems, and contrast with the need for more widespread domestic-demand-driven growth in the global economy and deeper and more liquid financial systems.

### Post-crisis regulatory change: safer banks or enormous policy support?

The aggregate assets of banks in OECD countries are shown in the left column of Table 3.1. A large sample of listed banks monitored by the OECD Secretariat is shown along with their asset composition in the middle section of the table. In contrast to the stable growth in pension and insurance company's assets prior to the crisis, bank assets accelerated sharply, driven mainly by trading assets, derivatives and loans. As the crisis hit, counterparty risk and margin-call pressures became the primary catalyst and promulgator of the crisis globally:

- Repo trading extended into less liquid mortgage and asset-backed securities, and during the crisis the haircuts to these transactions rose sharply, leading to a vast shortage of cash collateral.
- Lenders were forced to recall cash from all global locations, forcing counterparties to sell assets. A sort of global ring-fencing followed as affiliates abroad were forced to provide funding to parents.
- The general rise in price volatility led to huge cash margin calls on derivative positions.

These were the main reasons why the United States and the United Kingdom central banks, in the first instance, had to pump so much cash liquidity into the system—to prevent a collapse of the financial system via the drying up of liquidity.

The decline in banks assets (loans, trading assets and derivatives) since the crisis is due both to security losses and to deleveraging related to Basel III and new trading book rules (see below).

Table 3.1. **Banks and broker-dealer total assets (USD billion)**

Year	Banks*	Of which				Broker Dealers	
		OECD Listed Banks	Of which				
			Cash & Interbank Assets	Trading Assets & Derivatives	Loans		Other
2002	47,702	-	-	-	-	3,239	
2003	56,682	-	-	-	-	3,898	
2004	64,495	-	-	-	-	4,678	
2005	63,746	42,797	4,404	18,486	17,261	2,646	5,154
2006	75,149	51,965	4,997	22,983	20,770	3,215	5,861
2007	91,779	64,967	6,473	27,379	25,892	5,224	6,746
2008	94,212	72,318	5,815	30,074	27,481	8,947	9,201
2009	96,793	70,787	6,240	28,455	28,426	7,666	7,934
2010	98,235	71,884	6,583	28,448	28,813	8,040	8,669
2011	100,915	75,564	7,270	30,037	29,320	8,937	9,130
2012	100,857	74,788	8,010	29,170	29,346	8,262	9,450
2013	97,463	70,919	8,457	26,304	29,520	6,639	9,299
2014	90,875	69,438	8,249	26,266	27,981	6,943	9,040**

\* Including the following countries: United States, Turkey, Switzerland, Sweden, Spain, Korea, Slovakia, Portugal, Poland, Norway, Netherlands, Mexico, Luxembourg, Japan, Italy, Israel, Ireland, Hungary, Greece, Germany, France, Finland, Denmark, Czech Republic, Chile, Canada, United Kingdom, Belgium, Austria, and Australia.

\*\* OECD estimate.

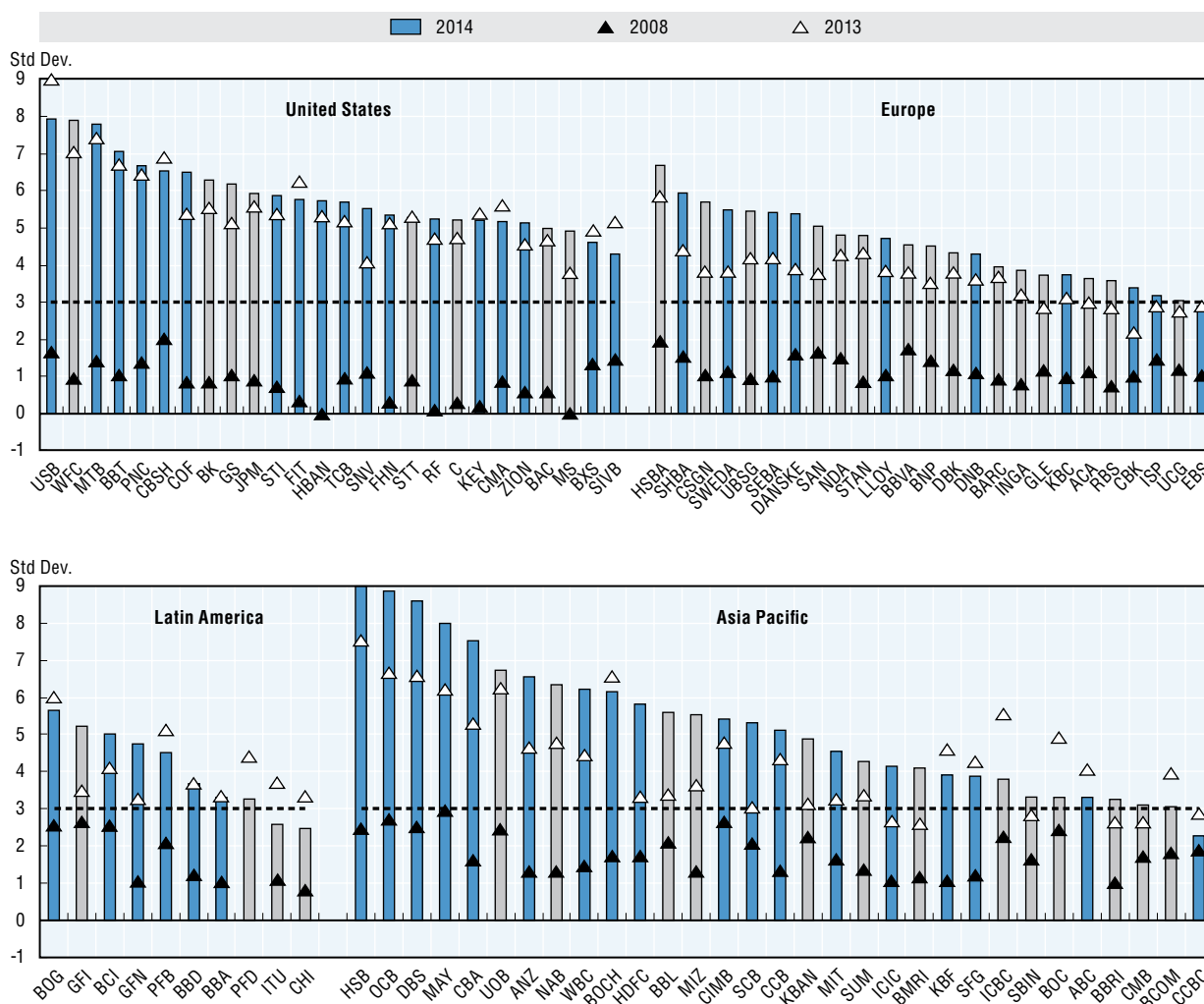
Source: National central banks, Bloomberg; Financial Stability Board, OECD calculations.

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### Banks have become measurably safer

Large Global banks appear to have become safer in the last year. The OECD Secretariat uses the distance-to-default calculation to monitor the safety of banks in the global economy.<sup>4</sup> Figure 3.6 shows listed banks in Bloomberg large regional banking competitive peer indices from the United States, Europe, Asia and Latin America, each identified by a number for confidentiality reasons. The bars show the most recent position. The pale grey bars show the globally systemically important banks (GSIB) as defined by the Financial Stability Board (FSB, 2014). The black-filled triangles show the average position in the 2008 crisis year, and the empty triangles show the position one year ago in 2013. Numbers above 3-standard deviation are a minimum level of safety.<sup>5</sup>

Figure 3.6. Bank distance-to-default: United States, Europe, Latin America and Asia



Note: This figure include all listed banks in Bloomberg large regional banking competitive peers indices from the United States, Europe, Asia and Latin America. GSIBs defined by the FSB (2014) are highlighted in grey.

The distance-to-default indicator is the number of standard deviations away from the default point. To derive the measure, it is assumed that a bank defaults (or is bankrupt) when the market value of assets equals (or is lower) than the book value of debt. The formula to calculate the distance-to-default is derived from the option pricing model of Black and Scholes (1973).

Source: Bloomberg, OECD calculations.

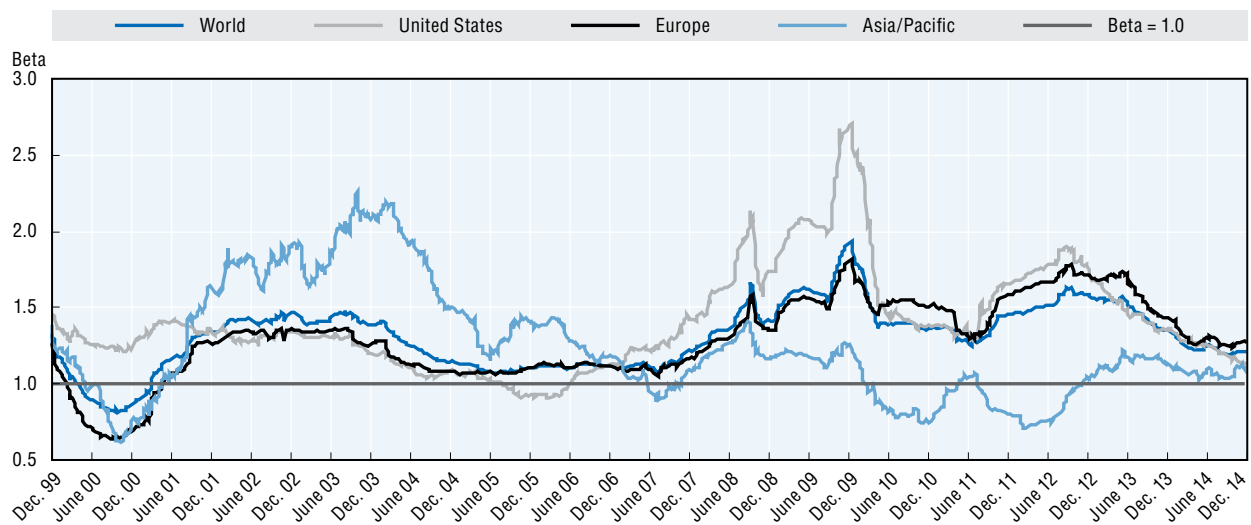
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### **But banks remain very interdependent suggesting reform has not gone far enough**

There is little doubt that the very strong recovery in bank safety is based on the historically unprecedented policies that have been undertaken, and it is unknowable how the distance-to-default would respond to a full monetary policy normalisation in all countries today.

Figure 3.7 shows the OECD Secretariat tool to monitor the progress of reform as it concerns reducing counterparty interdependence risk. It consists of the asset-weighted correlation of each GSIB's stock price to the regional MSCI.<sup>6</sup> A correlation less than 1.0 would be associated with safer less connected banks in the face of the asset price cycle. The Betas rose in an extreme and correlated way during the first phase of the crisis and did so just as easily again in the 2011-12 euro crisis. In 2014 they are not very different to what they were just prior to the crisis. This suggests that the way banks are evolving in response to regulatory reform is not to exit counterparty risk but to shift it into shadow banking affiliates with whom they are linked. Shadow banking system refers simply to credit intermediation involving entities and activities (fully or partially) outside the regular banking system.

Figure 3.7. **Measuring bank interconnectedness (The Global Bank Beta)**



Global Bank Beta is a measure of the correlation of volatility, or systematic risk, of the GSIB's stock in comparison to the market as a whole (the regional index). Beta is used in the capital asset pricing model (CAPM), a model that calculates the expected return of an asset based on its beta and expected market returns.

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### **Post-crisis regulatory change: shadow banking to the fore**

The intermediation of credit outside of regular banking really involves the interplay between institutions that are naturally short of cash and need to borrow it to achieve their objectives and those that are long cash and require greater exposure to securities. Between these sit the broker-dealers (which carry out prime brokerage activities) and custody banks (which provide custody and collateral management services). These are not a part of regular banking, but carry out credit intermediation.

*Prime Broking*: securities borrowing/lending acting as principal; synthetic lending (products based on derivatives including exchange-traded funds that synthetically create equivalent exposures to underlying securities performance); and derivatives clearing. These activities are intermediated with repo transaction funding activities.

*Custody and collateral management*: which includes lending agent activities for securities held in custody and derivatives collateral management activities.

The following sections look first at institutional investors which are typically cash short in the new regulatory environment. It then examines the products these investors seek in the low interest rate and changed regulatory environment. Subsequently, the way in which these trends interact with shadow banking to shift the location of financial system risk is explored.


### **Asset owner growth and portfolio allocations**

The size of the pension fund and insurance industry as measured by the OECD is shown in Table 3.2. Pension and insurance fund growth was strong prior to the crisis, dropped in 2008, and subsequently recovered as equity and bond markets both rallied together. By 2014 the pension and insurance fund totals were similar, at just over USD 28 trillion. The investment fund industry shown on the right of the table is over USD 43 trillion, made up of USD 33 trillion mutual funds, USD 3.7 trillion private equity, USD 2.8 trillion exchange traded funds (ETFs), USD 2.5 trillion hedge funds, USD 0.5 trillion in the (declining) fund-of-funds industry and a smaller amount in Commodity Trading Advisor funds (CTAs)<sup>7</sup>. It is not possible to add pension fund, insurance company and investment funds together, however, since the main clients of the latter are the institutional investors, and this would involve significant double counting.

**Table 3.2. The size of the institutional investor universe: asset owners (USD billion)**

Year	Pension Funds	Insurance Companies	Investment Funds										TOTAL	
			Mutual Funds (Regulated)	Of which				Mainly Private Funds			Hedge Funds	Fund of Funds		CTA
				Equity	Bond & Money Market	Loans	Other	Private Equity Funds	ETF's & ETP's					
2000	12,096	10,846	10,856	4,828	4,151	1,466	411	716	79	237	109	38	12,034	
2001	12,233	10,498	10,600	4,322	4,636	1,268	375	751	109	322	155	41	11,978	
2002	12,551	11,768	10,775	3,604	5,178	1,562	431	767	146	505	204	51	12,449	
2003	14,523	15,354	13,137	5,174	5,557	1,859	547	866	218	826	358	87	15,491	
2004	16,276	17,416	15,120	6,339	6,022	2,046	713	958	319	1,229	629	132	18,387	
2005	17,334	17,426	16,731	7,493	6,165	2,206	867	1,234	426	1,361	754	131	20,636	
2006	19,389	20,222	20,181	9,399	7,381	2,339	1,062	1,694	603	1,713	948	170	25,309	
2007	20,947	22,129	23,400	10,662	8,843	2,662	1,232	2,264	857	2,137	1,192	207	30,056	
2008	18,580	20,200	20,595	6,448	10,163	2,515	1,469	2,270	774	1,458	747	206	26,050	
2009	21,080	22,165	23,961	9,117	10,835	2,429	1,580	2,470	1,158	1,554	556	214	29,913	
2010	23,392	23,333	25,661	10,514	10,847	2,481	1,820	2,737	1,478	1,694	562	268	32,399	
2011	24,116	23,797	25,257	9,635	11,118	2,615	1,889	3,031	1,526	1,710	532	314	32,371	
2012	25,975	25,251	28,148	11,173	12,306	2,654	2,015	3,272	1,949	1,799	501	330	35,998	
2013	27,599	25,493	31,676	14,172	12,783	2,708	2,013	3,620	2,398	2,157	474	331	40,656	
2014	28,398	28,192	33,384	14,487	13,684	2,854	2,358	3,788	2,785	2,479	448	317	43,200	
Projection														
2015	29,190	29,214	34,144	14,840	13,860	2,919	2,525	-	-	-	-	-	-	
2016	30,422	30,780	35,999	15,659	14,536	3,078	2,727	-	-	-	-	-	-	
2017	32,135	32,956	39,138	17,024	15,803	3,346	2,965	-	-	-	-	-	-	
2018	33,917	35,249	42,496	18,484	17,159	3,633	3,219	-	-	-	-	-	-	
2019	35,784	37,683	46,115	20,059	18,620	3,943	3,493	-	-	-	-	-	-	

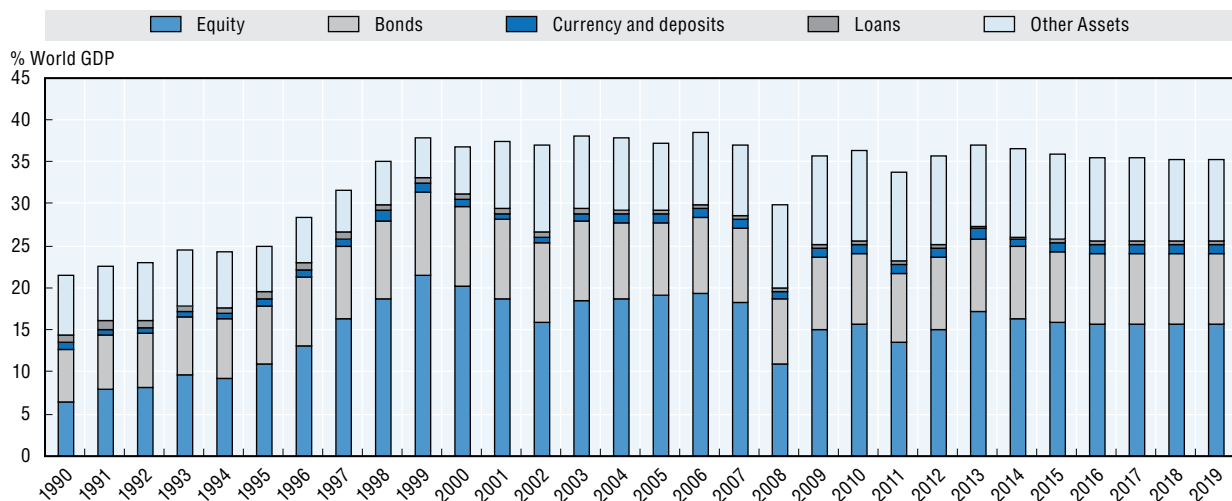
Source: OECD Institutional Investor's Assets Database, [www.oecd-ilibrary.org/finance-and-investment/data/oecd-institutional-investors-statistics\\_instinv-data-en](http://www.oecd-ilibrary.org/finance-and-investment/data/oecd-institutional-investors-statistics_instinv-data-en), 2014 Preqin Global Private Equity Report, ETFIGI monthly newsletter (February 2015), BarclayHedge.

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### Regulated institutional funds

Pension fund projections and asset allocations are shown in Figure 3.8 as a share of world GDP<sup>8</sup>. Over the next five years pension funds are expected to grow 26% from an estimated USD 28.4 trillion in 2014 to USD 35.8 trillion in 2019. Prior to the tech bust pension funds were rising quickly as a share of world GDP, and apparently well on the way to dealing with the problem of longevity risk—assets need to do better than world GDP if the dependency rates are rising due to longevity. This was due to policies which changed saving behaviour as well as to solid pre-crisis returns. Subsequently, however, this asset growth versus GDP has stalled, and is expected to be around 35% of world GDP in 2019.

Figure 3.8. **Asset allocation of pension funds**



Source: OECD Institutional Investor's Assets Database, [www.oecd-ilibrary.org/finance-and-investment/data/oecd-institutional-investors-statistics\\_instinv-data-en](http://www.oecd-ilibrary.org/finance-and-investment/data/oecd-institutional-investors-statistics_instinv-data-en).

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Prospects for insurance companies are shown in Figure 3.9. Over the next five years insurance companies are expected to grow 33% from an estimated USD 28.2 trillion in 2014 to USD 37.7 trillion in 2019. As a share of world GDP a slight recovery to 37% is expected in 2019—it was over 40% in the mid-2000s.

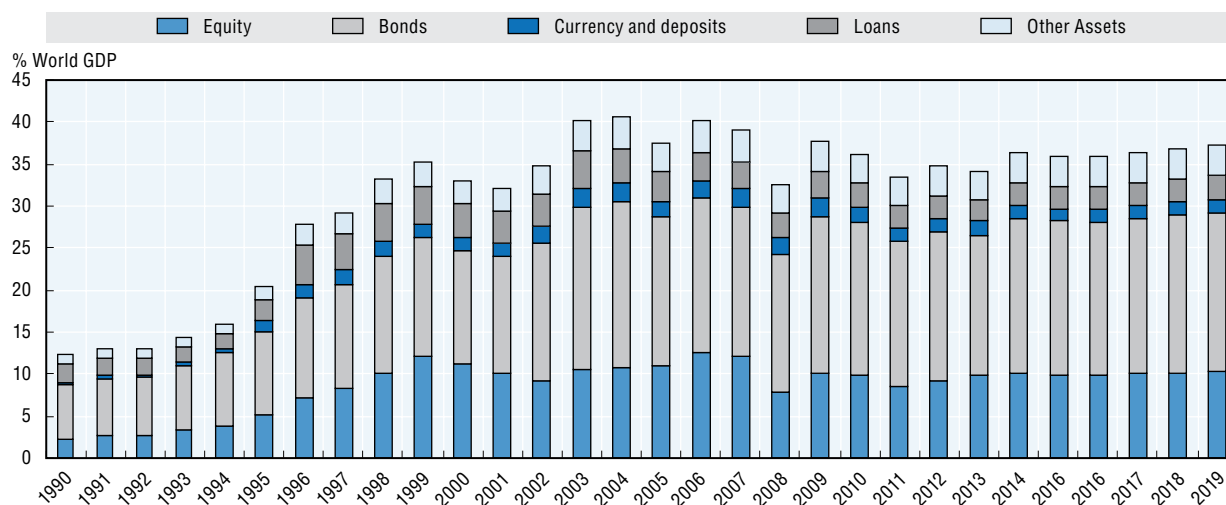
Prospects for mutual funds (which include a lot of the investments for pension funds and insurance companies) are also set out in Table 3.2. Over the next five years mutual funds are expected to grow 38% from an estimated USD 33.4 trillion in 2014 to USD 46.1trillion in 2019 (45% of world GDP).

### Pension funds and insurance companies face a problem

There is a fundamental problem emerging for asset owners with liabilities to meet in a low interest rate world where people are living longer and where companies are not investing in an efficient and productive way.

- If companies do not invest, and prefer to give money back to shareholders via buybacks, or for tax and labour cost reasons allow investment in supply chains to be carried out by EME partners, or engage in merger and acquisition activity which only changes ownership, then innovative investment and the productivity growth needed to underpin the valuation of bonds and equities in the future will be diminished (Chapter 2).

- As older higher-yielding bonds drop out of institutional investor portfolios and are replaced by very low-yielding bonds solvency issues may arise for pension funds and insurance companies, as the valuation of their liabilities rises (Chapter 4).
- The risk becomes that cash from contributions and from dividends and buybacks will be less invested in real assets, and more into leverage and riskier higher-yield and complex products with poor liquidity.

Figure 3.9. **Asset allocation of insurance companies**

Source: OECD Institutional Investor's Assets Database, [www.oecd-ilibrary.org/finance-and-investment/data/oecd-institutional-investors-statistics\\_instinv-data-en](http://www.oecd-ilibrary.org/finance-and-investment/data/oecd-institutional-investors-statistics_instinv-data-en).

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### Asset allocations of regulated funds to broad securities classes

The asset allocations consistent with Table 3.2 and Figures 3.8 and 3.9 for pension funds, insurance companies and mutual funds are shown in Figure 3.10. A number of features stand out:

- Pension funds invest most in equities (on average in the range of 30-60%), and less in bonds, which appear to have declined steadily from around 30% of total assets in 2002 to 26% in 2014. Major asset allocation shifts (either due to market price shifts—not rebalanced—or deliberate portfolio decisions) appear to be between equities and alternative assets (see below).
- Insurance companies hold more in bonds (on average a 40-55% range) and less in equities (a 18-34% range) and a 10% allocation to alternative assets. Assets allocation shifts are mainly between bonds and equities.
- Insurance companies and mutual funds began to participate in the syndicated loan market (including leveraged loans) in the mid-1990s<sup>9</sup>, but soon allowed their allocation to decline as securitised products became more popular (wrongly thought to be more liquid).
- Mutual funds (after the early 1990s) have tended to switch between equity and bonds with no structural bias to either, with a small allocation to alternative assets.

These broad asset strategies have not succeeded in raising the size of funds under management relative to GDP since the mid-2000s, and Chapter 4 demonstrates the liability risks that are posed to pension and insurance companies. This has meant that

asset owners have been increasing their investments in new products that promise better yield and lower risk. To see what is happening it is important to drill down into more granularity as to the products that institutional investors are moving towards inside these broad asset classes.

### ***Institutional investor moves into alternative assets***

To augment returns and diversify the risk after the tech bust in the early 2000s institutional investors began to adopt a 'barbell' strategy<sup>10</sup> of long-only funds at one end and hedge funds and real estate as alternative assets at the other. This was a distinguishing feature of pension funds in particular (Figure 3.10) with such assets in the 12-33% range since 1990 and insurance companies at 10%. The sharp drawdown of equity in the early 2000s and during the more recent crisis were temporary (due to the policy responses), and equity and bond market performances since 2009 have been very strong. Pension funds reduced equity and bond weightings, when in fact both of these asset classes outperformed traditional real estate and fund-of-fund sectors. As it turned out, this held back pension fund performance prior to the crisis.

Figure 3.11 shows the pension and insurance company assets on the right scale versus some of the alternative assets from Table 3.2 on the left scale. One strategy since well before the crisis has been for asset owners to move towards passive (index) funds in their long-only holdings (and away from higher-fee funds that promise but for the most part don't deliver 'alpha' versus a benchmarks)<sup>11</sup>. The almost parabolic growth of ETFs shown in Table 3.2 is a good example of the strength of this trend, with a vast amount also invested with large passive funds provided by Vanguard, Blackrock and others (the impact of the trend to passive on price discovery is discussed in Chapter 7).

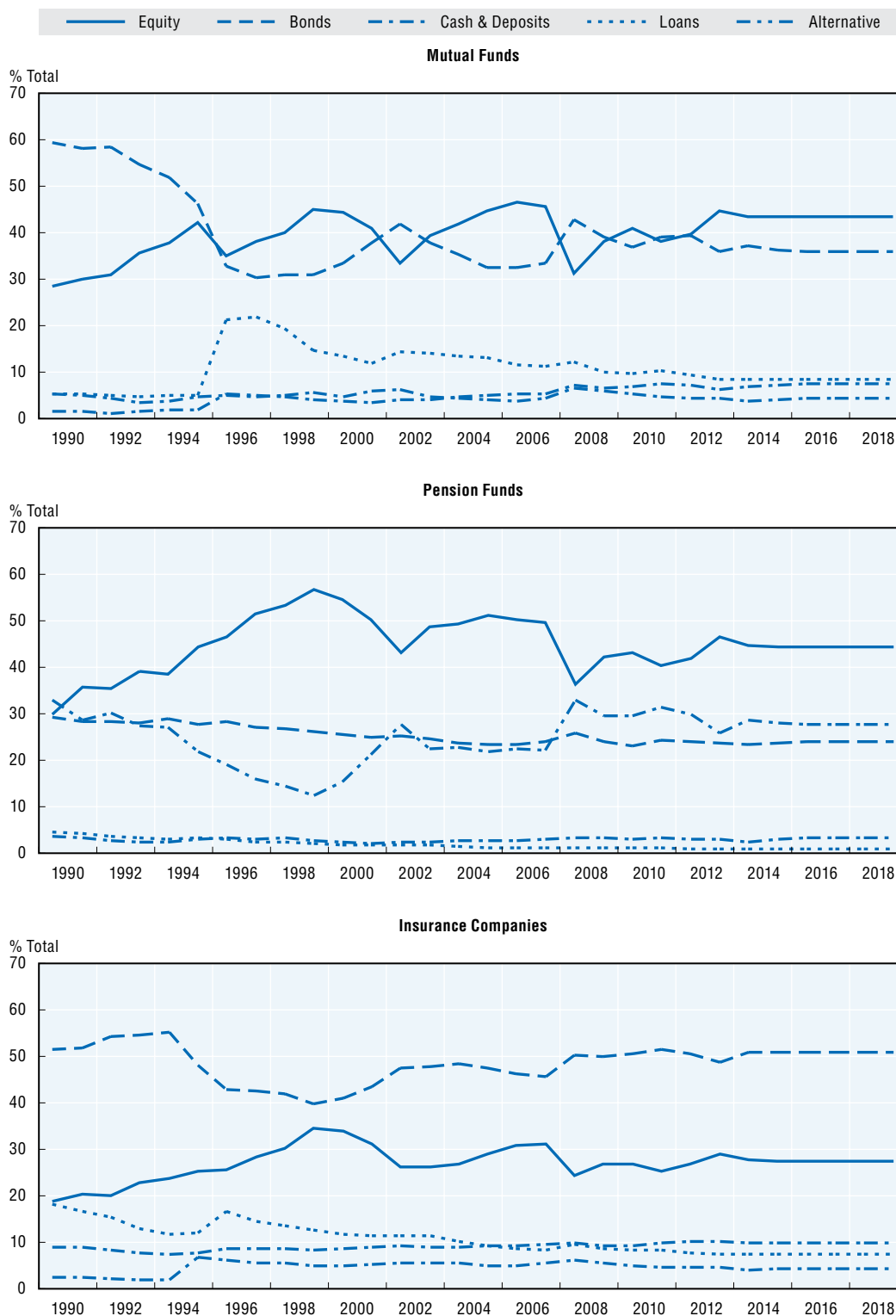
### ***Fund-of-funds fall out of favour***

Since the crisis it is clear that institutional investors have shifted away from general fund-of-fund hedge funds, due to high fees and because performance has been disappointing<sup>12</sup> as illustrated by the reversal of funds under management since the crisis (Figure 3.11). However, total hedge fund investments have been recovering more recently, suggesting that more specific styles have become popular. They are a part of a stream of new forms of investment by institutional investors that are becoming more 'mainstream' alongside traditional bonds and equities. For the hedge fund community the volatile environment during and since the crisis has resulted in the stronger growth of new product styles (shown on the left side of Figure 3.12) and a flattening-out of some less successful ones (on the right side of Figure 3.12).

### ***New funds that promise better yields with less risk***

Hedge funds and private equity are innovating once more with the help of the shadow banking sector (interactions between broker-dealers and prime broking and lending functions; lending agents and custodians; and asset owners themselves). As regulations and rules begin more strongly to tie up liquid assets and increase the costs associated with derivatives (margins, the quality of collateral, segregated accounts, clearing) the sources and uses of funding have had to adjust—with most changes outside of regular insured deposit banking functions.

Figure 3.10. **Asset allocation patterns of mutual funds, pension funds and insurance companies**



Source: OECD Institutional Investor's Assets Database, [www.oecd-ilibrary.org/finance-and-investment/data/oecd-institutional-investors-statistics\\_instinv-data-en](http://www.oecd-ilibrary.org/finance-and-investment/data/oecd-institutional-investors-statistics_instinv-data-en).


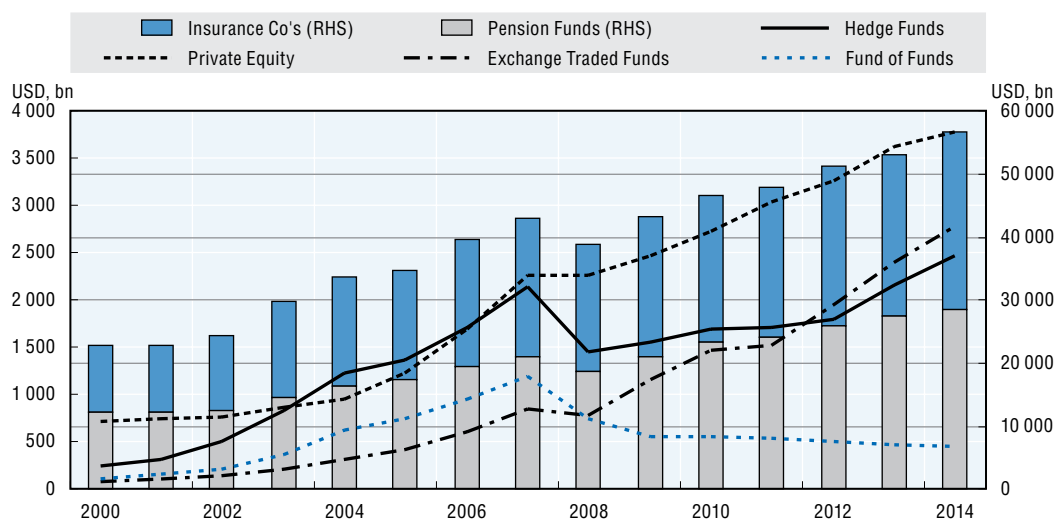
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Figure 3.11. Private funds versus regulated funds



Source: BarclayHedge, 2014 Preqin Global Private Equity Report, ETFGI monthly newsletter (February 2015), OECD calculations.


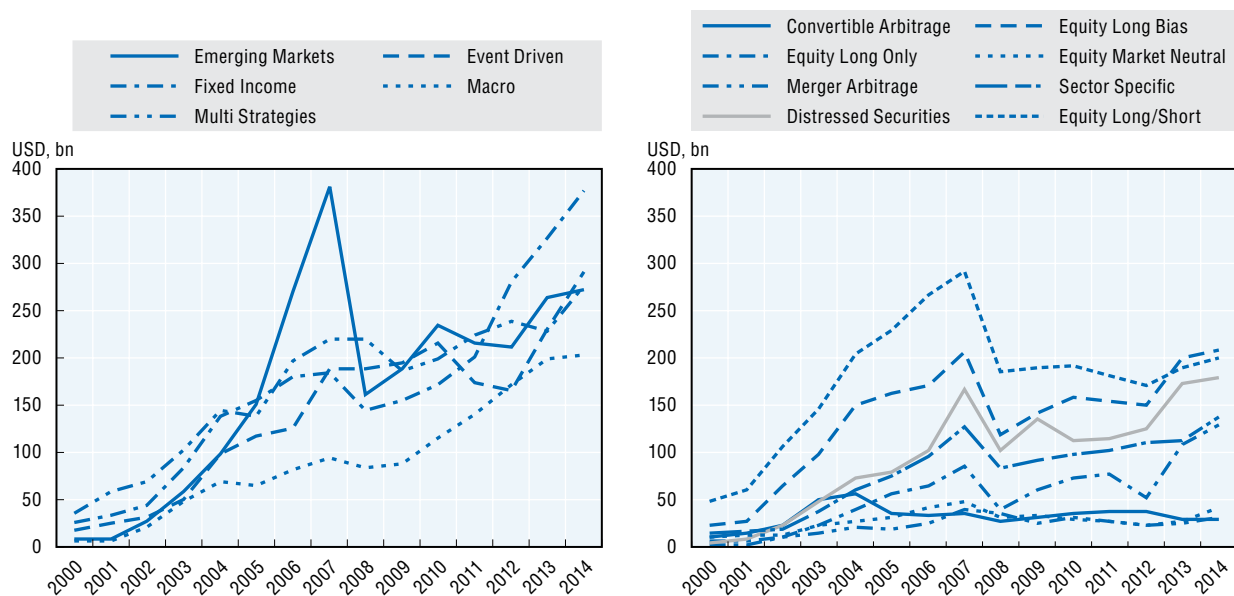
StatLink  <http://dx.doi.org/10.1787/888933209465>

Figure 3.12. Growing hedge fund styles versus slowing ones



Source: Barclays, OECD calculations.

StatLink  <http://dx.doi.org/10.1787/888933209479>

One way to look at this is the descriptions of styles offered by Barclays in Figure 3.12. Another selection of 'alternative funds' provided by investment managers is shown in Table 3.3. This selection of funds has increased by over USD 1 trillion in only 5 years, from USD 1.6 trillion in 2009 to almost USD 2.7 trillion in 2014. The funds in Figure 3.12 (style) and in Table 3.3 (products) of course overlap. More generally these funds (which often promise better yield with less risk) fall into five generic categories:

- **Absolute return funds:** These promise positive returns in both rising and falling markets. They use a wide number of assets and are not tied to traditional benchmarks. They use derivatives and a variety of methods to short securities.

- *Total return funds*: These promise to maximise gains from both income (interest and dividends) and capital gains (securities that appreciate over time), while hedging downside risk typically with derivatives.
- *Risk parity funds*: These focus on the allocation of risk and do so by leveraging up low-risk assets while deleveraging high-risk ones. The whole range of derivatives and repo markets are used in this process.
- *Actively managed exchange traded funds*: these promise low fees and outperformance of indexes.
- *Private equity*: These have traditionally been in the illiquid category, but are now innovating to give their clients products that satisfy the demand for yield.

These are a section of actual funds from the Eikon coverage of products that are complex in structure, and often involve leverage and derivatives. Alternative funds include credit, currency, global macro, equity neutral, event-driven, long-short, managed futures and relative value. Absolute return involves derivatives and short selling techniques to achieve absolute as opposed to relative returns. Hedge funds here include a multitude of complex strategies. Currency-hedged funds involve forwards, swaps and options. Commodity blended funds involve a risk managed basket of currencies instead of a single commodity like gold. Frontier markets are highly-illiquid securities in the MSCI frontier index. Guaranteed funds usually trade off the upside in market performance for varying degrees of downside protection. Real estate funds promise liquidity for highly illiquid underlying assets.

Table 3.3. **A selection of alternative funds (USD billion)**

Date	Alternative Funds	Absolute Return Funds	Hedge Funds & Money Mkt Leverage Funds	Global IG Bond Currency Hedged	High-Yield Bond Currency Hedged	Commodity Blended Funds	Equity Frontier Markets Funds	Guaranteed & Protected Funds	Real Estate & Equity Sector RE Funds	TOTAL
2009	138	125	409	35	201	123	0	186	389	1,606
2010	191	167	465	54	253	183	2	193	449	1,957
2011	223	183	498	64	287	190	1	208	469	2,122
2012	270	234	525	88	383	211	2	224	535	2,473
2013	377	341	468	98	427	124	5	237	595	2,672
2014	376	389	425	92	411	101	6	208	647	2,657

Source: Eikon/Reuters, OECD calculations.

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### **Absolute return, total return and risk parity**

This group of funds feature significantly in Figure 3.12 and Table 3.3. They include strategies that are often called ‘hedge strategies’ in Table 3.3. These might focus on liquid equities and bonds, but seek to outperform by what might be called ‘leveraged beta’. For example a manager might invest in a market or index (beta) and then seek to outperform not by skill and analysis of fundamentals, but simply by writing derivatives to earn income and selling the performance as ‘alpha’. Alternatively, this may involve investments in illiquid equity and credit products offering good yields, while promising to protect against the downside with derivatives. Multi strategies include actively managed futures. Finally, long-short strategies can cover liquid markets, emerging countries, or focus on opportunities that arise out of economic and geopolitical events (macro, multi-strategy, etc.). All of these funds offer structures which promise better yield with less volatility.

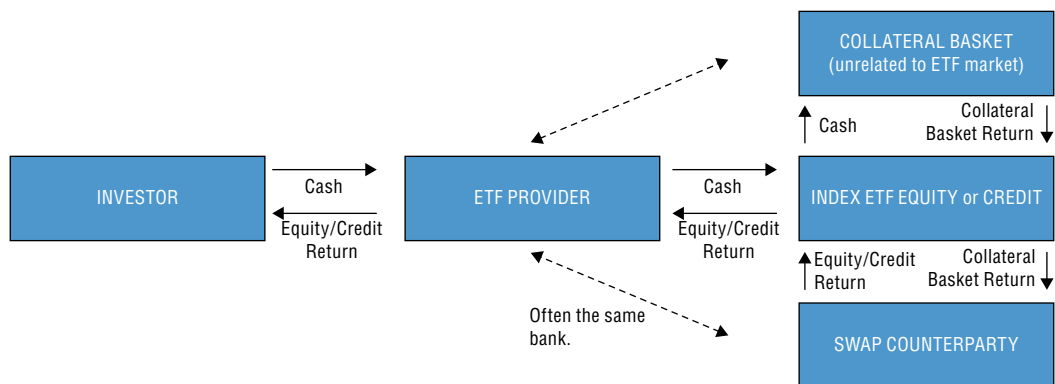
### Exchange traded funds


Exchange traded funds offer daily liquidity (trade on exchanges) while offering exposure to markets the underlying securities of which may not be as liquid: small cap stocks, high-yield credit, and emerging market equity and credit. They have continued to show strong growth in funds under management, because they too have evolved to meet demands in the new environment—and in particular low fees in a lower yield environment. To augment returns these securities may be loaned out, so that the interest earned allows them to outperform while still charging low fees<sup>13</sup>. This activity brings in other players, including: lending agents from a custody bank carry out the loan (and this may involve indemnification); and swap counterparties for synthetic exchange traded funds (which are mainly offered in markets outside the United States). The latter may reference high yield securities and use collateral (that do not necessarily match the reference portfolio), while using swap contracts and options to give returns based on less liquid credit and equity securities (illustrated in Figure 3.13).

Products that offer daily liquidity while referencing illiquid underlying securities may face severe problems were there to be a run of redemptions on this asset class.

Figure 3.13. **Synthetic exchange traded fund (ETF) example**

SYNTHETIC ETF, The Risk Is Even Higher



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### Private equity

Private equity holdings have increased most spectacularly, from USD 963 billion in 2004 to USD 3.5 trillion in 2013—an increase of some 260% over that period (see Figure 3.11). These funds based on limited partnerships, are private and illiquid. Private equity deals have been particularly strong in the low interest rate environment since the crisis as debt is cheap and the demand for alternatives assets is strong. Often the main point of these deals is to transfer risk to lenders and enhance the return on equity for the investors. An under-levered, underperforming company is typically targeted (Blundell-Wignall, 2007)<sup>14</sup>. Debt service tends to rise sharply in the deal phase, profit before tax falls, but due to the tax deductibility of interest after-tax profit falls less and the return for the private equity investors can be very strong.

The business model in recent years has evolved into a broader offering of services for asset owners in the low interest rate environment. For example, private equity deal making with companies and debt enables them to offer credit products with stable ‘cash-plus’ returns. A private equity fund might buy gas storage facilities at various ports around

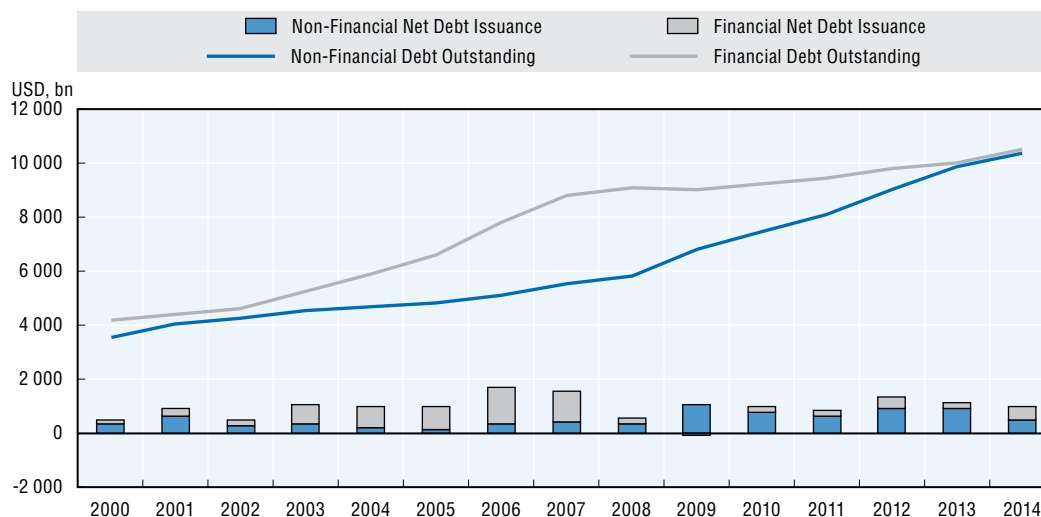
the world, the value of which might rise as global value chains spread, but some of the cash streams can be channelled back to the underlying investors in giving them access to better yield income. So as not to constrain future restructuring options, ‘covenant-lite’ bond contracts are most attractive, and investors competing for yield may be happy to accept this (‘covenant-lite’ trends are discussed below). Investors are attracted to private equity precisely because the offerings allow them to meet both diversification and yield objectives at the same time. The trade-off is that the weight of illiquid products in asset owner portfolios is rising.

### **The nature of corporate bonds being absorbed by institutional investors is changing**


The OECD Secretariat has constructed a comprehensive data set for corporate bond issuance (Çelik et al., 2015)<sup>15</sup> and outstanding amounts (which requires call data to be matched with each individual bond)<sup>16</sup>. The strong demand for corporate bonds (which have better yields than the very low or negative rates on sovereign debt) to feed directly or via alternative products into institutional investor portfolios has led to new trends in this sector. A greater proportion of high-yield and emerging market debt is being issued in the United States dollar market, and the covenant structure of the bonds is changing.

Figure 3.14 shows the issuance of the financial versus non-financial companies. For the former issuance was strong prior to the crisis and subsequently flattened out. The gap in the market left by the banks has led to a greater use of corporate bond markets by the non-financial sector, which picks up more strongly after 2008. In the period from 2008 to 2014 the net outstanding of the non-financial sector bonds rose by USD 4.6 trillion versus USD 1.5 trillion for the financial sector.

Figure 3.14. **Financial versus non-financial corporate bonds**



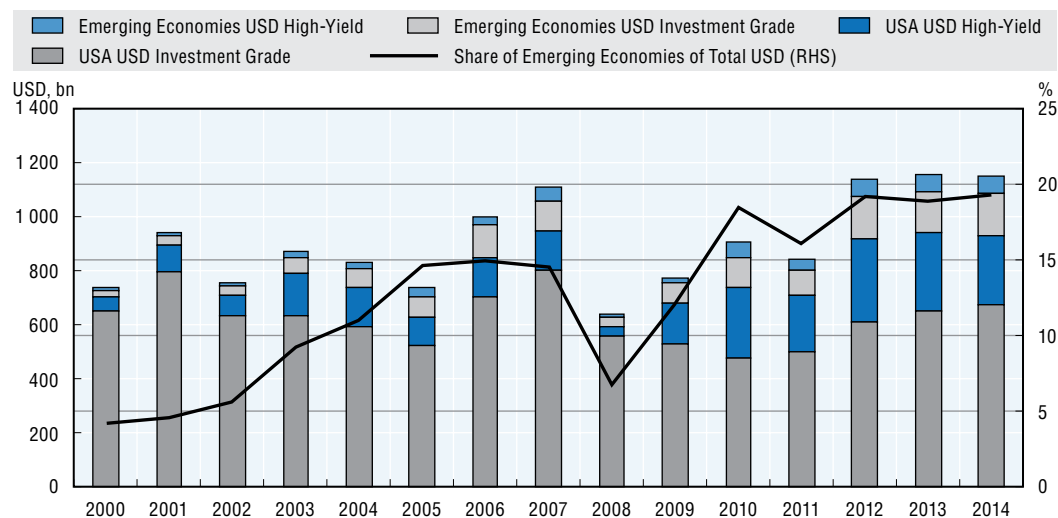
Source: Thomson Reuters, Bloomberg, OECD calculations.

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The issuance data in United States dollar bonds are shown in Figure 3.15. United States issuance of high-grade corporate bonds is relatively stable over the period shown, in the USD 500 billion- USD 800 billion per annum range. However, high-yield debt issuance is moving up rapidly: since its low in the crisis of USD 39 billion it is now in the USD 250

billion to USD 300 billion per annum range. Emerging market issuance in both investment grade and high-yield has increased in the dollar market to around USD 220 billion per annum. The emerging market share of issuance in the dollar market has risen to around 20% in recent years (the broken line in Figure 3.15). As the United States dollar rises some of this debt held in advanced country institutional portfolios may see a rise in defaults, particularly if the dollar overshoots.

Figure 3.15. **US dollar net debt issuance: United States versus emerging and high yield versus investment grade**



Source: Thomson Reuters, OECD calculations.

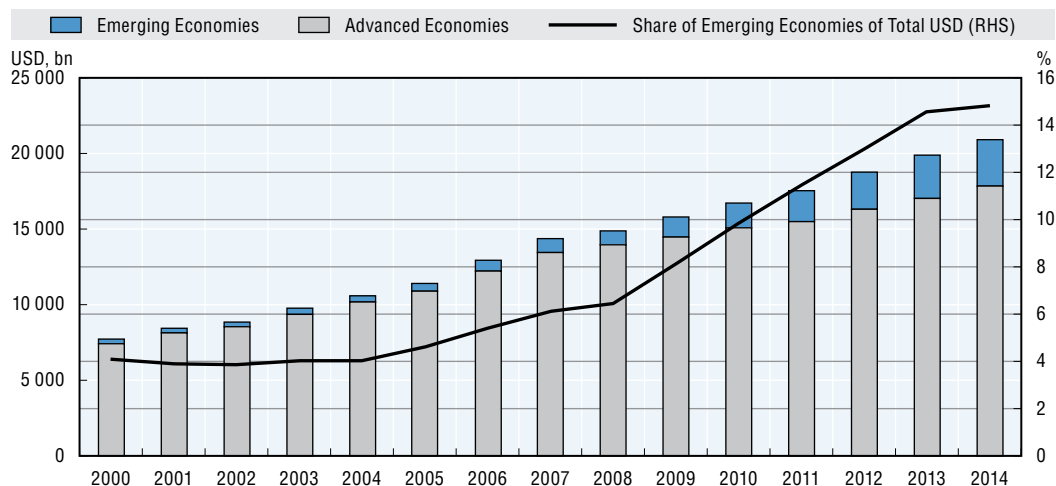
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The outstanding amounts split between advanced and emerging bonds (all currencies) are shown in Figure 3.16. Advanced-country bonds stand at around USD 17.8 trillion in the most recent year, compared to USD 3.1 trillion in emerging market bonds, which are around 15% of the total<sup>17</sup>.


Competition amongst lenders for yield products may give rise to issuers having more scope to reduce covenant protection in bonds with lenders less concerned to resist them. The top panel of Figure 3.17 shows a covenant protection index between 0 (no protection) and 1.0 (high protection) for bonds being issued. The index for high-yield bonds has plunged from around 0.6 to 0.3. The bottom panel shows some of the categories used in the index for high-yield bonds. The reasons behind this appear to be:

- Competition amongst lenders in a low interest rate environment<sup>18</sup>.
- A form of short-termism whereby performance pressure leads to investment manager incentives to sacrifice covenant protection for higher yields because the returns are immediately apparent, whereas ‘covenant-lite risk’ will manifest itself much later (Choi and Triantis, 2012).
- The proliferation of new products that involve securities lending may be facilitating these trends as risk is being continually shifted around and/or is hedged.
- Activist hedge fund actions prior to the crisis (on the basis of the late filing covenants) have led issuers to rephrase provisions in order to avoid such disputes in the future.

‘Covenant-lite’ bonds are less liquid and would require larger price movements in order to find buyers in a stressed environment.

Figure 3.16. **Outstanding amounts of bonds: advanced versus emerging economies**

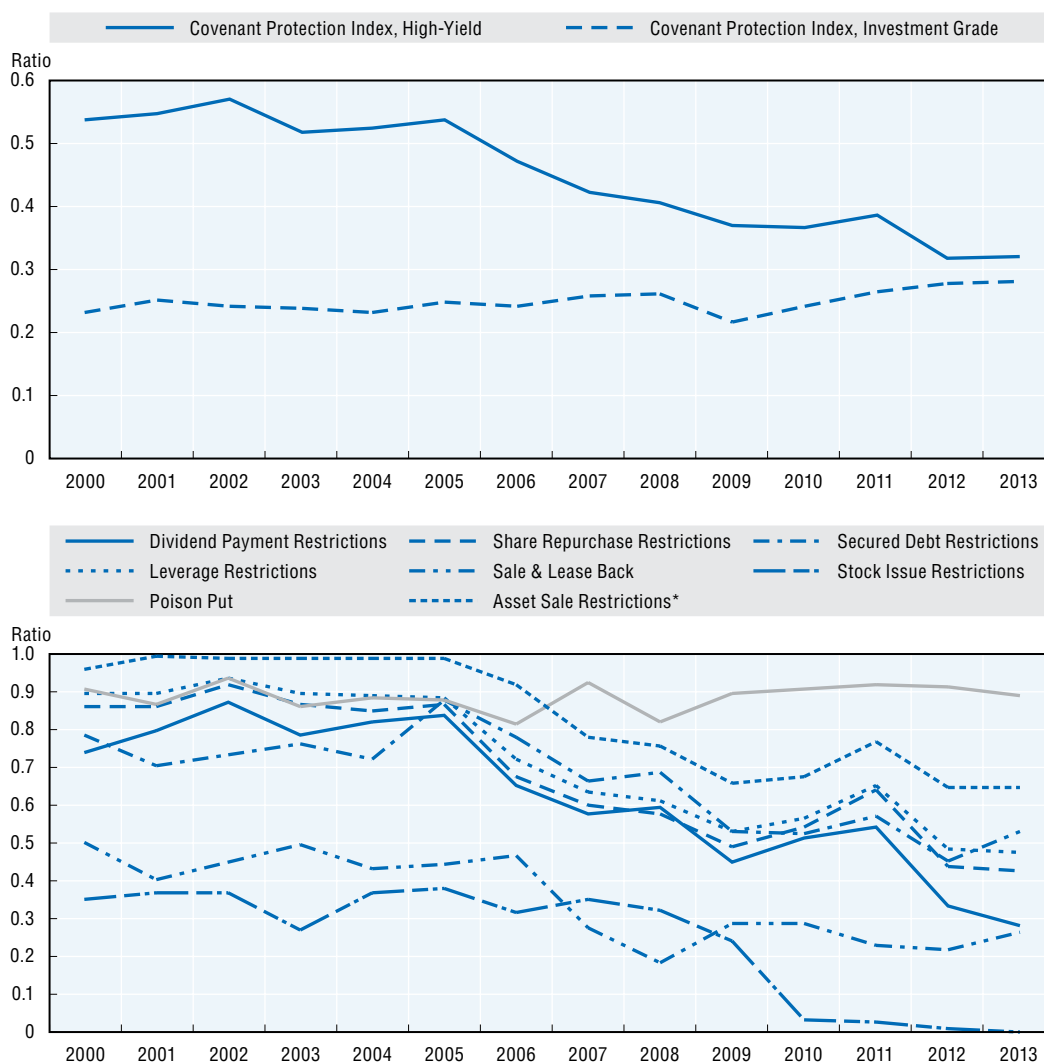
Source: Thomson Reuters, Bloomberg, OECD calculations.

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### **New regulations and greater shadow banking role**

Basel III and new rule writing under the Dodd-Frank Act and the European Market Infrastructure Reform Act (EMIR) are leading to new pressures for business model innovation in the finance sector alongside the pressure on institutional investors to cope with a very low interest rate environment by seeking higher yield and lower volatility. Some of the key regulatory changes include:


- Raising the Basel risk-weighted capital requirements (and a leverage ratio 'back-up') by focusing on (a) the quality of capital, and by (b) adding capital buffers for large banks.
- Adding charges for counterparty credit risk (Basel III) and credit limits (Dodd Frank Rule 165(e)) to unaffiliated companies (> USD 50 billion) of 25% of their capital (plus loan loss reserves) and 10% for companies (> USD 500 billion), which are GSIBs. The credit exposure includes repos, reverse repos, securities borrowing and lending, guarantees (including indemnifications to asset owners from lending agents in the custody business), debt sales and counterparty credit exposure for derivatives.
- Use of centralised clearing counterparties (CCPs) and the increased transparency of swap transactions via swap execution facilities required by Dodd Frank and EMIR rules. EMIR also requires: pre-determined minimums for initial and variation margins on uncleared derivative transactions; higher quality collateral; and more thorough reporting of trades to a repository.
- Adding a liquidity coverage ratio (LCR) which requires high-quality liquid assets (HQLA) equal to 100% of the amount of liquidity needed to cover a stressed environment for 30 days.
- A proposal for a net stable funding ratio (NSFR): essentially 'available' stable funding (e.g. customer deposits) to 'required' stable funding of risk-weighted assets.
- A requirement to separate regular insured deposit banking from aspects of prime broking such as under the Volcker and Vickers rules and a set of policies attempting similar reforms in Europe.

Figure 3.17. **Covenant Protection Index and selected covenant frequency**

Note: The 34 covenant variables in the dataset are matched to the 15 covenant groups. If a bond had at least one covenant that belongs to a certain covenant group, it was considered to have that covenant type. For each covenant type, a binary variable was generated, which is equal to 1 if the covenant type is available in the bond indenture. The binary variables are then summed, divided by 15 to create an index that ranges from 0 to 1, with the ratio 1 denoting the highest possible protection for bondholders. Data from the binary variables frequency in selected sub-categories are shown in the bottom panel.

\* Asset sale restrictions are very highly correlated with cross-default provisions and merger restrictions, the latter two of which are not shown.

Source: Çelik et al., 2015.

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- The Dodd Frank Act and the EMIR Act have mandated changes in the way in which over the counter derivatives are cleared including also the use of HQLA. In Europe cash cannot be used for Undertakings for Collective Investment in Transferable Securities (UCITS) margins, which differs from rules for other institutional products.
- The requirement for money market funds to float their net asset value (NAV) so that 'the buck' can be broken and reported transparently for investors and regulators.
- Greater monitoring, disclosure and dispute settlement procedures with supervisors which raises cost.

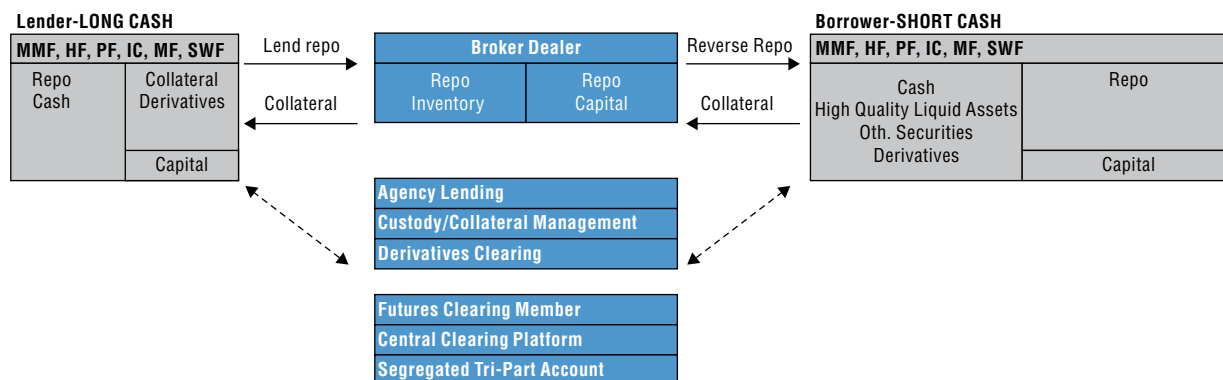
These rules do the following:

- They greatly increase the demand for cash and HQLA to post margin and meet collateral requirements for banks and asset owners.
- They increase the costs of using repos, derivatives, securities lending, indemnifications, etc.
- They apply also to pension funds and insurance companies that are typically very cash poor. While broker-dealers can take advantage of netting rules under Basel III<sup>19</sup> (Blundell-Wignall and Roulet, 2014), institutional investors need to find ways to manage their limited liquid resources.


Institutional investors confronted both with these new rules and the low-return environment need to reconcile their demand for more complex higher-yielding products with their concomitant need to settle margins and collateral with counterparties and broker-dealers. For example, to improve returns they need to become more involved in higher-yielding products (and hence more leverage and risk) and lending programs to reuse their assets. Frequently the most valuable lending activities concern less liquid assets with higher intrinsic value. To take advantage of this they can repo out their lendable securities, and obtain funding (via that market) for some of the higher-yielding hedged products discussed earlier and cash for collateral management. In a sense institutional investors unlock illiquid assets through lending programs and gain exposure to swaps, long-short products, actively managed future and exchange traded funds, etc.—but they also need to manage collateral carefully.

A simplified version of this activity (leaving out all of the complex cross-arrows with futures clearing members, CCPs, lending agents tri-partite agents, and custody banks listed at the bottom) looks something like Figure 3.18.

Figure 3.18. **Shadow banking example: leveraged portfolios and broker-dealers**



Note: 'MMF': money market funds, 'HF': hedge funds, 'PF': pension funds, 'IC': insurance companies, 'MF': mutual funds, 'SWF': sovereign wealth funds.

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The process requires 'long-cash' market participants to deal with 'cash-short' (less liquid) asset owners that are cash short to achieve better-yield goals.

- A short cash fund on the right side of Figure 3.18 carries out a reverse repo with its securities, lending them out and getting access to liquidity. If these are low-yielding HQLA they may do this to get access to cash for exposure to derivatives—the new products noted above—which will require them to post initial margin and pay or receive



variation margins to boost returns. Alternatively they may lend out illiquid securities and get access to term repos with a higher yield.

- The long cash fund, such as a money market or sovereign wealth fund, is the other side of the repo, while the broker-dealer runs a matched book and minimises regulatory charges via netting etc.

### **Risks associated with the shadow banking sector**

- *Counterparty credit risk*: the asset owner takes on the credit risk that the broker-dealer doesn't return the lent securities. Typically this risk has been indemnified by the securities lending agent (but may be dispensed with if the cost is too high due to Basel). The risk to the lending agent is the failure of the broker-dealer, in which case the lending agent would liquidate the collateral and buy the loaned securities on the market to return them to the securities lender. If the collateral is not sufficient then the lending agent would take a hit on its capital. The collateral valuation risk also applies to the broker-dealer vis-a-vis the failure of the cash borrower (security lender) in the transaction.
- *Reinvestment risk*: the cash received via the lending agent on behalf of the cash borrower (securities lender) is invested either in pooled funds (products) or a separately managed account. In the absence of indemnification, the securities lender bears the 'interest rate', 'spread', 'credit' and 'liquidity'<sup>20</sup> risk.
- *Re-hypothecation risk*: when invested in separate accounts the cash can be re-hypothecated in repo transactions with other broker-dealers usually involving a tri-partite lending agent. The securities lender is then also subject to the risk of default by the broker-dealer (or the lending agent if indemnified).
- *Maturity transformation risk*: in all the above examples the financing repo may be shorter than the open position being funded, requiring the repo to be rolled a number of times. However, in a period of stressed market conditions the rolling may not be possible.
- *Clearing and CCP credit risks*: here there is a chain of default risk in the same manner as just discussed, i.e. if the collateral is not sufficient to cover the exposure of the defaulting party (to the clearer in the event of a default by customers; or to customer in the event that the clearer fails and the collateral was not held in a segregated account). The CCP and the exchange based clearer are similarly exposed to each other according to the sufficiency of the collateral held.

### **Potential financial stability risks**

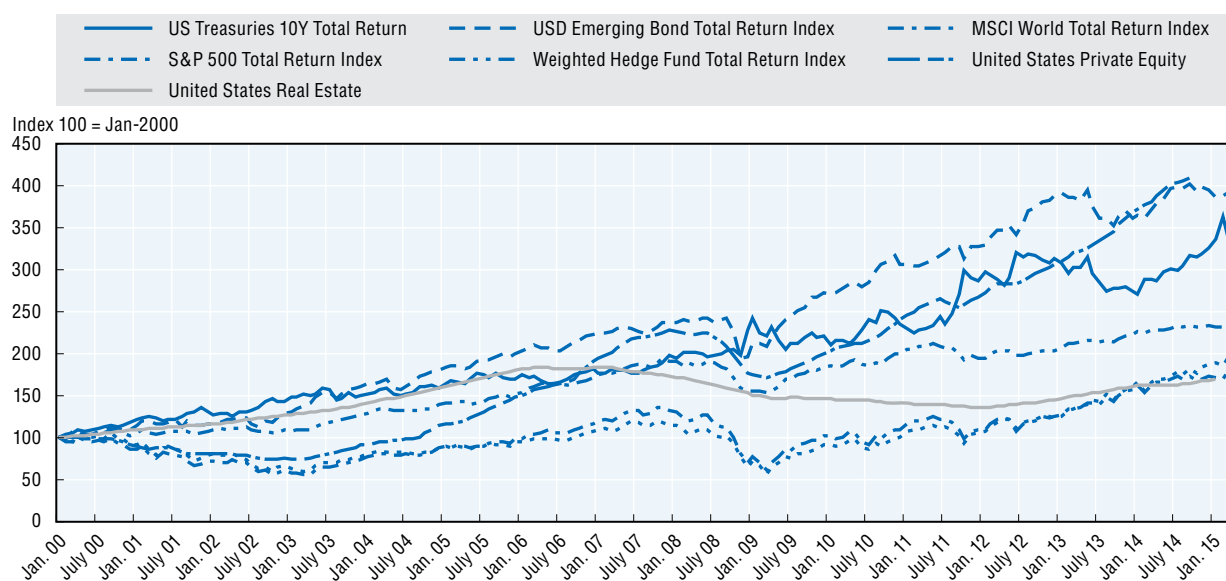
More global financial stability risks may result from the above shadow banking funding mechanisms that create leverage and counterparty exposures with the possibility of the above risk outcomes.

- *Pro-cyclicality*: the asset price leverage process works via haircuts on collateral—as asset prices rise there is more room for leverage and more funding helps asset prices rise further.
- *Loss of confidence in counterparties*: in a period of stress may lead to 'cliff effects' of funding being pulled and fire sales of assets following.
- *Contagion risk*: given the strong interconnectedness in the reuse of collateral the failure of any counterparty would spread quickly through the system. Alternatively, a period of market stress may cause the lending market to dry up and mismatches may cause the failure of some intermediaries to meet their commitments.

## The market risk outlook

The performance of United States equities, global equities, the United States 10-year Treasury bond, emerging market bonds, hedge funds, private equity, and United States real estate are shown in Figure 3.19. Since 2000 the differences in performance are quite extraordinary. Bonds have benefitted from the move to low interest rates and cross-border private sector and official flows discussed earlier. Fixed income and private equity all outperformed the S&P500 and the MSCI over the past 15 years. The United States and global equity markets sold off more in the crisis because stocks are tradable (liquid). The more liquid equity market is something of a benchmark for measuring the extent that the other sectors may exhibit unrealistic valuations. The fixed income returns will presumably become subject to mean-reversion in a world where monetary policy is being normalised and countries like China gradually allow more exchange rate flexibility.

Figure 3.19. **Total return indexes on various asset classes**

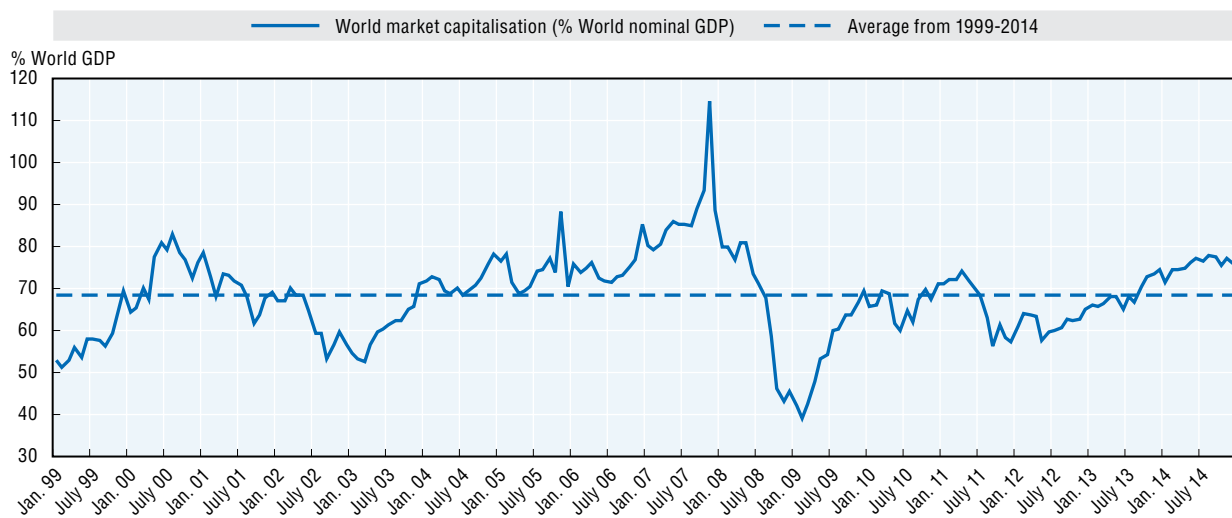


Source: Bloomberg, OECD calculations.

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Figure 3.20 shows the ‘Buffet model’ of equity valuation (Market-cap-to-GDP), but applies it to the entire world, in order to allow for the development of global value chains and the shifting of gravity towards emerging countries and tax havens. Companies don’t have to invest in and receive revenue from their own countries, whereas including them all gets around that issue. The global equity market does not appear to be extremely overvalued, though it is approaching levels where corrections back to the mean do become more likely. What this means for other illiquid sectors that have been the focus of asset owners seeking yield in a zero rate and QE world is unclear—but there would seem to be room for some concern. The equity markets have had the best performance since the worst point in the crisis (late 2008) because they declined the most, and the other asset classes were thought of as more defensive. The S&P total return index has moved up over 150% and the MSCI 119% since 2008. But emerging market bonds, United States Treasuries and private equity appear largely to have matched these returns (with increases over the same period of 102%, 71% and 118%, respectively) notwithstanding their relative strength prior to the crisis.

Figure 3.20. World equity market capitalisation versus world GDP



Source: World Federation of Stock Exchanges, OECD calculations.

StatLink  <http://dx.doi.org/10.1787/888933209558>

### Liquidity illusion

There appears to be some liquidity illusion in these trends. There has been a veritable ‘super-highway’ of inflows into these ‘illiquidity premium’ products: corporate and emerging corporate credit, private equity and alternative assets. The ‘super-highway’ into these products is not a dual carriageway—and when investors want to sell in a stressed environment they may find that there will be ‘accidents’ in the reversal of the flows. While pension and insurance funds would aim to hold assets like corporate bonds to maturity, any major and unexpected price falls would at some point cause them to attempt to sell/redeem (perhaps encouraged by prudential rules). High-yield bonds, as noted earlier, have reduced liquidity due to declining covenant protection, making them harder to sell in a stressed event. Holding to maturity is less of an option for alternative products that require counterparty relationships: they may be forced to redeem via collateral management mechanisms. Private equity and hedge funds have built-in gates that prevent investors from divesting. Exchange traded funds and alternative products that offer daily liquidity through trading in secondary markets when referencing illiquid underlying securities could be severely tested by redemptions in a sell off even where shores must be redeemed for in kind securities rather than cash.

There are a number of triggers for a liquidity crisis in credit creation via shadow banking:

- *Monetary policy normalisation*: One candidate is a rate tightening cycle in the United States—the selloff in the 1994 cycle came out of very less exceptional circumstances than those which present now. Zero rates, QE, and forward guidance gave the markets a one-way bet for years, and now the talk of taking this away puts two-way risk back on the table, and markets don’t seem to have factored this in (given term premia and market performance).
- *Dollar overshooting*: The United States and the United Kingdom were the most preemptive in introducing QE, but now Japan and most recently the European Central Bank have moved to do the same. Currencies have begun to move, and the appreciation of

the dollar has been rapid and fairly extreme by historical comparisons. This means that the dollar bloc countries in Asia (other things given) would rise with the dollar and lose competitiveness versus Japan and Europe. If these countries ease rates and intervene to push currencies down (as opposed to the earlier interventions in the face of inflows to prevent appreciation versus the dollar), leading to a more serious advent of currency wars, capital controls and beggar-thy-neighbour policies.

- *Emerging market crisis*: The slowdown in growth, over-investment and excess borrowing results in a new emerging market crisis: Defaults in high-yield ‘covenant-lite’ United States dollar emerging market corporate bonds (particularly companies that do not have dollar revenues) as the dollar rises and growth slows. Similarly, domestic credit to over-invested (declining return) companies, may result in financial system crises.
- *Europe*: A worst-case risk whereby QE does not manage to solve its growth, banking and deflation problems, and Greece is forced to leave the euro.
- *A falling oil price surprise* that undermines the oil-related and fracking business investment in the United States, and hits the commodity-exporting countries in Australia, Canada, OPEC, Latin America and Africa. The combination of these negative terms-of-trade factors outweighs the relative price and household income gains in net oil-importing countries.
- *Major geopolitical risks* in the Middle East and Central and Eastern Europe eventuating.

## Conclusions

Any of these events would likely trigger asset price volatility, margin and collateral calls within the shadow banking system. Attempts by institutional investors to redeem illiquid corporate bonds and alternative assets in crisis circumstances would amplify volatility. Credit, spread, maturity transformation mismatch, and collateral valuation risks would rise for asset owners, broker-dealers and lending agents. Dollar funding would risk drying up, with basis spreads widening and thereby risking the promulgation of the crisis not only between financial system players but also regions, requiring standing central bank swap arrangements to be triggered alongside a general sliding back into other crisis measures. These sorts of scenarios need to be avoided at all costs. This will require both structural reform in the international financial system and a completion of the financial reform agenda between banks, shadow banks and institutional investors.

### **Structural reform of the international financial system**

At the most basic level many of the problems that asset owners are trying to deal with would not have become issues if structural reform of the global economy had advanced enough to make the achievement of implicit promises more feasible.

- One promise is that the globalisation of supply chains benefits all countries in an equitable way. However, Chapter 2 noted that corporate success in cash flow terms from global re-organisation does not translate into investment in R&D, productivity and innovation, and that the ways in which emerging economies have been drawn into supply chains has led to over-investment, inefficiency and reduced value creation possibilities. The strength of businesses that underpins valuations in bonds and equities will not rise to meet the future needs of asset owners in the absence of reform. To address this situation there is a need for more open competition and responsiveness to market mechanisms. A sensible and gradual sequencing of liberalisation and more exchange rate flexibility consistent with a better balance between investment- and consumption-led-growth in the global economy is essential.

- Countries must be able to use macro-prudential emergency measures which affect cross-border flows on a temporary basis, as and when the economic situation demands it. But such measures should not contribute to a drift towards permanent new cross-border controls aimed at supporting exchange rate management policies at the expense of other countries' trade and growth. This would raise the risk of a currency war outcome. Macro-prudential measures should not become a substitute for taking required monetary policy decisions and structural reforms to promote more competitiveness and dynamic industries<sup>21</sup>.

### ***Pension and insurance reform in the face of longevity risk***

Another promise is that pension funds and insurance companies will be able to meet their future liabilities in a low interest rate environment in the face of ageing populations and the very real issue of longevity risk. This requires policies such as those discussed in Chapter 4. On the structural side a re-negotiation of unrealistic promises including a matching of the retirement age with longevity risk may be important. Facilitating socially-useful financial instruments such as longevity bonds and swaps is important, as is the need for government support for the framework within which the pricing of such products occurs: official longevity indexes on the basis of which private product offerings can be evaluated; standardisation and transparency built around such indexes; and government issuance of longevity bonds to help build liquidity in these markets.

### ***Financial system interdependence and counterparty risk***

The OECD Secretariat has long argued that the greatest risk to financial stability is interdependence and counterparty risk the costs of which outweigh the alleged benefit of a lower cost of financial intermediation. This latter assertion is strange to say the least:

- The financial sector of the S&P500 in the United States was a sizeable 9.4% of all listed-company earnings in 1990 and rose to 18.3% by 2007. Following the post-crisis recovery this has become 21.7% in 2014.
- In Europe the financial sector of the STOXX was a costly 20.8% of all listed company earnings in 1990 and rose to 33.1% by 2007. With post-crisis recovery it has reached 28.7% in 2014.

These large shares reflect costs that are borne by the non-financial sector. The financial sector earnings share seems largely impervious to regulatory change, while interdependence risk remains (Figure 3.7). The policy that will best address this risk is a clear separation of regular retail banking, prime broking and custody and collateral management services so that losses in any one business in the group do not risk the capital of another. In this respect the Volcker rule, Vickers and European legislation did not go far enough. Indeed banks are pushing back on regulation of their business models and are promoting a unified bank services model, arguing that they are best placed to manage collateral for institutional investors since it is too costly for them to buy the teams to do it themselves<sup>22</sup>.

The Dodd-Frank Act required insured banks to trade risky swaps in separate swap execution facilities to which federal assistance would be forbidden. Banks succeeded in lobbying for a large number of exceptions and, most recently, succeeded in removing all but one type of swap transaction from the required list. In Europe the lobbying against the sensible 'Barnier' separation proposals is quite intense.

Other measures that could reduce counterparty risk without directly separating businesses include:

- *Improve transparency*: via more granular mark-to-market data reporting by shadow banking activities—notably derivatives, collateral and pricing. This would help financial market participants and supervisors to deal with collateral valuation risk.
- *Establish minimum percentages of cash*: to be held in short-term deposits in high-quality institutions or in Treasury securities or overnight repos for all broker dealer and custody/lending activities (a sort of LCR for shadow banking). This would help address maturity transformation risks. Such a rule could be accompanied by weighted-average maturity and concentration limits. Regular stress testing might also help.
- *Limit the reuse of cash in repo markets*: this addresses re-hypothecation risk. One option to consider is limiting re-hypothecation to uses purely for a client's own financing of long positions and the covering of their shorts. It should not be used for the broker-dealer's own account.
- *Set minimum capital requirements for CCP risk*: this would address counterparty credit risk. Designing the rule to prevent competition between clearers on the basis of margin requirements (which would reduce safety) would support this approach.
- *Establish dealer-of-last-resort facilities*: as recently announced by the Bank of England (Bank of England, 2014). This goes in the opposite direction of the swap push-out rule, but has increased merit if full business model separation is excluded. This addresses liquidity crises amongst counterparties and related failures. The conditions under which this would be used as a backstop would need to be narrow (and possibly carry penalties) to avoid the mispricing of risk.

### Notes

1. Large surpluses and deficits are mixed between advanced and emerging countries. Germany for example has a large surplus. Many EMEs have deficits.
2. See the discussion of efficiency also in Chapter 2. Huang and Wang show that financial repression inhibited growth by 3-3.6% in 1978 and by 1.7-2.1% in 2008. They argue that growth was hurt by the inhibition of financial development.
3. China has actually been making some steady progress - See Huang, Y. and X. Wang (2010). They show an index of financial repression based on principal components analysis of measures of all the above factors. In 1978 their measure was the maximum of 1.0 for highest repression and this fell to the 0.5 to 0.6 range by 2008.
4. The distance to default is a measure that uses a combination of bank reported data, and market information to calculate the number of standard deviations a bank is from the default point, where the market values of assets equals the book value of liabilities. See Blundell-Wignall and Roulet, C. (2014).
5. Banks above 3-standard deviations prior to the crisis managed to remain just above the default point of zero during the crisis.
6. Each bank's individual beta to the regional MSCI for a rolling 1-year window is calculated. These are aggregated with the 1-year rolling asset weights of that bank in total bank assets.
7. CTAs operate like a hedge fund using managed futures.
8. The estimates are based on forecasts of world GDP by the OECD, the return assumptions in Chapter 2, and the VIX index which is assumed to return to its historical average from the current low levels.

9. As a consequence of two events: (a) Moody's and S&P began to issue loan ratings in 1995, and in 1994 the Fed Funds rate rise and related bond sell-off began. Since loans outperform bonds in a rate rising environment there was a marked shift towards the latter and out of bonds.
10. Holding long-only products at one end, and private alternative funds at the other with the analogy to a weight lifter's barbell.
11. Traditional funds management establishes a benchmark, e.g. the Morgan Stanley Capital Index (MSCI), and have a process that tries to outperform the market (benchmark)—the market "beta" of their fund is the correlation to the benchmark (the return they would have got anyway) and the alpha is the outperformance over and above the return they got due to beta.
12. In fact these funds have an extra layer of fees, after which the blending of styles leads to little more than balanced-fund-like returns.
13. Market estimates that 21% of lendable securities were utilised in this way in early 2014.
14. For a discussion of traditional pre-crisis deals see Blundell-Wignall (2007).
15. This study focuses on the issuance data.
16. Essential as bonds are often called before their maturity date and the gross issuance data cannot be simply cumulated.
17. This rising share of emerging markets is entirely consistent with the analysis of flow borrowing based on income statements of individual companies in Chapter 2.
18. The Bank of England has recently noted this in a British context: see Bank of England (2014), Trends in Lending, October.
19. Banks have a huge opportunity to optimise under Basel Regulatory Framework, as cross-product netting is permitted within netting pools—building an incentive for even more concentrated derivatives trading banks. See Antolin et al. (2011), Office of Financial Research (2014), and Pozsar (2015).
20. This arises where the callable cash loan is invested in longer-term assets.
21. In the 1950s-1970s what is now called macro-prudential was then the status quo of a sector-based approach to monetary policy: capital flow controls, managed exchange rates, shifts in required bank reserves and liquid government security minimums, interest rates and credit ceilings for particular sectors, and the like. This approach did not work for the collective whole, and had to be abandoned in favour of deregulation.
22. See, for example, Citi Investor Services (2014).

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## ANNEX 3.A1

## Statistical tables and supplementary data

Table 3. A1.1. Outstanding corporate bonds

	USD billion														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>World</b>	<b>7,734</b>	<b>8,468</b>	<b>8,881</b>	<b>9,749</b>	<b>10,579</b>	<b>11,445</b>	<b>12,935</b>	<b>14,353</b>	<b>14,892</b>	<b>15,795</b>	<b>16,704</b>	<b>17,515</b>	<b>18,806</b>	<b>19,915</b>	<b>20,936</b>
Non-financial	3,549	4,028	4,251	4,525	4,689	4,813	5,132	5,511	5,820	6,790	7,491	8,067	8,992	9,880	10,408
Financial	4,185	4,440	4,630	5,225	5,889	6,633	7,804	8,842	9,072	9,005	9,213	9,448	9,814	10,036	10,528
Investment grade	6,974	7,665	8,055	8,831	9,560	10,350	11,704	13,038	13,671	14,478	15,134	15,790	16,799	17,594	18,375
High yield	760	803	826	918	1,019	1,095	1,231	1,315	1,221	1,316	1,570	1,725	2,007	2,322	2,561
<b>Advanced economies</b>	<b>7,417</b>	<b>8,136</b>	<b>8,537</b>	<b>9,355</b>	<b>10,149</b>	<b>10,916</b>	<b>12,236</b>	<b>13,470</b>	<b>13,927</b>	<b>14,505</b>	<b>15,060</b>	<b>15,503</b>	<b>16,365</b>	<b>17,011</b>	<b>17,832</b>
Non-financial	3,387	3,851	4,059	4,311	4,457	4,529	4,788	5,086	5,315	6,064	6,559	6,943	7,683	8,279	8,779
Financial	4,030	4,284	4,478	5,045	5,692	6,387	7,448	8,384	8,613	8,441	8,501	8,560	8,683	8,732	9,053
Investment grade	6,741	7,416	7,793	8,528	9,223	9,938	11,140	12,322	12,866	13,351	13,690	14,010	14,634	15,011	15,629
High yield	675	720	745	827	926	979	1,095	1,148	1,061	1,154	1,370	1,494	1,732	2,000	2,203
<b>Emerging markets</b>	<b>317</b>	<b>332</b>	<b>343</b>	<b>394</b>	<b>430</b>	<b>529</b>	<b>700</b>	<b>883</b>	<b>965</b>	<b>1,289</b>	<b>1,644</b>	<b>2,012</b>	<b>2,441</b>	<b>2,904</b>	<b>3,104</b>
Non-financial	162	177	191	214	232	283	344	425	505	726	932	1,124	1,309	1,601	1,629
Financial	155	155	152	180	198	245	356	458	460	564	711	888	1,132	1,303	1,475
Investment grade	232	249	262	304	337	412	564	717	805	1,127	1,444	1,781	2,166	2,583	2,746
High yield	85	83	81	91	93	117	136	166	160	162	200	231	275	322	358
<b>United States</b>	<b>3,299</b>	<b>3,685</b>	<b>3,898</b>	<b>4,152</b>	<b>4,388</b>	<b>4,545</b>	<b>4,957</b>	<b>5,470</b>	<b>5,519</b>	<b>5,548</b>	<b>5,690</b>	<b>5,748</b>	<b>6,036</b>	<b>6,427</b>	<b>6,844</b>
Non-financial	1,974	2,248	2,381	2,519	2,593	2,603	2,717	2,874	2,945	3,152	3,417	3,570	3,914	4,245	4,566
Financial	1,325	1,437	1,517	1,633	1,795	1,941	2,239	2,596	2,574	2,396	2,273	2,178	2,123	2,182	2,278
Investment grade	2,724	3,071	3,262	3,451	3,624	3,743	4,081	4,553	4,681	4,666	4,644	4,628	4,748	5,016	5,364
High yield	575	614	636	701	764	801	875	917	838	882	1,046	1,120	1,288	1,410	1,480
<b>Europe</b>	<b>2,978</b>	<b>3,220</b>	<b>3,358</b>	<b>3,818</b>	<b>4,308</b>	<b>4,811</b>	<b>5,572</b>	<b>6,161</b>	<b>6,441</b>	<b>6,788</b>	<b>6,970</b>	<b>7,172</b>	<b>7,470</b>	<b>7,497</b>	<b>7,704</b>
Non-financial	679	831	904	1,019	1,095	1,148	1,280	1,388	1,511	1,928	2,053	2,179	2,447	2,604	2,731
Financial	2,299	2,389	2,454	2,799	3,213	3,663	4,292	4,773	4,930	4,859	4,917	4,993	5,023	4,893	4,973
Investment grade	2,929	3,167	3,302	3,747	4,211	4,701	5,430	6,012	6,294	6,597	6,742	6,903	7,146	7,051	7,134
High yield	48	53	56	71	97	110	142	149	146	190	228	269	324	445	570
<b>OECD Total</b>	<b>7,429</b>	<b>8,139</b>	<b>8,537</b>	<b>9,331</b>	<b>10,115</b>	<b>10,879</b>	<b>12,199</b>	<b>13,434</b>	<b>13,892</b>	<b>14,473</b>	<b>15,028</b>	<b>15,485</b>	<b>16,320</b>	<b>16,981</b>	<b>17,780</b>
Non-financial	3,391	3,848	4,058	4,307	4,460	4,539	4,799	5,100	5,328	6,084	6,588	6,993	7,726	8,341	8,847
Financial	4,038	4,291	4,478	5,024	5,656	6,340	7,400	8,334	8,563	8,389	8,440	8,493	8,594	8,640	8,933
Investment grade	6,727	7,396	7,769	8,486	9,178	9,893	11,099	12,287	12,835	13,322	13,656	13,986	14,575	14,970	15,561
High yield	702	743	768	845	937	986	1,100	1,148	1,057	1,151	1,372	1,500	1,745	2,011	2,219

Note: Corporate bonds issuance data obtained from Thomson Reuters New Issues Database and call date data obtained from Bloomberg. Outstanding amounts are calculated based on annual net issuance amounts and actual call data matched with individual bond. Data exclude convertible bonds, preferred shares, sukuk bonds and bonds with an original maturity less than 1 year or an issue size less than USD 1 million. The country breakdown was carried out based on the domicile country of the issuer.

Source: Thomson Reuters, Bloomberg, OECD calculations.


StatLink  <http://dx.doi.org/10.1787/888933210416>

Table 3. A1.2. **Banks Distance-to-Default**

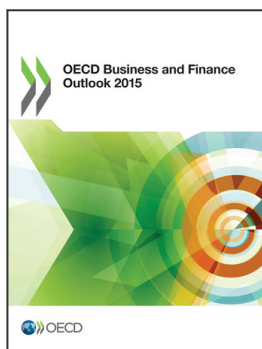
	Number of standard deviations away from the default point														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>All Banks</b>	<b>2.91</b>	<b>2.78</b>	<b>2.50</b>	<b>3.52</b>	<b>5.25</b>	<b>6.20</b>	<b>5.38</b>	<b>3.96</b>	<b>1.26</b>	<b>1.33</b>	<b>2.88</b>	<b>2.64</b>	<b>3.50</b>	<b>4.16</b>	<b>5.05</b>
United States	2.47	3.00	2.78	4.49	6.74	7.50	7.23	4.04	0.79	0.56	3.08	2.36	3.54	5.26	6.15
Europe	3.07	2.87	2.46	3.50	5.25	6.23	4.97	4.18	1.26	1.07	2.32	1.85	2.34	3.62	4.57
Asia/Pacific	3.15	2.27	2.32	2.41	3.40	4.53	4.47	3.24	1.71	2.44	3.84	4.03	5.02	4.27	5.13
Latin America	2.40	1.94	1.82	2.84	3.00	3.22	2.59	3.04	1.25	2.26	3.33	2.94	3.47	3.66	3.46
<b>GSIBs</b>	<b>2.92</b>	<b>2.65</b>	<b>2.32</b>	<b>3.37</b>	<b>5.30</b>	<b>6.33</b>	<b>5.43</b>	<b>4.01</b>	<b>1.20</b>	<b>1.16</b>	<b>2.74</b>	<b>2.33</b>	<b>3.02</b>	<b>4.03</b>	<b>4.96</b>
United States	2.43	2.80	2.61	4.32	6.75	7.62	7.11	4.01	0.75	0.56	3.10	2.29	3.35	5.09	6.04
Europe	3.16	2.82	2.46	3.52	5.33	6.38	5.10	4.18	1.26	1.13	2.32	1.87	2.35	3.67	4.60
Asia/Pacific	2.89	1.74	1.53	1.41	2.63	3.75	3.80	3.12	1.65	2.15	3.80	3.88	4.54	3.72	4.59
<b>Other Large Banks</b>	<b>2.90</b>	<b>3.18</b>	<b>3.11</b>	<b>4.03</b>	<b>5.07</b>	<b>5.69</b>	<b>5.20</b>	<b>3.78</b>	<b>1.46</b>	<b>1.76</b>	<b>3.22</b>	<b>3.27</b>	<b>4.38</b>	<b>4.37</b>	<b>5.22</b>
United States	2.63	3.83	3.48	5.25	6.65	6.93	7.86	4.20	1.01	0.57	2.98	2.71	4.50	6.13	6.71
Europe	2.78	3.04	2.43	3.42	4.92	5.43	4.35	4.19	1.28	0.85	2.31	1.73	2.27	3.39	4.46
Asia/Pacific	3.35	3.17	4.14	4.27	4.65	5.73	5.29	3.35	1.76	2.70	3.88	4.13	5.33	4.57	5.40
Latin America	2.40	1.94	1.82	2.84	3.00	3.22	2.59	3.04	1.25	2.26	3.33	2.94	3.47	3.66	3.46

Notes: This table includes all listed banks in Bloomberg large regional banking competitive peers indices from the USA, Europe, Asia and Latin America. GSIBs, as defined by the FSB (2014), are highlighted in grey.

The distance-to-default is a measure that uses a combination of bank reported data, and market information to calculate the number of standard deviations a bank is from the default point, where the market values of assets equals the book value of liabilities.

Source: Bloomberg, OECD calculations.

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