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NEW APPROACHES TO ECONOMIC CHALLENGES (NAEC): THE FINANCIAL STREAM
NEW APPROACHES TO ECONOMIC CHALLENGES (NAEC):

THE FINANCIAL STREAM

Abstract

This monograph pulls together the work on financial issues carried out by the Directorate for Enterprise and Financial Affairs over the past two years, in connection with the New Approaches to Economic Challenges (NAEC) initiative. The financial stream of the NAEC initiative seeks to address several policy issues, including: the trend towards greater interdependence of the global economy, mostly due to the opening of trade and investment; the rise of the digital economy; financial deregulation and innovation, which has raised the interconnectedness of financial institutions; ongoing changes in technology and innovations in the trading of securities; long-term trends, such as ageing populations and longevity risk; the rise in the importance of institutional investor; the mismatch between long-term investment (including needed infrastructure) and corresponding financial products with suitable investment horizons; the rise and relative size of emerging markets in the global economy, with different policies towards openness; and the rise in the international activeness of state-owned enterprises and global mergers and acquisitions. These developments combined to contribute to the 2008 crisis in one form or another and/or have led to structures and institutions that might pose problems for effective price discovery, resource allocation, financial stability and economic growth unless properly addressed. The discussion and analytical evidence of the NAEC financial stream is set out in a horizontal framework under the following headings:

I. Introduction
II. An Overview of Complexities and Interdependencies
III. Framework Conditions for Strengthening the Global Financial and Competitive Product Market Landscapes
IV. Designing and Building Institutions
V. Improving Price Discovery in Financial Markets

1 This paper is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and the arguments employed herein do not necessarily reflect the official views of OECD member countries. Most of the work in this monograph has been discussed in some form in the OECD Committees served by the Directorate for Finance and Enterprise Affairs, namely: the financial markets, insurance and private pensions, corporate governance, competition, and investment committees. This work is in the spirit of new data, methods and analytical frameworks being explored through the NAEC project and the overall pursuit of “new approaches”; hence the analysis and conclusions of this monograph do not necessarily reflect in all cases a consensus view of the Committees that have discussed the results.

2 The NAEC initiative was launched in 2012 as an organisation-wide reflection on the roots and lessons from the crisis with the aim to catalyse a process of continuous improvement of the OECD analytical frameworks and policy advice.
I. Introduction

The New Approaches to Economic Challenges (NAEC) initiative has as one of its aims the analysis of the diverging trends and conflicts in the structure of the world economy that have built up over decades and ultimately resulted in the 2008 crisis. This crisis in all of its aspects was foreseen by very few and only some of the measures to deal with it have been coordinated internationally. However, the growing complexity and interdependence of markets, trade and policy making requires a careful rethinking of the underlying structures and practices, if new problems are to be avoided. The analysis must proceed, by necessity, in phases. Understanding the causes of the crisis, as opposed to only its symptoms, is critical, and this has been given priority.

By definition the financial system must be an effective intermediary between savers and investors in a non-distorting utility-like way. To fulfil this goal, it should not be in a position to absorb monopoly-like rents that go beyond this facilitation role, distorting in the process the income distribution process, or to attain a position of interconnectedness whereby its risk-taking losses might have to be periodically socialised.

Some of the key structural trends that conditioned the emergence of the crisis arose in unexpected ways, including by the opening up of the world economy to trade and cross-border investment in the post-War period; the advances in digital technology; deregulation and financial innovation; rising longevity and ageing populations; the rise of the emerging markets’ share of the global economy, and the need for mutually-reinforcing stability to promote long-term global growth. These long-term trends have fundamentally changed the structure of the world economy, and while many of them cannot and indeed should not be reversed, the regulatory framework, business models and institutional structures within which they develop must be compatible with the stability, efficiency and equity objectives of society. The crisis measures taken to date have not resolved all of these fundamental tensions in the global economy. New thinking is required to address the most fundamental and structural causes of the crisis, which is the primary objective of this Monograph. This text is not meant to be a comprehensive analysis of all policies that merit review, either to address transitional social problems or to deal with the challenges associated with achieving a more inclusive and sustainable growth; these are dealt in other streams of the NAEC project.

The NAEC project aims to bring new approaches to understanding these long-term trends, analysing them and thinking about policy alternatives. The project seeks to gather new data and information, reviewing it under new or improved methods and analytical frameworks. Some of this NAEC work has already contributed to policy thinking while new measures were being undertaken\(^3\), and some of the suggestions that go beyond the current responses will continue to do so in the future as the on-going need for adequate and globally-consistent reform of the financial system proceeds.

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\(^3\) For example Blundell-Wignall, Wehinger and Slovik (2009), and follow up papers of this work stream on bank business models under NAEC. This is quoted in both the Vickers interim report Independent Commission on Banking (2010) and in European Parliament votes favouring bank separation, see EU (2013). Schich and Lindh (2012) is also quoted in EU (2013). The OECD has been called upon to give evidence in the European Parliament several times, and to other parliaments, government inquiries and requests from other official bodies, covering topics on leverage, banks separation, guarantees, corporate governance and computer trading.
II. An Overview of Complexity and Interdependencies

Opening of trade and investment and advances of the digital economy

Two important trends that led to distortions that would play a huge role in the crisis were the opening up of OECD economies with respect to international trade and investment in the post-War period and rapid advances in digital-economy technology. Multinational enterprises emerged and moved across international boundaries more freely and this brought with it not only new markets, but also an ability to locate investment, production and employment in multiple locations where supply chains can be managed in the most advantageous way to the profitability of the firm, and where the savings to fund that investment could be allocated from sources quite separate from the domestic location of the firm’s headquarters. The internet-based digital economy subsequently further facilitated the “removing of borders”, the reduction of inventory needs and the shortening of delivery times. These developments brought many benefits. They also brought with them a greater complexity of financial needs, going well beyond the evidently increased demand for cross-border banking. These included, inter alia:

- New products that would facilitate hedging of exchange rate and credit default risks.

- Financial engineering to match maturities required by savers and investors, and to take advantage of different tax and regulatory regimes that bear on the costs of doing business (for which swaps were very convenient).

- Mergers and acquisitions not only of businesses, but of stock exchanges and related markets with global capabilities.

- New platforms and technological developments to handle the trading of new products with volatile mark-to-market prices.

These developments, in turn, led to new arrays of products that had to be sold to savers and investors.

Financial deregulation and innovation

Policy makers in OECD countries accommodated these trends via financial deregulation—eliminating international capital controls, moving towards auction systems for selling sovereign debt and developing monetary policy that moved away from sectoral quantitative and interest rate controls to operate instead via market-determined financial prices. This freeing up of financial markets followed after the opening of goods markets, particularly from the early 1980’s, and in some respects was the necessary counterpart of it. However the process went very far, and by the end of the 1990’s policies encouraged the ‘financial supermarket’ model (e.g. with the removal of Glass-Steagall) and by 2004 bank capital rules under Basel II became materially more favourable to bank leverage as did rule changes for investment banks. The banking system became the epicentre of the global financial crisis, essentially due to the under-pricing of risk, and numerous OECD Secretariat papers in the NAEC process have identified poor micro-prudential regulation, excessive leverage and too-big-to-fail business models as prime reasons for this.

Financial innovation responded to the demands of a global more integrated world economy and the finance sector began to flourish in the easier regulatory environment. The rents however were extracted to a very large extent for the financial sector itself: it took an increasingly disproportionate share of the earnings of the economy. In Figure 1 the USA share rose to 30% of the S&P500 (now accelerating back to these pre-crisis highs) and Europe to over 40% of the Stoxx (Europe’s recent decline related to the size of and policy approach to the crisis will reverse back upwards in the future in the absence of structural
change). These shares of earnings do not correspond to the role of the financial sector as an intermediary between real savers and investors.

**Figure 1: Share of the Financial Sector in Market Cap. & Earnings**

The rapidly expanding derivatives markets permitted investors to go long and short bank credit like any other security. While large financial supermarket banks played a key role in all of the origination, underwriting and market making involved in these developments, smaller banks too were drawn into business models with a greater focus on originate-to-distribute products and fees and away from traditional spreads as a source of earnings. This process required traditional loans to feed the securitisation machine and the structuring of products. Competition amongst smaller banks in this process saw lending pushed out to lower-risk (sub-prime) borrowers which drove down banking spreads in relation to risk and replaced the earnings with fee-for-sale revenue, in the process taking loans off the balance sheet so that capital rules provided little constraint.
Price discovery and institutional investors

Another feature of these developments has been the extensiveness of development of new trading, clearing and custody platforms and the speed with which they operate which have implications for price discovery so critical in the allocative efficiency of investment. The rise of the role of the institutional investor, the expansion of leverage and derivatives and the general deepening of financial markets led to innovations in how securities are traded. For example, the crossing of large parcels of securities that might move prices against a seller can now occur on ‘unlit’ exchanges for agreed prices between sophisticated institutional investors. Technology has led to high-frequency trading, where computer algorithms and speed allow some players consistently to trade at better prices within the bid-offer spreads.

Technology has also affected product development in the direction of low cost computer driven passive products with high liquidity: passive funds and exchange traded funds (ETF’s) have come to dominate institutional investor portfolios. These developments can serve to undermine price discovery (due to the absence of lit bid-offer spreads and passive strategies that are not fundamental-research based) and increase the risks of financial instability (through sudden liquidity crises where these products provide artificial liquidity that does not exist in the underlying securities and resulting price feedback loops). The rise of institutional investors and the separation of owners from the governance of companies has added a new layer of complexity compounding some of these issues. Such developments serve to undermine public trust in securities markets.

Emerging markets and global growth consistency

The trends towards openness in OECD economies were not mirrored in emerging markets generally, and in Asia in particular. Capital controls have been used by countries at an early stage of financial liberalisation to contain the potential systemic risks caused by ‘hot’ capital flows. But they have remained strong in some EMEs despite a strengthening and better regulated domestic financial system. Furthermore, capital control measures have often supported a managed exchange rate regime in relation to the US dollar. These features contribute to unbalanced global growth characterised by external imbalances and they can be disruptive to financial markets.

Greater economic integration has certainly contributed to economic development in emerging market economies (EMEs). To the extent that exchange rates are held below market-determined levels via intervention and its inflation consequences can be mitigated by capital controls, together with other policies, many EMEs have benefited from a successful export-oriented trade and development model. While it is for EME’s to decide on the correct sequencing of structural reforms in their own countries, it also needs to be understood that capital controls and exchange rate intervention do not come without costs for other more advanced economies. Indeed some aspects of this process interacted with other developments in financial markets to increase the scope of the financial crisis. Furthermore, a continuation of this growth model could portend crises in the future, since it is not feasible that savings in OECD countries continually decline to offset rising savings levels in EME’s as these countries grow to be larger than the OECD (see the discussion below).

With respect to financial markets, the US dollar has long served as the reserve currency in the global economy. When countries intervene to fix versus the dollar, they acquire US dollars and typically recycle these into holdings of US Treasury securities, which are the most liquid security with little political risk in the global economy. Two important effects of the increasingly large size of ‘dollar bloc’ EME’s are (a) that they compress Treasury yields, as the stock of their holdings grows, and (b) their foreign exchange intervention means that the US economy cannot have the exchange rate regime it needs against trade partners that are together absolutely larger than itself.
These forces contributed to the crisis. The stronger dollar worked against manufacturing production and other traded-goods jobs and favours services and housing, while the lower Treasury yields in relation to policy-determined short rates fed into the pricing of mortgages and other financial securities. In advanced economies more generally, the impact of globalisation on the fear of job-loss, together with the size of the productivity shock to the world economy coming out of the EME’s, has helped to keep inflation lower than it would otherwise have been. Job losses and low inflation impart an easing bias to monetary policy—not so much in the sense of a policy mistake, but as a consequence of poorer policy choices for floating-currency countries in the global economy. Since the crisis the low interest rate policy, together with the more compressed yields on Treasury securities, have contributed to the global carry trade, where investors search for higher-risk and higher yield products. In the ‘risk-on’ periods this contributes to increased inflows into EME high-yield credit which, in turn, contributes to more foreign exchange intervention and increased capital control measures. The potential future risk here is that in the ‘risk-off’ periods the attempt to sell these illiquid assets will result in huge pressures on EME funding and a great deal of volatility in financial markets.

Globalisation in the manner described above changes the effectiveness of domestic-focused monetary policy. In effect a given easing of monetary will affect demand production, employment and inflation, but not necessarily in the domestic economy in the same manner that might have been the case in earlier decades. For EME’s capital controls are not always beneficial as may be the case in the crisis-free years. But when crises do emerge these policies frequently result in a greater fear of capital controls and a withdrawal of funds at precisely the time they are most needed, and which also can be so disruptive to the world economy (as in 1998 and 2008).

**FDI, competitive neutrality and global M&A**

Foreign direct investment (FDI) is critical in the global economy, being the means by which high-saving and low-investment opportunity countries can reallocate those savings more productively. But for this to happen in a welfare-enhancing manner, decisions need to be taken on the basis of pricing that is not distorted, and where unnecessary bureaucracy and approval procedures that undermine commerciality are avoided. A level playing field outcome is required if mutual benefits are to accrue in the long run:

- Where countries have huge state-owned enterprise (SOE) sectors that are looking to invest abroad, it will be important to develop governance processes that promote commercial arms-length operations that do not benefit from implicit or explicit guarantees and cross-subsidies from the state. There is a need to develop policies for competitive neutrality.

- Since cross-border FDI often involves mergers and acquisitions that raise competition policy issues, it is important that common frameworks and understandings are reached. There is a need to ensure policy coherence across jurisdictions and co-operation among competition authorities, as globalization of business activity increases, and the number of independent competition authorities rises. Multiple approvals can be costly in terms of delays and large jurisdictions can effectively veto mergers with harmful externalities to one another’s economies.

**The euro area issues**

In many ways the USA and Europe led the trend towards openness of trade and investment in the global economy. But since 1999 the European approach has been combined with the spread of the euro as a single currency. The economics for countries that do not have their own currency is different in respect to competitive adjustment and the ability and perceived ability of countries to finance their budget deficits. The euro project brings a range of potential benefits. But it also constrains the ability of governments to manage their public debt through currency devaluations and inflation. Without their own currency,
governments are more likely to resort to defaulting on their debt or to require outside rescue packages in extreme situations, which raises their risk premia. For example, Japan has larger budget deficit and sovereign debt issues to deal with than most countries, but spreads are very low with respect to other bond markets. Scandinavian countries that retain their own currency have never shown signs of spread problems as have occurred in the periphery—including Denmark which fixes its currency to the Euro and maintains sound fiscal policy. The euro arrangements also interact with financial fragility issues in unexpected ways, particularly with respect to the role of sovereign bonds in bank holdings and the high status they have in the Basel risk-weighting framework. Wild fluctuations in sovereign bond spreads affect banks with large sovereign holdings in euro-area countries that run into budgetary difficulties, raising default and liquidity crisis issues. All European countries trade not only with each other, but with the rest of the world that is dealing with the trends discussed earlier in respect to the approach to development in EME’s. The north of Europe is more vertically integrated into strong Asian growth due to the demands for high-quality technology, infrastructure and other investment goods, while the south of Europe is competing with EME’s to a greater degree in lower-level manufacturing trade. European financial institutions are interconnected with those in other countries, and so the solutions to these issues that give rise to asymmetric real shocks to different euro area regions are a part of the complexity and interconnectedness that NAEC aims to address.

Ageing population and long-term investment financing

It has long been understood that populations are ageing but uncertainty about the future has been compounded by new factors:

- The ageing of the population of many countries in the future will be driven not so much by the baby boom pass-through, which is temporary, but because people are living much longer now than has been foreseen by providers of pensions and health care.

- The permanent loss of income and national wealth resulting from the crisis has compounded the problem for future generations, while the way that global trends will play out in the future are inherently uncertain.

- Poor remuneration and job loss will be most affected in the lower income areas exposed to global competition and trade, while incomes in the services sector (and financial firms in particular) benefit. The owners of shares and other securities that benefit from these trends will see their wealth rising compared to other cohorts in society who will have greater difficulty providing for their future.

- The macro responses to the crisis, too, raise new uncertainties for providers of future pensions and healthcare. A deflation scenario could lead to a prolonged period of low long-term interest rates causing liabilities to be valued higher while matching asset returns with appropriate long duration remains problematic. Bankruptcies of private sector providers may result.

- To meet yield targets institutions have taken on more risk in products that are less transparent and where providers are trying to create “artificial liquidity” that does not exist in the underlying securities and assets (hedge funds, ETF’s, derivatives, private equity, credit).

The requirement of policy is to decide which sectors are best placed to assume longevity risk, and whether there are adequate long-term investments that do not themselves create conflicts with financial stability objectives in the future. The matching of long-term liabilities for pension and insurance companies requires sound long-term investments that are suitable for pension funds in terms of viability and duration. Infrastructure investment has the potential to develop financing vehicles that could be well suited to such aims—while also being highly relevant for other aspects of the NAEC project (such as environment and sustainable growth). Developing the right policy frameworks and financial products is therefore a critical and integral part of financial reforms and policy making.
A horizontal framework for policy thinking on such diverse financial issues

Despite the considerable progress that has been made in the G-20 framework since the sub-prime crisis came to a head in 2008 a considerable agenda remains. The Financial and Enterprise Affairs area of the OECD has embarked on several projects under the NAEC umbrella which generally relate to ways to strengthen the competitive landscape in which financial institutions and enterprises operate. The objective is to find reforms that will both make the system adjust more smoothly to a changing world as OECD countries confront the challenges set out above, and to be more resilient so that disturbances do not lead to crises of the kind that have recently been experienced. These projects are:

- The role of the financial system in the crisis and reform required to promote sustainable growth.
- Fostering long-term investment and responding to the challenges of ageing and longevity.
- Implications of globalisation for Competition.

Some of this work is advanced but much is still in progress, at the information gathering and analysis stages, and is in its early stages of yielding policy recommendations. Important parts are also proceeding in collaboration with other OECD directorates and with international organisations and groups, often through the G-20 process. To bring these diverse insights together in a way that is conducive to policy thinking in a complex and interrelated global economy, it is useful to organise the discussion according to 3 horizontal themes:

1. The framework conditions for strengthening the global financial and competitive product market landscapes.
2. The appropriateness of institutional arrangements.
3. Finding ways to make pricing mechanisms throughout the system function better.
III. Framework Conditions for Strengthening the Global Financial and Competitive Product Market Landscapes

The International Financial and Banking Systems

Three sets of systemic changes since the millennium which stand out as causes of the crisis are (i) the rise of EME to a size where distortions matter more than in the past; (ii) much too high leverage in the financial system; and (iii) the rise of interconnectedness through the proliferation of derivatives and the funding of and re-lending of margin payments (referred to as re-hypothecation). None of these have been fully addressed. This leaves the world economy far less resilient as it recovers than it was during all previous post-war cycles. Important changes are needed if the world economy is to adapt to the challenges set out above.

The rise of emerging markets

The correlation between national saving and investment (S-I) is sometimes used as a measure of relative ‘openness’. For OECD countries this correlation has declined continuously (as the sample of data is extended from 1960). However, this has not been the case for a group of large EME’s, suggesting a very wide disparity of openness between them and OECD countries. Figure 2 shows the results for the 5-year rolling window of the S-I correlation. The OECD countries reflect a sharp decline in the 2000’s essentially to zero. The EME’s show no evidence of decline: the coefficient for the 5-year period to 1986Q4 was around 0.7 and it remains around that level in the most recent period. Since for the entire world economy global savings must equal investment, the clear implication is that a ‘tipping point’ will likely arrive if the non-OECD area becomes large enough: a continuation of the recent S-I correlation trends would in the end require OECD saving in aggregate to become negative in order to support the growth strategy of the ‘dollar bloc’—a clearly unbalanced, unsustainable and unlikely picture for the global economy.

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4 Feldstein and Horioka (1980) interpret the high correlation between these variables in the 1970’s and 1980’s to imply that global savings are not sufficiently mobile to fund ex-ante demand for investment goods.
6 China, India, Brazil, Mexico, South Africa, and South Korea. South Korea and Mexico are included here as they joined the OECD only in the 1990s, and the focus of this paper is historical.
7 See Blundell-Wignall and Roulet (2014). If EME investment and saving correlation is represented by: \( I_e = a + 0.7S_e + \varepsilon_e \) and OECD by: \( I_o = b + \varepsilon_o \), as implicit in the correlations shown here, then \( S_o = a + b + \varepsilon_e + \varepsilon_o - 0.3S_e \). A significantly large EME world would become destabilising if the correlations did not begin to change.
Foreign exchange intervention and capital controls do not matter so much if a small country does this in an isolated way. But since the end of the 1990’s the size of the BRICS and other countries that manage the exchange rate have exploded upwards, bringing with it a new set of issues. Figure 3 shows the purchasing power parity shares of the USA, the BRICS, Japan, the EU, other Anglo-Saxon countries, and the rest (mainly other EME countries) in world GDP. The US share is around 20%, whereas the approximate size of the BRICS and other EME’s has risen from around 28% in 1980 to about 50% currently. This latter share is expected to rise further and as it does financial volatility could force adjustments to rebalance savings and investment correlations in a possibly more disruptive way than would be the case with timely cooperative policies.
The rising global weight of emerging markets, especially in Asia, means that distortions affecting international capital flows and exchange rate adjustment that once seemed minor can no longer be ignored. In particular, the systematic undervaluation of exchange rates in many of these countries that has been a feature of the world economy since the early 2000s has generated very large capital flows into advanced-country financial markets, especially for US Treasuries. This not only affects both the configuration of exchange rates among the advanced countries and puts downward pressure on US Treasury rates, but it also creates large persistent capital inflows which the system must somehow absorb. First and foremost, US monetary policy must respond to the conditions created by these flows, i.e. to stimulate demand to support employment in the face of the overvaluation of the exchange rate and its adverse effects on the traded-goods sector (compared to the case of US outflows into Asia leading to a market-driven depreciation of bilateral exchange rates).

For most of the period since the tech bust high and seemingly intractable unemployment has combined with low inflation (itself in part due to the global supply shock coming from the EME world and the fear of job loss in the West that keeps wage demands low) to encourage low policy rates and, since 2008, the use of unconventional monetary policy. Figure 4 shows these holdings of US Treasuries by foreigners (mainly central banks), which have accelerated since the crisis and now total something like $5.6 trillion. Also shown on the chart is the US Federal Reserve’s own balance sheet, which has also risen sharply to around $3.6 trillion dollars. These sharp increases both work to hold interest rates down. But they put opposing pressure on the dollar, including from carry-trade flows in search of higher yields in EME’s, providing a focal point for the clash between two fundamentally different approaches to policy in the world economy—an interaction that is not stable. Lower interest rates and QE weaken the dollar against floating currencies, while *carry trade* flows lead to more foreign exchange intervention, new capital controls and macro-prudential (sectoral) policies to deal with latent asset price inflation pressures in EME’s.

*Figure 4: Foreign Central Bank Holding of Treasuries & the Fed Balance Sheet*

![Diagram showing foreign central bank holdings of US Treasuries and the Fed balance sheet from Dec/08 to Dec/13.](source: US Treasury, OECD)
In this respect, new OECD Secretariat research using the IMF’s measures of capital controls has found that they do not have a net beneficial effect when crises in the global economy are taken into account:

- In the good years prior to the recent crisis, capital controls appear to have been good supporters of growth. This is likely because combined with exchange rate management there is a foreign trade benefit, companies are not constrained for finance, and containing inflows reduces the build-up of money and credit following from exchange market intervention.

- However, during and after the crisis the exact opposite is found. Capital controls are negatively correlated with growth. The intuition here is that distorted domestic monetary policy leads to overvalued assets prior to the crisis priming a retreat of foreign capital when this becomes unsustainable. The pressure on the exchange rate is down, not up, and international reserves are used up defending against a currency crisis (contracting money and credit). Companies are more constrained by cash flow and external finance considerations. Just at the time when foreign capital is needed, countries with the most controls suffer the greatest retreat of foreign funding. Investment and GDP growth suffer.

- The overall net benefit pre- and post-crisis appears to be negative.

- This study was followed up with one based on the capital spending decisions of 4500 firms in the global stock market index (the MSCI). It finds that the measure of capital controls used shows no significant influence on capital spending prior to the crisis. However, since 2007 these controls have powerful negative effects on investment, depending on the strength of the measures taken in different countries.

While it is early days, and some caution is required, the findings suggest that in the long-run dealing with the global investment-savings imbalances could be of benefit not only to developed countries, but also to the developing world itself. This suggests that there is scope for longer-term sequencing of reform that will be mutually beneficial to global resource allocation and future financial stability.

NAEC must focus on better adjustment mechanisms that avoid these tensions in the international monetary system. The OECD codes of liberalisation provide a flexible framework for dealing with a gradual global liberalisation process, by allowing for reservations on becoming an adherent, and incorporating principles of standstill (no new controls, though derogations for temporary crisis measures can be accommodated). The codes are particularly useful for dealing with some of the key global issues by calling for: the avoidance of discrimination between residents and non-residents; freedom of residents to transact abroad, where national rules do not apply; and freedom of non-residents to carry out certain operations in the territory of a Member, indistinctively of treatment granted to residents (e.g. operations in foreign exchange and movement of physical assets). Use of the OECD Codes as a reform instrument would be preferable to risking more disruptive outcomes in the future, including extreme financial volatility or, worse, trade and investment sanctions.

8 See Blundell-Wignall and Roulet (2013). This study also exactly reproduced the empirical result of the IMF paper by Ostry et.al. (2010), the basis of the shift in views of IMF thinking in favour of capital controls, and shows that the findings do not stand up to a robustness test.

9 See Blundell-Wignall and Roulet (2014), and references therein. This is because, for example, Multi-nationals are less likely to invest in and more likely to remit dividends from countries with controls in the post-crisis world. Similarly, small firms are disadvantaged by lack of funds, and inefficiencies arise and rent-seeking behaviour is more prevalent.
Too-high leverage

The banking systems in the many countries remain far too highly leveraged. As a part of the NAEC approach at developing new analytical frameworks the OECD Secretariat has worked on building comparable banking statistics for IFRS and GAAP reporting banks. Figure 5 shows the weighted-average leverage ratio for 26 globally systemically important banks (GSIB’s). The broken line shows some of the results of new data analysis where US banks are converted to IFRS accounting (no derivatives netting) to avoid overstating their capital position. For core Tier 1 capital this group of key large banks remains leveraged 30 times on average (a 3% core capital ratio) with some individual banks levered by very much more than that. This means that when something goes wrong anywhere, e.g. sub-prime real estate problems in Las Vegas or sovereign debt problems in Greece, banks’ capital can be insufficient, or just feared to be insufficient, to absorb the problems. Maintaining funding can become a problem and creditors and counterparties may become exposed. Local problems can become systemic with macro-economic consequences.

Figure 5: Weighted Average of Capital Ratios for 26 GSIB Banks; T1 & Core T1, Showing the Difference for IFRS Conversions for US Banks

The origin of this problem lies in the scope that the Basel risk-weighting framework gives banks to game the capital adequacy rules by reducing the base on which minimum requirements are calculated (i.e. “Risk-weighted assets”). Efforts to reform and compensate (Basel II in 2004 and Basel III in 2011) have added extreme complexity but have done little to strengthen the system. OECD Secretariat research in a NAEC context has repeatedly pointed out that large banks are able to work the system more effectively than smaller banks but the downward trend in the risk-weighted assets to total assets has been persistent regardless of either reforms or bank size (Figure 6). This trend does not suggest that the 26 banks were getting less risky in the run up to the crisis. Rather, banks used their models and off-balance sheet techniques—including over-the-counter (OTC) derivatives—systematically to grind risk-weighted assets

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10 Basel I was 13 pages long, plus some brief annexes, was comprehensible to a no-specialist and had 4 risk weights which ran from 0-100%. Basel II ran to 347 pages and Basel III to 616 pages. The framework today has millions of risk weights with a range that is virtually infinite. See also A. Haldane and V. Madouros (2012).
downwards as a share of the total and, since the capital rules apply to the risk-weighted assets, they were able to raise leverage.

The policy implication is that the whole framework governing capital requirements needs to be simplified. The cleanest way to do this is to move to a simple, binding leverage ratio while eliminating loopholes and exemptions that permit banks to understate their exposures\textsuperscript{11}. One important issue here is the treatment of counterparty netting of derivative and repo positions. This is a technical issue not developed here except to say that the recent Basel agreements failed to address the issue well by not insisting that IFRS accounting standards be used to measure exposures requiring equity backing. Furthermore, the Basel agreement is focusing on a requirement of only 3\% for a measure that does allow netting of derivatives and related instruments. The OECD Secretariat insists that 5\% without netting would be a safer long-term objective to move towards—one that the safer banks in new OECD Secretariat research always are able to respect.

**Figure 6: Banks’ Risk-weighted Assets as a Share of Total Assets %**

[Graph showing risk-weighted assets as a share of total assets for G-SIFIs and Non-G-SIFIs over the years 2002 to 2012. The graph illustrates the trend in asset-to-asset ratio with R² = 96.3% and R² = 96.1% for different years.]

*Source: OECD*

**Interconnectedness and derivatives**

The huge expansion of the use of derivatives since the millennium, particularly interest rate swaps (IRS) and OTC credit default swaps (CDS), has reinforced the financial instability issues associated with too much leverage by reinforcing the system’s interconnectedness. This has been facilitated by financial deregulation in the 1990’s and 2000’s, a time of rapid financial innovation. Figure 7 shows primary securities (equity, bank loans and debt securities) in the world financial system and the notional value of all global derivatives.

\textsuperscript{11} The USA regulators in early April 2014 voted in a rule requiring (on a US GAAP basis) the 8 biggest bank holding companies to maintain Tier 1 capital equal to 5 percent of total assets. Insured bank subsidiaries must meet a 6 percent ratio. Reasons cited include the scope for “gaming” the Basel risk weights, and that 3\% would not have been enough in the crisis. This is in broad consistency with OECD Secretariat views.
Figure 7: Global Primary Securities versus Derivatives (Notional)

Derivatives, unlike primary securities, do not fund economic activity: they merely shift the ownership, structure and the riskiness of primary securities. This makes them valuable instruments for managing risk but, equally, they can be used to gamble and involve large exposure to market risk if they are not well-hedged. Since derivative contracts generally involve margin calls requiring cash settlement when prices of underlying reference securities change, they can lead to liquidity crises. While primary securities have fluctuated within a range of 2 to 3 times world GDP since 1998, the notional value of derivatives rose from around 3-times world GDP to a staggering 12-times world GDP during the decade to the eve of the financial crisis in 2007. These have fallen back slightly since then but they remain far larger than they were in 2001, when their expansion accelerated sharply. One test of a successful (NAEC) approach to policy will be to see whether policies do in fact reduce derivatives to a socially-useful core for end-users and eliminating the vast amounts used for regulatory arbitrage of banks and the structuring of products for clients to take advantage of taxation anomalies.

Figure 8 shows an index of global bank interdependence labelled “Beta”, and the gross market value (GMV) of derivatives in billions of dollars.

The GMV of derivatives is much smaller than the notional exposure (on which bank fees and spreads are based): whereas in 2007 the notional value rose to some $700tn, their GMV rose suddenly from $10tn to around $37tn as the crisis hit. The GMV of derivatives is the amount that would have to be settled at the prices prevailing at that point in time. Settlement may occur via the netting of any positive and negative derivative positions (where this is contractually permitted or in a close out situation) and via the margin collateralisation process. The sudden rise in the GMV as the crisis hit revealed a huge shortage of capital and eligible collateral in the world financial system—massive inter-dependence risk.

12 The Commodities Futures Modernization Act, introduced as an attachment to an 11,000 page spending bill on the last day before Christmas recess in 2000, during the Clinton/Bush transition, and signed 6 days later by the outgoing president, was a milestone. Outstanding CDSs are thought to have been around $100 billion in notional terms when this Act was passed. By 2007 this figured $58 trillion. Today it remains at around $27 trillion.
The measure of global bank interdependence (global bank beta) is a new tool developed for the OECD Secretariat to monitor progress of reforms in reducing the inter-connectedness risk of global banks. The global beta, takes the daily stock prices of all the GSIB banks, and calculates for each a one-year rolling beta (correlation) to the MSCI world stock market index. Each bank’s individual beta to the MSCI is then aggregated according to the (rolling) asset weight of the bank in the total assets of all the banks. From around 2005, the interdependence of global banking began to rise in an unprecedented way, from less that 1.0 to a global weighted-beta peak of around 2.0 during the Lehman crisis. It fell back temporarily to 1.4 (bottoming well above 1.0) and then the global bank beta rose again to 2.0 in the late 2009 euro crisis, fell back to 1.3 and rose again during the 2011 European bank crisis to around 1.8. The new monitoring tool shows that the periodic build-up of massive interdependence of banks, related to their connections as counterparties, has not been removed by the reforms to date.

The interconnectedness of the system arising from the proliferation of derivative trading, which is largely an issue relating to 10 to 20 GSIB banks which dominate trading in these instruments, reinforces the need for a strong equity base capable of absorbing losses in large banks without threatening counterparties, and hence robust leverage ratio requirements as described above. But so long as derivative positions expose banks to potential losses that can have systemic consequences general reforms aimed at strengthening the system as a whole need to be supplemented by measures targeted at the institutions most likely to put the system at risk. These are discussed below with other reforms that the NAEC work suggests are necessary to develop institutions better adapted to the challenges facing OECD countries.

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13 This concept is different from the capital asset pricing model concept of beta where the risk free rate plays a role. See Blundell-Wignall, Atkinson and Roulet (2013a).
Non-bank Financial Intermediaries and Ageing

Banks, with their deposit and short-term credit funding base, and being subject to restrictions arising from their access to lender-of-last-resort (LOLR) and government deposit guarantees, are not well placed to finance important high-risk or long-term projects. These include, in particular, important elements of the challenges that ageing populations will pose over the longer term and major infrastructure building and maintenance. A strong framework that is supportive of non-bank financial intermediaries (NBFI’s), who act as institutional investors, will be an essential part of meeting these challenges.

Longevity risk and NBFI role

Much of what needs to be done to meet the challenge of ageing populations goes beyond the financial sector. In broad terms this means finding ways to mobilise resources and transfer them from children and working age people to support increasing elderly cohorts, mainly in the form of pensions and health care. While significant parts of this task will fall to the public sector, with an important fiscal impact (see Table 1), private financial institutions will have to play role. This seems likely to be most significant on the pension side. Longstanding OECD Secretariat messages in this regard are: (i) to diversify the sources of retirement funding; (ii) to insist that both public sector and private pension systems will be needed; and (iii) to point out that private pensions need to be funded and for most people should be complementary to a public pension.

Table 1: Prospective Fiscal Impact of Ageing-related Expenditures

(Increase in general government expenditure as a percent of GDP, 2010-2060 for the EU and 2005-2050 for the USA)

<table>
<thead>
<tr>
<th>Country</th>
<th>Pensions</th>
<th>Health Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>1.5</td>
<td>2.6</td>
</tr>
<tr>
<td>US</td>
<td>1.8</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Source: OECD and Congressional Budget Office.

For the system as a whole, the challenge derives from the combination of increasing longevity (see Figure 9, where life expectancy is shown to have been rising by around 1 year for each decade since 1950) and low fertility rates (which are below replacement rates in many countries). This means fewer workers supporting more retired people, necessitating some combination of more payments by working people into pension and medical care systems, fewer benefits taken out by retired people and changes in the age at which people switch from being contributors to being beneficiaries. The best way to proceed in this regards is politically contentious and must be conditioned by fiscal sustainability considerations. But recent OECD Secretariat work suggests it would appear that linking retirement age to life expectancy (as in Sweden), which effectively splits longevity increases between periods of contributing more and periods of taking more benefits, must play a large role. For this to work well it will be important that labour markets can absorb the higher supply consisting mainly of older workers, which links the problems to dealing with all of the other economic issues raised in this NAEC report.

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Provided that the system generates the necessary resources overall, the main challenge will be to insure that institutions develop to collect savings/contributions and provide savers/beneficiaries with instruments that are appropriate to their circumstances. The main challenge in this regard arises from uncertainty about longevity, referred to here as “longevity risk”. The state is well placed to assume this risk, since it can rely on actuarial calculations and adjust taxation or benefits if needed to compensate for any shortfalls. As a result, state pensions are designed as defined benefits programmes. For businesses and individuals, however, longevity risk is dangerous. Businesses are not well placed to analyse their commitments and likely resources over very long periods and have been moving toward defined contribution plans for many years. Even if businesses offer defined benefit plans individuals face the risk that promised payments many years in the future will not be forthcoming, perhaps because the payer’s market situation has changed. They may also face portability issues which constrain their options in important ways. But defined contribution plans, which leave the beneficiary with a stock of assets to cover retirement, involve the risk of outliving their assets.

The OECD Secretariat analysis suggests that the solution to this is to develop annuity products which would transfer longevity risk from individuals to institutional investors best placed to manage it\(^\text{15}\). These would operate as defined contribution plans, allowing portability and relating expected benefits at retirement to what assets already accumulated can command in the marketplace, but be converted automatically (all or in part) to an annuity at retirement. This will primarily be an issue of supporting institutions appropriately designed to assume the necessary risks and financial instruments that make this possible. These are considered below. But important elements of the wider policy framework must also be adapted to facilitate these efforts:

- The tax system must not penalise such products and, in particular, it should not discriminate in favour of defined benefit systems.

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\(^{15}\) See OECD (2014b).
Legislation and regulation are needed to encourage capital market solutions that provide standardisation, liquidity and transparency in markets for instruments allowing hedging for longevity risk.

Pension funds which manage defined benefit plans and other providers of annuities, such as insurance companies, can go bankrupt. Systems to deal with contingencies should be developed.

**NBFI investment allocation role**

An important characteristic of most non-bank financial intermediaries is that their funding sources are generally more stable and less subject to unanticipated withdrawal than deposit taking institutions. This makes them better placed than banks to take a longer view on their investments and, in particular, to take an ownership stake in large property developments and enterprises. As a result, a very large share of the ownership of, and management responsibility for, publicly-owned enterprises and commercial property in advanced market economies is held by investors which are not individuals but institutions. This share has risen rapidly during the past 50 years and, given the pressures of population ageing noted above, this seems likely to continue. Measuring how much is a challenge, given problems such as double counting, incomplete listing of some categories of investor and confidentiality, but the OECD Secretariat estimates that total holdings of institutions amounted to nearly $85 trillion in 2011 (Figure 10), most of this in the hands of investment funds, insurance companies and pension funds. Some $28 trillion consisted of publicly traded equities and smaller amounts were allocated to other funding of enterprises such as private equity and venture capital.

**Figure 10: Total Assets under Management and Allocation to Public Equity by Different Types of Institutional Investors (trillions of USD)**

Note: Investment funds, insurance companies and pension funds data do not cover non-OECD economies. Since institutional investors also invest in other institutional investors, for instance pension funds' investments in mutual funds and private equity, the comparability of different data cannot be verified.


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As late as the mid-1960s physical persons owned 84% of publicly listed corporate equity in the United States. Today this figure is around 40%. In the United Kingdom the decline has been from 53% in 1963 to 11% in 2012. In Japan it was 18% in 2011. [c.f. Celik, Isaksson (2013), p.7]
In pension funds around half of the investments are in equity, a quarter in fixed income and there is a distinct rise in alternative assets (e.g., private equity). Insurance companies are much more dominated by fixed income, due to their long-duration liability management role, while investment funds lie somewhere between the two (see Figure 11).

The size of these institutions and their weight in the ownership of business enterprises makes it obvious that they have important roles to play in allocating business investment in the economy and monitoring and overseeing corporate management. These roles must be carried out effectively. Work for NAEC has called attention to at least two elements of the broad economic framework that merit attention.
First, corporate equity appears to be declining in importance, at least in its liquid, publicly tradable form. Since 2000 major institutional investors have significantly reduced the share of assets allocated to public equity, and by as much as 7 percentage points in the case of insurance companies. The number of listed companies in both the United States and the European Union has dropped sharply during this period (Figure 12).

There has also been a distinct downward trend in IPOs, which are important sources of capital for expanding businesses and as means of rewarding people who have provided angel and venture financing for high-risk entrepreneurial companies (Figure 13).\(^\text{17}\) Since equity acts as the main financial shock absorber for enterprises as economic conditions vary, making it a prerequisite for coping with uncertainty and raising additional capital, this is disturbing. It is doubtful that this reflects problems with the institutional investors themselves; indeed their share of total outstanding stock of public equity has risen by 5 percentage points since 1995 as the household and company share has fallen. Reversing this decline requires strengthening critical infrastructure, i.e. exchanges, connectivity and broker-dealers, which is discussed below. But it should start by addressing broader forces influencing the attractiveness of equity to both the ultimate beneficial owners and to the businesses that issue them:

- In most countries some degree of double taxation operates to favour debt over equity, e.g. encouraging buybacks instead of dividends as a way of returning cash to shareholders; and
- Regulatory and reporting requirements can make listing shares financially burdensome. Work for NAEC, which has so far focused on the United States, suggests that characteristics and concerns of small companies are different from those of large ones and that the regulatory framework should be designed accordingly\(^\text{18}\).

Figure 13: Initial Public Offerings in OECD markets (2012 USD)

Second, the large weight of institutions in the ownership of the business sector gives them a responsibility for management and oversight that they must take seriously and exercise effectively. This responsibility can most effectively be exercised at the level of the Board of Directors and senior management. Given that individual institutions’ stake in individual businesses is usually small, especially

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\(^{17}\) See Isaksson and Celik (2013).

\(^{18}\) Weild, Kim and Newport, (2013).
for large enterprises, this is a challenge. Many variables influence the way individual institutions approach this task, including *inter alia*: the purpose of the institution; its liability structure; its investment strategy; its portfolio structure; its fee structure; any presence of political or social objectives that it must respect; and the regulatory framework governing its engagement as owners.

Unsurprisingly, there is a wide variation across institutions in the way they approach their roles as owners. In a 2010 survey more than half of owners and managers from institutions reported some dialogue with companies they held stakes in but in some cases these involved little more than an e-mail or phone call. Indeed, 76% of asset owners and 56% of asset managers had at most 5 staff whose job involved engaging with the companies in which they held stakes. In view of the costs involved in taking oversight responsibilities seriously this is quite rational. But, inevitably, meaningful exercise of ownership responsibilities by institutional investors is sporadic at best.

Work is under way to develop a better understanding of how public policy can strengthen the contribution that ownership engagement by institutional investors can make to economic performance across the economy, at minimum by avoiding policies that involve costs but have no or even adverse effects. At this stage three important messages stand out:

- In order to understand the level of ownership engagement a whole range of determinants need to be identified.
- Legal or regulatory requirements for exercising voting rights may have little effect if other and more important influences on the institutions remain unchanged; and
- Institutions with the highest degree of engagement typically have no regulatory obligation driving their behaviour in this regard.

The critical point is to identify where the fiduciary responsibility lies (and how to pass it on where required once delegation becomes unavoidable) as complexity builds through the extended investment chains and conflicts of interest between ultimate beneficiaries, trustees of pension funds and their fund management agents. Board processes, the role of proxy advisers, voting technology and the interface with consumer protection (and legal redress) all have a role to play in creating the right balance.

*Role in financing long-term infrastructure projects*

Institutional investors will have to play an important role in financing large global infrastructure needs over the longer term. The total requirement for global infrastructure investment by 2030 for transport, electricity generation, transmission and distribution, water and telecommunications is estimated to be around $71tn by the OECD Secretariat, which amounts to about 3.5% of global GDP over the same period. Similar figures are reported by McKinsey that, based on three alternative estimation methodologies, quantifies the infrastructure need to 2030 between $57 and $67tn excluding the needs for social infrastructure. Achieving a low-carbon energy sector globally will require an additional cumulative investment of USD 36 trillion by 2050, including USD 7.35 trillion in the power sector, of which USD 1.2 trillion in China.

In the past few years, the funding of infrastructure investment in projects has become characterised by high specificity, low re-deployable value and high intensity of capital, and has increasingly taken the form

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of project finance. On the equity side, the bulk of financing has been provided by corporate sponsors and developers. On the debt side, the prominent role has been played by bank syndicated loans. The collapse of the Monoline insurers has had the effect of reducing the potential amount of funds that institutional investors can commit to infrastructure investments. Taken together, this means that private sector finance has yet to develop sufficiently to make up for the reduction of the availability of public finance. Banks depending on short-term funding such as deposits are not well suited for this kind of long-term and often illiquid funding. Greater reliance will have to be placed on non-bank intermediaries whose funding base is more stable.

To make infrastructure financing attractive enough to institutional investors that they will play their role, measures are needed to provide reasonable prospects that such investments will generate returns that these institutions can capture. In a contribution to the G-20 work on long-term investment financing the OECD Secretariat identified some policy priorities in this regard:\(^21\): These include:

- **Better management of infrastructure**, for example through user charges and public-private management of assets, creates stronger incentives to invest by raising its productive potential.

- **Simplification of planning procedures** to reduce delays and costs associated with construction investment, notably strategic infrastructure projects.

- **Creating a credible regulatory environment** to reduce regulatory uncertainty affecting infrastructure projects. Governments should move beyond political commitments and implement appropriate institutional, legal and regulatory arrangements for improving the investment climate, including by enabling efficient and reliable dispute resolution, appropriate consultation mechanisms and ensuring regulators’ independence and quality.

- **Improving infrastructure delivery capacity** to facilitate public-private partnerships and reduce delays and costs associated with infrastructure projects. This includes infrastructure planning, project design and implementation capacity. This can be facilitated by well-equipped infrastructure units, efficient institutional coordination, clear separation of political and technical responsibilities and effective stakeholder.

- **Developing the use of public-private partnerships (PPPs)** within a sound policy framework. A clear, predictable and legitimate institutional framework supported by competent and well-resourced authorities is needed. Selection of Public-Private Partnerships should be based on value-for-money (OECD, 2013). The budgetary process should be transparent, minimise fiscal risks and clearly identify fiscal costs.

**Product Markets and a Framework to Enhance Competition**

**SOE’s and competitive neutrality**

The best competition policy for most countries is trade liberalisation and elimination of barriers to entry, including those that work by impeding cross-border investment. But these need to be reinforced by policies that ensure a neutral competitive framework, in which producers compete on even terms where policy-driven advantages or disadvantages are at least minimised. They must also be supplemented by competition policy frameworks that prevent companies from abusing market power.

\(^21\) See OECD (2013) which is a full Comprehensive Note for the G-20, an internal document based on work between Financial and Enterprise Affairs and the Economics Directorate, and Della Croce and Yermo (2013), Gatti (2014) and Della Croce and Sharma (2014).
The basic requirement of a neutral competitive framework is the elimination of discriminatory tax or regulatory frameworks that generate firm specific advantages or burdens, and maximising neutrality should be part of their design. But the presence of state-owned or controlled enterprises (SOE’s), notably large banks and emerging-market-based oil and gas producers, has risen as globalisation has proceeded. These trends have raised concerns about the implications for competitive neutrality.

To respond to the challenges, which largely relate to financial advantages and access to government support, the OECD Secretariat recently developed a “best practice report” identifying priority areas for policy makers that are committed to maintaining a level playing field – commonly referred to as “competitive neutrality” – between SOE’s and private enterprises. The report was based on a large body of earlier OECD Secretariat studies, guidelines and best practices which, while not directly addressing competitive neutrality, have a bearing on the subject. The main conclusion is that governments wishing to obtain and enforce competitive neutrality need to focus attention on the following seven priority areas:

- Streamline government businesses either in terms of corporate form or the organisation of value chains.
- Ensure transparency and disclosure around cost allocation.
- Devise methods to calculate a market-consistent rate of return on business activities.
- Ensure transparent and adequate compensation for public policy obligations.
- Ensure that government businesses operate in the same or similar tax and regulatory environments.
- Promote debt neutrality.
- Promote competitive and non-discriminatory public procurement.

In a cross-border context there is little doubt that a portmanteau commitment to competitive neutrality such as outlined above would eliminate almost all concerns about the operating conditions of foreign SOE’s. What is perhaps less clear is whether such an approach would be efficient – or even feasible – in the global political economy. At issue is, first, the difficulty in assessing and regulating intangible advantages that an internationally active SOE may enjoy such as, for example, regulatory forbearance and a privileged position in the domestic economy. Also, at the political level there seems to be limited appetite for a broad commitment that would apply the competition in the domestic economy between foreign entrants and purely national SOEs. NAEC work has so far opted to take a more narrowly focused approach targeted on SOEs’ cost of funding and financing. This is discussed in more detail below.

**Competition law frameworks**

Formal competition law frameworks have become common in the last 20 years. There has been more than a 600% increase in the number of jurisdictions with competition law enforcement since 1990, with the number of jurisdictions with competition law enforcement having increased from fewer than 20 to about 120 today. Most jurisdictions with competition law are national, but some are regional, such as the European Union.

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22 On the basis of a metric developed by Forbes (the magazine), averaging market value, sales, profits and assets, 22 of the world’s largest enterprises are either state-owned or state-“invested”, i.e. more than 10% owned by the state.

23 See OECD (2012) and OECD (2013a).

24 This is drawn mainly from Capobianco, Davies and Ennis (2013).
Many competition law cases have an international dimension, and the number is rising rapidly, perhaps as a consequence of increasing international trade and global supply chains:

- In recent years, more than 90% of fines against cartels by the US authorities have been international. The number of cartel cases investigated in the European Union with a participant from outside the EU, has increased more than 450% since 1990.

- Mergers of companies with global operations involving similar products and overlapping territories (i.e. with cross-border dimensions) have increased by about 250%-350% since 1990.

Competition law enforcement—including abuses of dominant market positions—is also an area in which well-known substantive disagreements exist and create scope for international friction.

Because many international cases have a cross-border dimension, co-operation between competition authorities is increasingly important. Co-operation has improved, with an increasing number of co-operation agreements between competition authorities. These agreements are typically bilateral. A few competition authorities—such as those in the US, EU, Canada, Japan, Korea and Australia—co-operate frequently, mainly with each other, but most authorities have very little experience of co-operating on enforcement. Even the closest bilateral arrangements make no provision to recognise the interdependency of decisions, or any formal mechanisms to avoid inconsistency. They are essentially loose information-sharing tools.

Global mergers present a particularly complex challenge. Most jurisdictions can take action against mergers having effects in their territory, regardless of the location of the merging firms. In practice, smaller jurisdictions might be unable to prevent or effectively remedy such mergers. For the largest jurisdictions the situation is reversed: a single large jurisdiction (such as the US, EU or China) can effectively block or impose conditions on any merger, with global consequences. If competition authorities disagree about the effects of a merger—either because those effects genuinely differ in different countries, because the laws differ or simply because of a difference of assessment of the same facts—then their decisions can impose harmful externalities on one another’s economies. Furthermore, because a decision to block by a large jurisdiction is effectively a veto on a global merger proceeding at all, mergers of the largest global companies will become increasingly difficult, as multiple separate approvals are required and the merger must satisfy the most cautious of the investigating authorities. The administrative costs of multiple parallel investigations are high.

Similarly, global cartels and abuse of dominance cases might face parallel investigations, with some jurisdictions much better able in practice to prosecute these behaviours than others. For example, when the cartel has effects in one jurisdiction, but several of the firms involved are headquartered elsewhere, enforcement might be patchy and inconsistent.

Although co-operation has increased, the need for co-operation is perhaps increasing still faster, for two reasons. Firstly, there are more competition authorities (because there are more jurisdictions with competition laws) than there were, so the complexity of co-operation—which the OECD Secretariat measures by the number of pairs of authorities needing to co-operate—has increased substantially: e.g. by 53 times since 1990 for cartel cases. Secondly, as noted earlier, business is more globalised than it was, and there is still great scope for further economic integration; in some ways globalisation has barely started. The number of cases with an international dimension will therefore continue to grow very rapidly, even if the spread of competition laws now levels off as almost all major economies have competition authorities in place.
Techniques for bilateral co-operation have improved since the mid-1990s due to the work of the OECD, other international organisations, and the authorities themselves. However, making it work well in the future will be increasingly complex, as business becomes ever more globalised, spanning more and more jurisdictions enforcing competition law. This has led to an ongoing debate, in which several options have emerged:

- Improved bilateral co-operation, for example to allow exchanges of confidential information between enforcers;
- Developing standards for legislative/regulatory frameworks that would enable sharing of information and include legislative protections for information received from counterpart regulators;
- Developing common form waivers and suggestions to facilitate the use of such waivers;
- Adopting multi-lateral instruments that address most pressing needs for co-operation. These could relate, for example, to sharing information, merger notification, or convergence of leniency policies for cartel investigations;
- Developing international standards for formal comity, such as a legal instrument defining criteria for requesting an enforcement action in or assistance to another authority, and clarifying participating authorities’ comity obligations;
- Allowing authorities to choose to recognise the decisions of other competition authorities in the investigation of cross-border matters. There could even be an agreement for giving non-binding deference to one ‘lead authority’; and
- Reaching a multi-lateral agreement for exchange of information, comity and deference standards based on jurisdictions voluntarily opting in to the agreement.
IV. Designing and Building Institutions

**The banking system: encouraging sound business models**

A more coherent regulatory framework that ensures that banks hold meaningful amounts of capital will not be enough to make the system resilient—the OECD Secretariat work for NAEC has shown that there is no reasonable ex-ante capital rule that would be enough for all contingencies in a crisis such as that of 2008. Restraints are needed on high-risk activities that expose banks’ capital to losses that can threaten their funding base of deposits which benefit from government-backed insurance or guarantees. Given the interconnectedness of the system, such losses in one major bank can quickly threaten creditors and counterparties and force large-scale government intervention to avoid systemic crisis.

While resolution regimes are important in the event of such defaults, the OECD Secretariat believes that prevention is fundamentally far more important than resolution. Single point of entry attempts to bail in bond holders with the idea of providing time for restructuring and resolution before a default point may not work—they may well exacerbate and create bank runs. The idea of safer bank business models to avoid these situations (i.e. prevention) has led to a number of proposals to separate high-risk activities from traditional banking, notably by the OECD Secretariat itself since 2009 and those associated with Paul Volcker, John Vickers and Michel Barnier (writing EU rules to implement the Liikanen report). While these have been similar in that they aim to limit cross-subsidisation of high-risk activities by low-cost and guaranteed deposit funding, they have generated great debates about specifics and, at least in the United States and the Euro area, have proved difficult to agree and implement.

A tool has been developed as part of the NAEC initiative by the OECD Secretariat for use in international regulatory work, by using the “distance to default (DTD)” measure. This measure compares the market value of assets (based on the Black-Scholes formula) with the book value of liabilities, and the distance from zero (the default point) is measured in standard deviations. High numbers of the DTD, preferably above 3, are associated with a profitable well-capitalised banking system, while zero is the default point. Figure 14 shows the DTDs for the largest US and European banks.

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26 See OECD (2009).
27 The measure itself is akin to an unconditional probability of default, which plays a role in the Basel risk-weighting and capital rules framework, and hence should be acceptable to the broad range of policy makers that support Basel (see Zhou and Tarashev (2013)). Blundell-Wignall and Roulet (2013c) use this as the dependent variable to explore leverage and bank business model influences on bank vulnerability to default. This measure derives from the classical Black, Scholes (1973) and Merton (1974) framework. Recent empirical studies find the DTD (and/or closely related variations) to be a good predictors of bank failures, for example: Harada, Ito and Takahashi (2010), Duan (2012), Brossart, Ducrozet and Roche (2006). The DTD cannot cover all the factors contributing to bank failure. Earlier discussion of modelling default risk and debates therein include: Avellaneda, M., & Zhu, J., (2001);Crosbie, P. and J. Bohn, (2003); Jorge A. Chan-Lau and Amadou N. R. Sy, (2006).
New empirical analysis of a data base including 108 individual G20 banks compiled by the OECD Secretariat sheds some light on the issue of how separation of high risk activities from deposit banking should be designed. Three elements of banks’ business models stand out as important influences on banks’ safety:

- Reliance on wholesale funding, which makes banks vulnerable to sudden liquidity problems, works to make banks more fragile;
- Large portfolios of liquid securities available for trading work in the opposite way, presumably because they are helpful in terms of dealing with liquidity pressures; and
- Large portfolios of derivatives, which expose banks to high levels of market risk, have a negative influence on the DTD, i.e. increase banks’ risk of insolvency.

The clear implication of this OECD Secretariat evidence is that the size of the derivatives portfolio, measured in terms of its gross market value, should be the focal point for the design of separation rules.

The reason for this is simple enough. In a complex financial system a crisis will result in more extreme asset price volatility resulting in a sharp rise in margin and collateral calls that have to be met. Intuitively, the broker-dealer Bank A in Figure 15 is engaging in derivative transactions with 2 counterparties B and C. Following the pale grey arrows for the case of no central clearing, bank A is down 100 with B and up 80 with C. It is therefore exposed to a loss of 80 in the event of the default of C. It is also down a net 20, when bank B is taken into account. This net 20 margin call can be met in normal times via a short-term repo loan (shown). But in a crisis situation liquidity in the repo and derivatives markets may not be available. If the broker dealer can’t meet the margin call then it will default if it does not have ready cash and liquid assets. It is precisely to remove these risks from a deposit taking institution that the separation proposals are made, and the question is where to draw the line on what is a proprietary business that carries these risks.

Source: OECD

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See Blundell-Wignall, Atkinson and Roulet (2013c).
Making the rules dependent on the motivation for holding derivatives should be avoided since these can only be inferred and invite endless debate without coming to agreement. The OECD Secretariat proposes that if the GMV of derivatives reaches 10% of a banks’ portfolio, based on IFRS accounting, then high-risk activities, including prime broking, market-making, underwriting and most derivatives activities be separated into a ring-fenced subsidiary within a Non-Operating Holding Company (NOHC) structure. An alternative approach would be to define a broader definition of proprietary trading—by defining what is not proprietary trading (e.g. deposits, loans, payments business, etc.) and applying a threshold to that residual concept.

**Central clearing counterparty (CCP) institutions**

It is important to understand that the proposal for a central clearing counterparty (CCP shown in the middle of Figure 15) for derivatives shifts settlement risk to a new GSIB institution, it does not destroy market risk in any way. The sum of the gross exposures in the above diagram (of 270) is greater than the net settlement value of 20 that the CCP undertakes to guarantee. But the CCP is exposed itself to the defaults of any counterparty resulting from market risk undertaken by those counterparties. Consequently, it must like any bank have the OECD Secretariat capital rule of 5% of the gross exposure, and it must set margin requirements that adequately reflect risks as any bank must do. This is because the CCP becomes a vital node, interconnecting multiple players in the financial system. The failure of such a node would lead to multiple contamination effects compared to bilateral trading. Governments and central banks could not allow the CCP to fail, so the implicit guarantees of TBTF are simply shifted around. Furthermore, since competition between CCP’s can only really take the form of reducing collateral requirements to make the cost of trading cheaper for counterparties, margins may be reduced causing systemic risk to rise rather than to fall.

It also needs to be noted that it is the least risky parts of the derivatives market that can be subject to clearing, e.g. standardised interest rate swaps. Non-standard derivatives that cannot easily be cleared were and are the main risk issue in a crisis. The non-cleared derivatives market includes inter alia the following:

- Very long–term interest rate swaps (e.g. 15-19 years) sought after by pension and insurance companies for liability management.
- Single name CDS (these are popular for regulatory and tax arbitrage).
• Swaptions—options on interest rate swaps (the rights to swap fixed and variable interest rates). This large market is crucial in managing long-term interest rate risk in pension and insurance products. For example, if rates were thought to rise in the longer run, then a firm would have the option (not obligation) by exercising a swaption to pay fixed and receive the rising floating rate interest payments. These can be up to 30 years maturity and are highly illiquid.

• Others include: forward rate agreements for currencies with long horizons; parts of the overnight index swap market; and commodity, energy and equity derivatives.

*Strengthening stock market infrastructure*

Organised stock markets and exchanges not only facilitate raising capital, especially for new businesses, but also provide liquidity to investors holding corporate equity. Work for NAEC has focused on ways to design healthier infrastructure to support these institutions as they are critical to reversing the trend away from equities. It has focused primarily on the United States, where structural and regulatory changes in the late 1990s have led to a sharp decline in IPOs, and may have contributed to the more general trend to delisting, but the analysis has been extended to cover the top 26 IPO-producing economies worldwide.

In the United States new legislation (the JOBS Act) has eased regulations and reduced costs with a view to making it easier for new businesses to go public and to meet SEC reporting requirements afterwards. But it did not do much to support the exchanges themselves and the networks of broker-dealers that make them work. Notably, after-market economic incentives, mainly commissions and the minimum price increment in which securities are allowed to trade (“tick” sizes), remain inadequate. These are vital to sustaining the financial viability of infrastructure supporting smaller companies that go public and risk eroding the markets from the bottom up. Much of this has been driven by well-intentioned efforts to protect investors by reducing transaction costs and levelling the playing field for retail investors, notably the shift to new order rules, Regulation ATS, Regulation Fair Disclosure, Sarbanes–Oxley and the insulation of equity research from investment banking. But the result has been a reduction of capital markets’ support infrastructure, especially around small caps, as the research, sales and trading that allow small companies to thrive as traded entities can no longer be provided profitably (see Figure 16). These changes have had an impact on strategic behaviour of many classes of market participants. To summarise:

• *Small issuers* cannot rely on capital markets if they have a small float or a complex investment story, as they will not be followed and researched by broker analysts where the collapse of bankable margins in line with lower tick sizes does not allow broker/dealers to cover their costs.

• *Investment banks and broker dealers* must focus on large liquid companies if they are to earn a return in the aftermarket, hence large institutional accounts are most active in this sector.

• *Venture capital firms* cannot rely on quick IPOs to access cost-effective capital or just take profits. In the 1980s and 1990s the time between first investment and IPO averaged 4 years. Today it is 8 years.

• *Fundamentally-oriented institutional investors* have largely abandoned the micro-cap sector in search of opportunities in more liquid larger cap stocks.

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29 See Weild, Kim, Newport (2013). Most of what follows draws on this work.
Pension funds have sought greater returns by allocating funds to hedge funds that once might have gone to small caps. For example, the 200 largest US retirement funds increased their allocation to hedge funds (and hedge fund-of-funds) by more than 20% in the year to 30 September 2012.

Figure 16: Forces Driving the Decline in US IPOs

The "one-two punch" of small tick sizes and the shift to electronic order book markets precipitated a secular decline in the U.S. stock markets.

Analysis of other countries is so far less developed than for the United States. However, the OECD Secretariat was able to carry out some econometric work for the NAEC project to explain IPO "productivity", measured as the number of small IPOs relative to GDP, on cross-sectional data covering 25 countries. Perhaps surprisingly, GDP growth rates, which influence capital formation in aggregate, are poorly related to IPO productivity. But the strength of incentives in the aftermarket and the number of public companies which serve to support stock market infrastructure, have strong explanatory power. The countries with strong performance in terms of IPO markets are also those that offer the highest aftermarket incentives (measured by "tick" size as a share of stock prices). These include Canada, Singapore, Australia and Hong Kong, and China. In contrast, countries with weaker IPO performance, such as Mexico, France, Italy, Japan and Germany, provide weak aftermarket incentives. Notably, the United States ranks poorly in both categories (after-market incentives and the number of companies supporting the market infrastructure).

State-owned Enterprises

Even where a broadly neutral competitive environment as regards SOE’s is maintained, governments need to exercise responsibility as owners where they hold significant equity stakes in enterprises. There are

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30 See Weild, Kim and Newport (2013).
many aspects of this task, notably whether and how to separate non-commercial objectives and activities (e.g. regulatory responsibilities or social objectives,) from those that should be run as a business. Work for NAEC has concentrated on one aspect in particular: how to ensure good governance of funding and financing such enterprises. Much of the work so far has been of an information gathering nature, involving a questionnaire and follow-ups to the response from 22 countries.  

There have so far been two objectives: (i) synthesising national practices with respect to processes that determine SOE financing; and (ii) taking stock of the range of transactions and conditions which might make the cost of operating SOEs materially different from that of private competitors. The most important areas concerned the effectiveness with which capital is used, covering among other things approaches to rate-of-return requirements and dividend policies; and issues determining approaches to equity and debt financing as they influence the relationship between re-capitalisation of SOEs; and the government budget, sources of debt financing and its cost.

A main finding of the work to date is that national governments approach their SOEs with a much higher degree of professionalism than was common in previous decades and closer to agreed norms and standards. However, considerable anecdotal evidence suggests that enterprises owned or controlled by sub-national levels of government have made much less progress.

While SOEs are generally subject to market terms and conditions on their borrowing, some concerns remain:

- **Rates of return.** Monitoring whether rates-of-return required of SOEs are comparable to those in the private sector is difficult, not least since rates of return should be considered over a relatively long time frame. Many OECD countries do not impose requirements on their wholly-owned SOEs. And some negotiate relatively low requirements to compensate for the cost of carrying out public policy functions, which gives them a perverse incentive to expand in the market place where they face little discipline on their use of capital.

- **Recapitalisation.** The conditions under which recapitalisation of wholly-owned SOEs takes place are difficult to assess. Some disciplines exist, notably those of the EC which require that practices be in line with those in the private sector. However, these can be difficult to enforce in practice, especially where governments must act in concert with private investors.

- **Perceived guarantees.** The perception that SOEs are more credit-worthy than private counterparts because they enjoy state backing is very difficult to eliminate however much governments deny that guarantees exist. The only OECD country with measures in place to neutralise the competitive advantage provided by perceived “implicit” guarantees is Australia, which requires “debt neutrality payments” from SOEs to the National Treasury.

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31 See (2013a) and references therein.
V. Improving Price Discovery in Financial Markets

Designing ways to hedge longevity risk

If annuity products are to play an important role in providing individuals with reliable income streams protected against longevity risks the institutional investors who provide them will need suitable instruments which allow them to manage this risk themselves effectively. Since life expectancy, even at 65 years, varies according to different risk factors (e.g. blue collar workers have a shorter remaining life expectancy than white collar workers), there is scope for annuity providers to manage their risks by adapting the design and pricing differentially to reflect these risks.

A number of financial instruments can be envisaged to manage longevity risk, including:

- **Buy-ins and buy-outs.** These are not really solutions because they transfer the entire risk instead of allowing it to be hedged. Different institutions may want more flexibility, i.e. to hedge different shares of their longevity risk.

- **Forwards contracts** (payments at maturity with no up-front disbursements). For example, Q-forwards exchange the realised mortality rate of a population at a future date in return for a fixed mortality rate agreed at inception, where the seller of the protection is incentivised by the former being less than the agreed best estimate of mortality. Similarly, S-forwards are where 2 counterparties exchange at a future date a net amount equal to the realised survival rate based on a (‘floating’) mortality index of a given population cohort in return for a fixed survival rate agreed at inception, plus or minus the bid-offer cost for entering the transaction. The buyer gets a net payment if the realised survival rate rises above that agreed at inception.

- **Longevity bonds** (regular payments, coupons, up-front disbursement). These are less attractive than forward contracts or longevity swaps because they do require upfront funding.

- **Longevity swaps** (regular payments, no up-front disbursements). These can be more useful than forward contracts in managing longevity risk as they provide for regular payments, compared with only a single payment at maturity for forward contracts. They are also based on survival rates, which make them more attractive than similar contracts based on mortality rates because the former are more closely linked to the actual longevity experience of pension funds and insurers.

While product design and pricing to hedge longevity risk are the responsibility of the financial institutions themselves, governments should encourage standardisation, liquidity and transparency, and regulating these where necessary:

- Reference points for pricing longevity risk (government indexes to evaluate private contract on offer) would be useful to potential market participants aiming to enter the market.

- Up-to-date mortality tables as well as assumptions that include future mortality and life expectancy developments would help financial institutions to estimate the amount of longevity risk. Mortality tables should be designed to include stochastic forecasts of future improvements and regular updates.

- A reliable longevity index would better encourage standardisation and transparency. Derivative instruments would require a limited number of standardised contracts so that sufficient liquidity
could be concentrated, in order to ensure that the policies do not raise the sort of financial fragility concerns associated with derivatives raised elsewhere in this document.

- Governments can issue longevity indexed bonds (LIB) to provide liquidity, standardisation and benchmarking for pricing. Government issuing LIB’s doesn’t necessarily mean that governments have to take on all the longevity risk out there in the market from annuity providers and/or pension funds. That may be far from advisable as governments already hold in their balance sheets a lot of longevity risk from their PAYG-financed public pensions. The actual idea of issuing LIB is that governments will jump-start the market by absorbing a small proportion of all the longevity risk and it will bring in the positive effects mentioned above.

**Changing stock market structures and practices: pricing issues**

The price discovery process in secondary markets plays a central role in the allocation of equity capital. Efficient and fair price formation is critical, not only for efficiency but also for investors’ confidence in the integrity of the markets and their incentives to identify and invest in long-term performance. In this regard, some fundamental changes in the structure of equity markets, driven by both technological advancements and regulatory initiatives, during the last decade pose some challenges.

First, they have led to **fragmentation of markets**. For a long time, services of stock exchanges were seen as similar to public utilities and often protected by a legal monopoly status which prevented the emergence of competitors. However, the integration of financial markets accelerated by technological advancements made it increasingly difficult for traditional stock exchanges to perform this important and “straightforward” function. Like in many other industries, technological advancements also streamlined the quality of services in terms of market infrastructure. For instance, at the beginning of the competition era, nearly all European stock exchanges were using the same trading mechanism.

The first demutualisation of the Stockholm Stock Exchange has been followed by an international trend towards demutualisation with incorporated exchanges being listed on their own markets. During this process, the stock exchange industry has also experienced a considerable degree of consolidation both at a national and international level, such as the merger of the NYSE and Euronext in 2006, NASDAQ’s acquisition of the OMX and the London Stock Exchange’s merger with Borsa Italiana in 2007.

While the “registered” stock exchange industry has experienced consolidation, the “dark” part of the equity market, i.e. anonymous trading volume away from the exchanges and not openly available to the general public, has moved in the opposite direction. The result is that equity markets today have fragmented into traditional organised stock exchanges and non-exchange trading venues, such as alternative trading systems (ATS) in Canada and the United States, multi-lateral trading facilities (MTFs) in Europe, and broker networks.

The fragmentation is not only between traditional stock exchanges and new venues for trading but also between so-called dark and lit markets. Table 2 indicates that in September 2009, 74.6% of US trade

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33 The United States’ Securities Exchange Act of 1934 defines an exchange as “…which constitutes, maintains, or provides a market place or facilities for bringing together purchasers and sellers of securities…”
was executed in the registered exchanges (NYSE, NASDAQ and others) and five electronic communication networks. The remaining 25.4% was traded in 32 different dark pools and in more than 200 different broker-dealer networks that do not display “best-price orders”\(^37\). Although the use of dark pools has not reached the same levels as in Japan, there is still an upward trend. A study by IOSCO shows that during the last week of 2010 no less than 9.2% of total trade by value in Japan was executed in dark pools\(^38\).

### Table 2: Estimated share of trade volume in the United States (%, September 2009)

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered exchanges</td>
<td>63.8</td>
</tr>
<tr>
<td>Electronic communication networks</td>
<td>10.8</td>
</tr>
<tr>
<td><strong>Total displayed trading</strong></td>
<td>74.6</td>
</tr>
<tr>
<td>Dark pools (32)</td>
<td>7.9</td>
</tr>
<tr>
<td>Broker-dealer internalisation (&gt;200)</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Total un-displayed trading</strong></td>
<td>25.4</td>
</tr>
</tbody>
</table>


While recognising the usefulness of dark pools for executing large trade orders, both IOSCO\(^39\) and the European Commission\(^40\) have expressed concerns. Since they do not publicly display orders they generate unequal access to market data and this may ultimately affect the quality of price discovery. To compensate for this, as required in MiFID II for example, prices in the dark pools should be determined by reference to a widely published price generated by another system and regarded generally by market participants as a reliable reference price. However, as dark pools are getting larger and lit pools are shrinking in terms of trade, the question arises as to where the breaking point is for using prices in small lit pools as the reference for the majority of trading taking place in dark venues.

A second challenge, concerns one of the most important changes in trading practices over the last decade: the dominance of algorithmic trading. This means that orders are executed by computer-based systems according to a pre-designed set of rules and procedures. The characteristics of algorithmic trading are defined very broadly from agency activities (on behalf of clients) to proprietary trading (with own money), aggressive strategies (liquidity-consuming) to passive strategies (liquidity-supplying), and informed (try to predict very short-term returns) to passive strategies (liquidity-supplying), and informed (try to predict very short-term returns) to passive strategies (liquidity-supplying), and informed (try to predict very short-term returns) to passive strategies (liquidity-supplying), and informed (try to predict very short-term returns) to passive strategies (liquidity-supplying), and informed (try to predict very short-term returns) to passive strategies (liquidity-supplying). However, the current public discussion focuses primarily on one particular type of algorithmic trading, namely so-called high-frequency-trading (HFT), which also represents the largest and increasing share in trade volumes in some OECD markets.

Although there is no commonly accepted definition, the main features of HFT can be identified as proprietary trading, using extraordinarily high-speed computers with sophisticated software, applying co-location services and the use of individual data feeds that are offered for a fee by stock exchanges. HFT is also characterised by very short timeframes for transactions, cancelation of orders shortly after the


\(^{38}\) IOSCO, (2011a).

\(^{39}\) IOSCO, (2011).

\(^{40}\) European Commission, (2010).

submission and ending the trading day with a maximum flat position. In 2009, HFT accounted for nearly 60% of the total trading volume in the US equity market. In Europe, it represented some 38% of total trade volume in 2010 with an upward trend.

Although technological advancements that make it possible to develop and adopt sophisticated and rapid computerised trading practices were the critical factors behind the increase of HFT, changes in the regulatory framework, trading rules and practices have also contributed to this rapid transformation. This includes regulatory reforms such as regulation National Market System (NMS) in the United States, MiFID II in Europe and Marketplace Rules in Canada, that aimed at promoting competition in trading services, decreasing the tick sizes that make it easier for investors to engage in speculative activity, and the possibility of co-locating the computer servers of trading firms within the stock exchanges to gain faster access.

HFT has raised some policy concerns. From a corporate governance perspective, HFT can be seen as an investment strategy with a very short-term focus. The ambition is not to assess and trade on genuine information concerning the long-term performance of any individual company. Rather, the strategy is heavily based on short-term arbitrage opportunities that are often obtained by unique and fast access to trading information.

Equal access to accurate market information is also a problem in relation to HFT, since high frequency traders generally use dedicated data feeds that provide them with information before consolidated information is delivered to the public. Another important aspect of the HFT price discovery process relates to order cancellations. Today, more than 90% of the total trade orders are cancelled by high frequency traders immediately after they are placed.

Finally, new equity-based instruments have become widespread. The increase of intermediary ownership has for a long time been coupled with a rise of passive investment strategies that are based on a closely pre-defined set of criteria. The most obvious example is various forms of index tracking, which has become an important “strategy” for a broad spectrum of investors. Already in the beginning of 1990s, many pension funds allocated more than half of their investments in equities to indexes. Two important factors driving this development were that: (i) passive investment strategies (indexing) helped investors to dispose of heavy brokerage commissions and advisory fees; and (ii) active institutional investors were unsuccessful in beating the market averages over time.

In the mid-1990s, the use of indexing was taken to yet another level by the development of exchange-traded funds (ETFs). These were designed to be more tax-efficient, since they avoid taxes on realising

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46 Weild and Kim (2010).
47 Beside general characteristics, HFT covers a wide number of financial strategies with different market impacts, such as: market-making strategies, arbitrage strategies and directional strategies See IOSCO, (2010).
capital gains on the underlying assets being bought and sold, until the ETF itself a listed vehicle is traded. Stock lending and other practices have greatly reduced fees for investors. Since then, ETFs have emerged as alternative investment vehicles for both passive and active investment strategies. ETFs share the common characteristics of mutual funds but are also tradable like shares on exchanges. As a result, investing in ETFs makes it possible both to decrease the transaction costs and diversify the portfolio for passive investors, and at the same time follow an active strategy for holding and trading different ETFs. As shown in Figure 17, the total market value of assets under ETFs has grown dramatically during the last decade and, after a slight decrease in 2008 during the global financial crisis, reached $US 1,351.00 billion in 2011.

As passive instruments, ETFs are designed to take advantage of market efficiency and contribute nothing to improving it, which has raised some concerns about their impact on prices. They have been associated with a sharp rise in the correlation of all equity price movements in recent years that historically has rarely been seen outside crisis periods. This means that the market is increasingly failing to discriminate between well-run and poorly-run companies. Small companies in particular have been concerned about this trend and are increasingly insisting that they not be included in stock indexes if they do an IPO. This may be a contributing factor to the decline in IPOs noted earlier.

![Figure 17: Global Exchange-traded Fund Assets (USD, billion)](source: BlackRock)

The total liquidity the ETF’s offer, which involves continuous intra-day adjustments, contrasts with the low liquidity of many of the underlying assets, e.g. small caps, emerging markets funds, commodity funds, etc. In addition, the underlying assets are often on loan. It remains to be seen how resilient these instruments will be in periods of stress, especially when faced with high demand for redemption. Since many of these products are synthetic in nature, involving derivatives and counterparty risk, their origination and the role of market making in them should not be a part of a depository institution’s core functions. They should be offered only by independent firms or the subsidiaries of banks ring-fenced under the OECD Secretariat-proposed (or other national) separation rules.

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