

# The Control and Management of International Capital Flows: A Review of the Literature

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July 2014<sup>2</sup>

Abstract

This paper reviews the large research and policy literature on international capital flows and the costs and benefits of policy measures to control and manage them. Analogy with trade in goods and services suggests that unrestricted international capital flows allow gains of trade from risk diversification and inter-temporal exchange of resources. These prospective gains increase in the presence of increasing returns to scale; network, locational or production externalities; and product and process innovation. Institutions (e.g. the legal environment, financial regulation) matter: without supportive institutions the benefits of international capital flows may not be realised; at the same time openness to international capital flows may promote better institutions. Empirical evidence, while not always conclusive, provides considerable support for the view that international exchange of financial claims is economically beneficial at the microeconomic level. There are though macroeconomic concerns: global liquidity has a substantial and procyclical impact on flows and pricing in international markets, dominating any response to long term fundamentals. These concerns may justify restrictions on capital flows in emerging market countries, as a temporary macroprudential instrument, and suggest a possible need for intervention in the major developed countries. The policy challenges might be summed up by saying that there is an international policy trilemma that applies even when exchange rates float: it is not possible to have at the same time international capital market integration, independent macroeconomic policy and be assured of financial stability.

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<sup>2</sup> The views expressed in this paper are those of the author alone and do not necessarily represent the views of, and should not be attributed to, HM Treasury. I have benefited from comments and suggestions from, amongst others, Isaac Alfon, Abheek Barua, Andreas Hoefele, Glen Hoggarth, Eric Pentecost and Robert Pringle. Any errors of omission or interpretation are mine alone. A review of this kind would not have been possible without the indispensable tools of internet search and bibliography management: how did we ever manage without them?

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# 1. Introduction

A decade ago the broad consensus of both policy makers and researchers was that, at least for advanced countries, the balance of costs and benefits clearly favoured allowing investors to transact freely across borders, giving them the opportunity to purchase without restriction real and financial assets such as wholesale deposits, shares, bonds and residential and commercial property. Despite a few expressions of concern about the ‘financialization’ of the global economy, capital flows and the resulting increased financial interdependence between nation states have been generally viewed as welcome.<sup>3</sup>

This consensus has now shifted. The Asian crisis of 1997-98 and the subsequent global financial problems that materialised in 2007-2008 have highlighted some of the downsides of capital market integration: exchange rate volatility and potentially severe exchange rate misalignment; and also the possibility that a reversal of capital flows may trigger both banking and exchange rate problems. Global capital market integration is still broadly to be welcomed, but many now believe that some forms of policy intervention is on occasion justified: in order to influence or control the composition and scale of capital inflows, especially if these contribute to asset price bubbles or to dangerous levels of maturity mismatch in the domestic financial system; or to respond to a crisis. Others suggest that there are more fundamental problems that may require more far reaching policy intervention.

This paper explores these issues through a review of the literature on the control and management of international capital flows. It is written in the context of an ongoing UK government assessment of the allocation of competences for financial regulation, at the national, EU and global level. The emphasis is therefore on the lessons for policy makers in developed countries. The aim has been to draw on the research and policy literature to both (a) provide a foundation for thinking about the costs and benefits associated with cross-border capital flows; and (b) summarise available statistical and narrative evidence on the magnitude and interaction of these costs and benefits and on the impact of policies that, either directly or indirectly, impact on international capital flows.

There are three main sections. Section 2 begins with a conceptual discussion (the ‘theory’ of international capital flows), discussing the costs and benefits associated with measures to control and manage capital flows. While there are some references here to econometric research, most of the literature cited here are representative examples of broad streams of intellectual thinking and scholarship, either key original contributions or work summarising and surveying what has gone before. A key conclusion reached in this section is that, in understanding the economic impact of capital flows, the institutional context is critical.

Section 3 then reviews empirical research on some specific selected topics. The coverage of this section has been limited by the time scale for writing this review. It focuses on four areas of work: (i) statistical summary of the magnitude and composition of international capital flows; (ii) the substantial body of research, largely based on data for emerging

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<sup>3</sup> This term ‘financialization’ has become a popular one with unorthodox critics of the political economy of international finance (e.g. Dore, 2008; Epstein, 2005; Stockhammer, 2010). The theory and empirical evidence reviewed here provides little support for these broad criticisms of international economic arrangements, but does provide some genuine grounds for concern about the impact of international capital flows on global macroeconomic and financial stability.

markets, on the relationship between capital account openness and economic performance; (iii) work on the impact of specific forms of international capital flow; and (iv) studies of the role of international capital flows in episodes of financial instability.

Section 4 turns to policy analysis, reviewing some of the arguments made for restrictions or limits on international capital flows. Capital flow management may be useful for enhancing financial stability, although its use seems mainly relevant to the situation of emerging market not developed countries. Other policies have been proposed as a response to the perceived role of international capital flows in contributing to systemic financial vulnerability while responding inadequately to economic fundamentals. The literature though suggests caution about what any such policies can achieve. These policy challenges might be summarised by saying that there appears to be an international policy trilemma that applies even when exchange rates float: it is not possible to have at the same time international capital market integration, independent macroeconomic policy and be assured of financial stability.

Section 5 draws out some of the themes emerging from this review of theory and evidence, emphasising implications for developed countries:

- Standard static equilibrium theory provides strong arguments in favour of the unrestricted capital flows (just as it supports free trade of goods and services). Generalisations of this theory to take account of incentives for innovation and dynamic impacts on productive efficiency suggest these benefits can be larger than suggested by the static theory. A range of empirical evidence suggests that when looking at particular forms of capital inflow e.g. FDI, they are quite substantial.
- There are many benefits at the microeconomic level from the growth of international capital markets over the past thirty years, including better risk diversification, more competition in intermediation and corporate control and lower cost financing of international trade; but there is at least prima facie evidence these benefits have been achieved at a cost of greater macro-instability.
- While it is now widely accepted that intervention to manage capital flows may be justified on prudential grounds – there is as yet no clear evidence on how effective such interventions will be at reducing systemic financial risk.
- This suggested policy trilemma indicates two appropriate policy responses: (i) international co-ordination of macroeconomic policy; and – because such co-ordination will never lead to domestic policy decisions taking full account of impact on other countries – (ii) a focus on developing better bankruptcy and resolution processes to minimise the impact of episodes of financial instability when they occur.

There are three supporting annexes. Annex A examines a large body of relevant historical scholarship. Annex B reviews the development of OECD and EU treaty arrangements, constraining the policy actions of advanced countries with respect to cross-border capital flows. Annex C summarises the literature on capital flows in emerging markets.

## 2. A conceptual framework

This section presents a conceptual framework – the ‘theory’ of international capital flows – as a foundation for the subsequent review of empirical evidence and policy. This framework incorporates both formal and narrative analysis, on the grounds that while formal modelling provides essential insights, we are very far from having an established general equilibrium model that captures all the features of capital movements relevant to policy makers.

This theory is set out in four subsections: (a) first a discussion of what is meant by ‘capital’ and ‘capital flows’ and their management and control; (b) second a presentation of standard static (general equilibrium) theory; (c) third a review of formal extensions allowing for increasing returns to scale, network externalities and incentives for innovation; and (d) fourth a discussion of institutional perspectives on capital flows primarily explored using narrative tools but supplemented by references to some econometric literature.

A few points that emerge from this theory can be highlighted:

- The term ‘capital’ refers to three different concepts in economics and business: international capital flows are defined – statistically – as exchange of financial claims between residents and non-residents.
- The theoretical arguments in favour of free trade in goods and services apply also to exchange of financial claims between residents and non-residents. These allow potentially large gains from trade through both the inter-temporal exchange of resources and increased diversification of risk. Variations of this theory to take account of incentives for innovation and dynamic impacts on productive efficiency suggest these benefits can be even larger than suggested by the static theory.
- The economic impact of transactions in financial claims depends substantially on the institutional environment, and the extent to which these are able to overcome associated informational and transactional costs. These institutions include arrangements for corporate transparency and disclosure, corporate governance and financial regulation.
- The causality can run in both directions: greater openness to international exchange of financial claims may lead to beneficial institutional change; but achieving the gains from international trade in financial claims requires a sufficiently effective institutional environment to ensure that contracts are enforced and that the resulting exchanges do not result in misallocation of resources.
- A central concern is the interaction of capital flows with financial stability. There is a long history of controversy about the extent to which international capital flows (for example ‘destabilizing speculation’) are a cause of financial instability and a range of theoretical contributions. There is though no standard, empirically testable model of exchange rate and international banking crises: these episodes can be expected to depend on institutional and circumstantial factors that vary substantially both over time and from one country to another.
- Capital market integration increases the need for international policy co-ordination (of taxation, financial regulation and also fiscal, monetary and macroprudential policy). The literature is immature, but the reading offered here suggests that such co-ordination is especially problematic for macroeconomic policies, suggesting the possibility of ‘secular stagnation’ (structural weakness of aggregate demand) and

implying that with capital market integration it may not be possible to both pursue domestic economic goals and fully eliminate risks of financial instability.

### **a. What do we mean by capital flows?**

Before looking at theory of control and management of international capital flows, it is advisable to pause for a moment to consider the meaning of the terms 'capital' and also what can be meant by policies to 'manage' or 'control' international capital flows.

The term capital has three common but distinct usages in finance and economics. It may various refer to: (i) the stock of physical and human capital used in production; *or* (ii) to the totality of financial claims either on governments or on private sector institutions; *or* (iii) in other contexts (for example bank capital regulation) to a subset of these financial claims e.g. shareholder capital but not debt.

A well known branch of the standard trade theory discusses the international mobility of both capital and labour. In this literature the relevant concept of capital is the first one, the stock of physical and human capital. The basic insight of this theory is the gains from trade achieved through 'factor price equalisation', i.e. relative factor prices converging in different countries. This can be achieved through free trade in goods but also through mobility of at least one of the factors of production. This theory is however silent on the transition from one equilibrium (without free trade or factor mobility and hence divergence of factor prices) to another (with free trade or factor mobility resulting in factor price equalisation) so it says little about capital flows.

The phrase 'international capital flows' refers to the second concept of capital: that of financial claims (recorded in the capital account of the balance of payments). Assessment of the costs and benefits of international capital flows needs to take account of the impact on the first concept, that of physical capital. Financial claims can be used to finance investment in physical capital, so reducing barriers to international capital flows may result in higher (or indeed lower) levels of domestic investment in physical capital.

The third concept, of equity capital, is what most banking practitioners mean when they think of capital. For them capital means their own funds with any additional borrowed funds, whether in the form of short or long term debt, used only for leverage, in order to get a higher return on their (equity) capital. This matters for understanding institutional aspects of international capital flows. Both prudential capital requirements and standard performance metrics applied to banks and asset managers are based on assessing the levels of equity capital needed to protect against extreme risk outcomes. As statistical work described in the following section documents, this encourages procyclical movements in gross international capital flows, as banks and investment funds take on more leverage in good times when risks appear low and reduce leverage when perceived risk rises.

A further distinction to bear in mind is between financial transactions by residents and by non-residents. This distinction underpins the statistics on global capital flows. It also matters to tax policy and (see Annex B) plays an important role in the international legal and treaty frameworks governing capital flows. The phrase 'capital controls' itself has multiple meanings. One usage refers to regimes - such as in most of Europe in the 1950s - in which official controls are imposed on all financial contracts between residents and non-residents. Another usage is a reference to specific measures applied to financial claims (taxes or

surcharges, quantitative limits, restrictions on dividend or coupon payments) that discriminate between residents or non-residents. The phrase 'management of capital flows' may refer variously to more limited forms of capital control, to measures that seek to influence the level or composition of capital flows without discriminating between residents or non-residents.

### **b. Standard static analysis**

A natural benchmark for thinking about the cost and benefits of capital market integration is the standard Arrow-Debreu model (Arrow, 1952; Debreu, 1951; Arrow and Debreu, 1954) of the efficient use of resources in general equilibrium. The essential argument is that of gains from trade: freedom of trade achieves both allocative efficiency (prices of goods and services reflecting the marginal benefits of their consumption) and productive efficiency (prices of inputs reflecting their marginal costs). This in turn supports the conclusion that the outcome of free market exchange is Pareto optimal i.e. no consumer can be better off without some other consumer being worse off.<sup>4</sup>

These results carry through only slightly amended to the context of international exchange.<sup>5</sup> Imposing restrictions on trade may have a distributional impact, resulting in benefits (reflected in higher output, employment and incomes) in some sectors/regions of an economy; but the overall balance of costs and benefits are negative and the same sectoral benefits can be achieved more efficiently i.e. at less cost to other sectors, through domestic redistribution. The extension of this framework, to allow 'large' countries to have a degree of market power in the markets for their imports and exports, can mean that the imposition of tariffs benefits one country at the expense of others. But retaliatory action makes all countries worse off. Agreement on free trade therefore still makes all countries better off and trade policy should not be used to achieve domestic distributional goals.

The same gains from trade also arise from international trade in financial claims. Maurice Obstfeld expresses this succinctly:

*"In theory, countries exchange assets with different risk profiles to smooth consumption fluctuations across future random states of nature. This intratemporal trade, an exchange of consumption across different states of nature that occur on the same date, may be contrasted with intertemporal trade, in which consumption on one date is traded for an asset entitling the buyer to consumption on a future date. Cross-border purchases of assets with other assets are intratemporal trades, purchases of goods or services with assets are intertemporal trades."* (Obstfeld, 2012, pg 470)

In other words, standard general equilibrium theory still applies to international trade of financial claims under the (strong) further assumption of complete capital markets.<sup>6</sup> As a result the essentially static framework of a one period general equilibrium still applies. The

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<sup>4</sup> This is the first fundamental theorem of welfare economics, which applies under the strong assumptions about information, transaction costs and market power needed to ensure prices do indeed reflect marginal costs and marginal benefits.

<sup>5</sup> Work summarised in all the standard texts on international trade (e.g. Caves et al., 1996; Markusen et al., 1994; Obstfeld and Rogoff, 1996).

<sup>6</sup> I.e. there is trade in financial contracts offering a payoff in all possible future 'states of the world', allowing for complete insurance against all future outcomes.

remainder of this subsection considers the resulting intertemporal and intratemporal gains from trade in more detail.

### *Intertemporal gains from trade: international borrowing and saving*

A key benefit of capital market integration is that it establishes a single global (real) rate of interest. The existence of a single global interest rate yields both productive and allocative efficiencies through the inter-temporal exchange of resources.

Firms or governments lacking in productive capacity can obtain resources for investment today by borrowing on the world market at the world rate of interest. They can therefore build capacity more rapidly than if they relied on domestic savings alone (meaning there are productive efficiencies). These investments are funded by the savings of consumers or governments who lack good domestic investment opportunities. These consumers or governments achieve higher returns (the world interest rate) than if they had invested their savings domestically (meaning there are allocative efficiencies).

Similar gains from trade arise from differences in time preference between countries: countries with relatively impatient households (or governments) can consume more now than they would otherwise be able to do and this is achieved by postponement of consumption in other countries rewarded by a higher return on their savings.

Some additional insight into the intertemporal gains of trade can be obtained from the standard 'two by two by two' (i.e. two factors of production, two goods, two countries) Heksher-Ohlin model. In this model free trade in factors of production (in particular import and export of physical capital) can be equivalent to free trade in goods, in that the sense that in either situation the two countries end up after liberalisation enjoying the same levels of consumption and income and with relative factor prices are equalised in the two countries.<sup>7</sup>

In this case *either* (in the case of free trade in goods) there is a balance of physical trade (the capital rich/ labour poor country exporting the capital intensive good and the capital poor/ labour rich country exporting the labour intensive good) with no capital flows at all; *or* there is a one-time export of physical capital from the capital rich country to the capital poor country matched by a corresponding loan or equity investment from the capital rich country to the capital poor country to finance this resulting trade imbalance and then a subsequent flow of consumption goods back to repay the financing. Here the export of the physical capital is a trade transaction (it would be recorded in the current account of the balance of payments) but capital market integration is necessary in order to finance this export.<sup>8</sup>

This Heksher-Ohlin result might be interpreted as suggesting that controls over capital flows do not matter because the same economic outcome can be achieved through free trade in goods; but this is a misinterpretation. The Heksher-Ohlin model assumes that physical capital is a fixed resource that is not increased through saving and investment over time.

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<sup>7</sup> A result first obtained by Mundell (1957).

<sup>8</sup> This Mundell result on the equivalence of free trade in final goods and free trade in factors of production no longer holds in a model in which trade arises because of differences in technology rather than in factor endowment: for example if one of the two countries has a superior technology for producing one of the two goods; or if there are external economies of scale of the kind discussed below in Section 2b. See Markusen et al. (1994), chapter 21.6-21.7 for further discussion.



Once the dynamics of investment and saving are taken into account, free trade in goods is no longer at all equivalent to capital market integration. Even with free trade in goods there can still be a demand for the import of capital for financing a deficit on the balance of trade, so that domestic investment can exceed the level of domestic savings.

#### *Intratemporal gains from trade: improved risk diversification*

The intratemporal gains from trade arise from improved risk diversification. Allowing risks to be exchanged on global rather than domestic markets enables further gains from trade, allowing the costs of temporary country specific negative shocks to be shared across countries. An obvious example is the greater diversification achievable when there is exchange of large insurance risks – such as earthquake or tropical storm damage – between countries.

This is not just a benefit to countries exposed to such risks. Investors from a country such as the UK, which is relatively little exposed to such catastrophes, can benefit from receiving premium income in return for absorbing a share of catastrophe risks in other countries.

Another example is the diversification of financial market and asset price risks – such as equity price movements, credit spreads or property prices – through the international exchange of capital. With greater diversification, risk premia – the price that must be paid for hedging these financial market risks – can be reduced by free movement of capital, in turn allowing a greater share of savings to be allocated to high return but high risk investment opportunities.

The risk diversification offered by exchange risk through insurance and financial markets offers protection against temporary country specific shocks. This applies also at the macroeconomic level: governments or households may be able to borrow temporarily in order to smooth over these shocks and (in the case of governments) to respond to temporary demand shocks.

### **c. Extensions of standard general equilibrium theory**

Whilst the standard static analysis makes clear the potential economic benefits of international capital market integration, it makes a number of restrictive assumptions. In particular it fails to take account of many possible reasons why market prices may depart from marginal costs or marginal benefits. The literature offers essentially two responses to this limitation. The first discussed in this subsection is to develop extensions of general equilibrium, using the same kinds of mathematical techniques that are employed in the standard Arrow-Debreu theory. The second addressed in the following subsection is to pursue a less formal narrative institutional analysis.

The extensions of general equilibrium theory reviewed here make various alternative assumptions to account for characteristics such as increasing returns to scale and imperfect competition, technological and other ‘network’ externalities and incentives for innovation. Examples of this approach include the ‘new’ trade theory, the ‘new’ economic geography and ‘new’ growth theory of the 1970s-1990s.<sup>9</sup> A similar approach is used in ‘dynamic stochastic general equilibrium’ or DSGE modelling for analysing monetary policies and the

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<sup>9</sup> These literatures are now widely presented in the textbooks e.g. Tirole (1988). Survey papers include Venables and Smith (1986), Krugman (1998), Ottaviano and Puga (1998) and others.

determination of inflation expectations, introducing specific generalisations, in particular sluggishness adjustment of prices by imperfectly competitive goods producers in what is an otherwise standard Arrow-Debreu general equilibrium setting. While little of this work directly addresses implications for capital market integration, it is possible to draw some relevant conclusions.

#### *Increasing returns to scale and imperfect competition.*

The standard theory assumes perfect competition i.e. all governments, firms and households are price takers, taking no account of the impact of their production and consumption decisions on market prices. This assumption of perfect competition is partially relaxed in the standard theory of international trade when allowing for the impact of trade restrictions by large countries on international prices; but this does not seem to be of relevance to international trade in financial claims.<sup>10</sup>

Of greater relevance to the free movement of capital is the incorporation of increasing returns to scale and imperfect competition at the *microeconomic* level, central features of both modern literature on industrial organisation and modern equilibrium models of industrial location and trade. These general equilibrium analyses typically employ relatively simple stylised models, combining increasing returns to scale and imperfect competition (most often using the Dixit and Stiglitz (1977) model of imperfect competition for continuum of goods with a constant price elasticity of demand) with other accompanying assumptions.

What do these new models of competition have to say about the benefits of free trade and in particular about the free movement of capital? The consensus (see for example Krugman, 1993) is that, while these newer approaches offer a much richer account of observed structure of economic activity, they do not fundamentally change the presumption of the standard theory in favour of free trade. While in these more general settings Pareto optimality is no longer achieved by the removal of all barriers to trade, the potential for welfare enhancing market interventions is relatively limited, depending on a precise understanding of the underlying structure of industrial organisation. Furthermore and most importantly free trade and reduction of trade barriers is a transparent and easily monitored policy; attempts to exploit the relatively small gains achievable from intervention will make it much more difficult to prevent the abandonment of mutually beneficial free trade agreements and descent into counterproductive trade wars.

#### *Network externalities leading to locally increasing returns to scale*

A related observation, of relevance to international trade in financial claims, but unexplained by standard static theory, is the pronounced geographical agglomeration of many industries which cannot be explained by the location of factors of production. A simple theoretical explanation is that the production costs of the individual firm depend on the level of production by other firms of the 'network' good; or a dependency of consumption benefits of the individual consumer on the level of consumption by other

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<sup>10</sup> Section 1.4 of Obstfeld and Rogoff (1996) applies the standard theory to the case of a large country borrowing for a single period, finding that it can tax capital inflows in order to lower the global interest rate to its own advantage. Costinot et al. (2011) extend this analysis to multiple periods, showing that large high growth countries can tax capital inflows in order to put downward pressure on global interest rates and hence achieve better intertemporal allocation of consumption. These models seem counterfactual since there are no obvious examples of large countries actually pursuing such policies.

consumers of the 'network' good. Such joint dependencies in either production costs or consumption benefits are referred to as network externalities.<sup>11</sup> They can result in locally increasing returns to scale, external to individual firms, with a reduction in average costs per firm arising from an increase in the output of the local industry as a whole. These externalities are explored in the 'new' trade and economic geography literatures, allowing a reduction in average costs generated by an increase in the output of individual firms.

The implications can be loosely captured in a general equilibrium setting through the use of the 'AK' production function (where output depends on total fixed capital in a sector as well as the fixed capital of individual firms). In such a setting the resulting externalities of investment substantially increase the social returns to investment and hence magnify the benefit of reducing the domestic real rate of interest (elevated by a shortage of domestic savings) to the world level. An example illustrating the importance of such external benefits released by the free movement of capital to growth of emerging markets in recent years, has been the use of global financial markets to finance cellular telephone infrastructure, perhaps the most transformative technological change in lower income emerging markets for many decades.<sup>12</sup>

Evidence from the economic geography literature suggests that these locally increasing returns to scale help explain the emergence of financial centres (Pandit and Cook 2003; Lee and Schmidt-Marwede 1993). Falling transaction and communication costs are leading to even greater concentration in a few leading centres (Engelen and Grote 2009). As described in Annex A, London took advantage of just such externalities, and also a supportive permissive regulatory regime, to establish itself as the leading centre in the offshore Eurodollar markets in the 1960s. Capital account and financial liberalisation from 1979 onwards helped cement this position.

Especially relevant to the location of financial activity is the theory of 'two sided platforms' (Rochet and Tirole, 2006), the situation where buying and selling is intermediated through a central platform with search and other costs falling the greater the participation in the platform. This explains why financial transactions are so often concentrated in particular trading venues. It also suggests that a critical market mass may be needed for platforms to succeed, something which may lead to efforts to 'tilt' and hence expand the platform, by offering discounts to one side (a light hearted example being free entry to ladies at night clubs). All this is consistent with much of the empirical market microstructure literature on market liquidity and provides a further argument in favour of allowing freedom of international trade in financial claims. This may have a globally beneficial impact by ensuring that transaction platforms have sufficient usage to offer low transaction costs.<sup>13</sup>

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<sup>11</sup> Again there are many surveys, for example Shy (2011).

<sup>12</sup> Gruber and Koutroumpis (2011) review relevant literature and present cross-country evidence of a GDP impact that increases with scale.

<sup>13</sup> In the case of equity trading overall judgement on the economic impact is complicated by regulations (in the US Reg NMS, in Europe MIFID) that support competition between platforms, designed to avert potential exploitation of monopoly rents. However, some argue that these lead to market fragmentation and hinder price discovery, see O'Hara and Ye (2011). These changes are closely related to the growth of computer trading in financial markets (see Government Office for Science, 2012). The exchange trading of derivatives provides a clearer case of trading concentrating on specific venues, and the possibility of order flow moving

The 'clustering' of economic activity, highlighted by Porter (2000), is also observed in a number of other industries. Amongst many examples, some of the most frequently mentioned are shoes and clothing in Northern Italy (Cossentino, Pyke and Sengenberger, 1996; Belussi and Sammarra, 2009) and Silicon Valley (Bresnahan, Gambardella and Saxenian, 2001). The economic literature emphasises the role of network externalities in the emergence of such clusters, such as the role of social networks in spreading good practice, the availability of a pool of skilled supporting labour and access to shared supporting inputs (see Markusen, 1996); but – outside of the financial sector – it is not so clear that free international trade in all financial claims is necessary to support the establishment and development of such clusters.

### *Competition and innovation*

The new industrial organisation literature also offers insight into the relationship between trade and competition policies. There is a large body of work from both economics and law on competition policy (see Motta, 2004, for a detailed review). This justifies a range of remedies (such as approval for mergers and acquisitions or the break-up of firms and price fixing penalties) to address price collusion and the exercise of market power (in legal terms, the 'abuse of a dominant market position').

Modern theories of industrial organisation suggest that concentration does not necessarily result in the exercise of market power, provided that the possibility of new entry disciplines existing incumbents (for a statement of this argument see for example Audretsch et al., 2001). This essentially dynamic perspective suggests a further argument in favour of free international transactions in financial claims, notably in foreign direct investment. This can make it easier for new firms to enter an industry and the resulting reduction of entry barriers can be a discipline preventing incumbent firms from exploiting their market power.

Another branch of research addresses incentives for innovation. Here again there is a substantial economics research literature. This work includes the most influential strand of 'endogenous growth' models, which take account of the incentives for invention of new products and new techniques in a general equilibrium context (see Aghion, Howitt, and García-Peñalosa, 1998).

The theory of incentives for innovation suggests a non-linear humped shape relationship between competition and innovation, with these incentives first increasing and then declining as competition increases.<sup>14</sup> The implications for free international trade in financial claims appear similarly ambiguous. Foreign direct investment can support transfer of technology and the opportunity to employ technology in more markets open to free movement of capital favours innovation; but at the same time entry by foreign firms could reduce incentives for innovation by domestic firms.

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dramatically once a tipping point is reached; for illustration see Cantillon and Yin (2008); Gorham and Singh (2009).

<sup>14</sup> According to this theory the presence of competition encourages firms to innovate and hence differentiate their products and enjoy higher profit margins; but too much competition means margins do not justify the investment in innovation. For discussion and supporting panel evidence see Aghion et al. (2005)

#### d. Institutions and the institutional environment

The various formal models described in the previous subsection yield additional insights into the economic impact of capital flows not captured by standard Arrow-Debreu theory. These new models also though have obvious limitations. Firms are treated in a stylised way, ignoring the potential for divergence of interest between management and outside investors. There is little allowance for the legal institutions underpinning market exchange, ensuring enforcement of contracts and protection of property rights.<sup>15</sup> Government and political process is treated at best simplistically.

Another major omission, in the context of understanding capital flows, is that financial instruments, financial markets, financial institutions and financial regulation are all also absent from general equilibrium models. In standard theory financial markets are complete and the distinction between different forms of financial instrument such as debt and equity does not matter.<sup>16</sup> Finance is simply a veil, and an extremely transparent one, which has no impact on economic outcomes.

For all these reasons understanding the economics of capital flows requires also considering the richer but less precise narrative tools of institutional and historical scholarship. These two approaches – formal modelling and institutional analysis – are complementary: often such narrative analysis is motivated at least at the microeconomic level by mathematical models that provide insight into how the price mechanism may depart from the assumptions of standard general equilibrium theory. Formal extensions of general equilibrium have also been guided by less formal accounts of the institutions of the market economy.

This subsection is itself divided into five parts: first a general discussion of the importance of taking an institutional perspective to understand the operations of the market economy; second a discussion of the importance of financial development and how this can affect the benefits achieved from international capital flows; third a review of the variation in business organisation and corporate governance both over time and between countries and how this relates to the costs and benefits of international transactions in financial claims; fourth an examination of the political economy of capital market integration; and fifth and finally a discussion of the relationship between institutional factors, international capital market integration and systemic financial risk.

As in other parts of this review, the focus is on the implications of a much larger and broader literature for the economic impact of international capital market integration, particularly in developed countries. The discussion offered here suggests that:

- while there are large potential benefits to firms and households from international capital market integration, these can only be achieved when the domestic financial sector and supporting institutional arrangements are sufficiently developed;

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<sup>15</sup> This is not to say that there is no allowance made for institutional arrangements in general equilibrium modelling, for example general equilibrium models which explore the impact of patent laws on innovation and growth (e.g. Segerstrom, 1998). But such extensions of general equilibrium modelling are necessarily limited, capturing only a small part of a much richer institutional environment.

<sup>16</sup> This is stated in the Modigliani and Miller (1958) irrelevance proposition, itself essentially a corollary of assumptions of standard general equilibrium theory.

- increased capital market integration can support improvements in the arrangements for protection of investors and enforcement of contracts; and help policy makers make responsible long-term policy commitments;
- the economic impact of allowing freedom to trade in international financial claims can be expected to vary substantially both with the type of claim and with the businesses that issue or hold these claims; and
- international capital market integration makes it more challenging to ensure effective regulation of financial institutions, to contain risks of financial instability and to ensure effective co-ordination of macroeconomic policy. These risks of instability can be heightened by weaknesses in the governance and control of financial institutions and can be summarised in terms of a policy trilemma: even when exchange rates float it is not possible to have at the same time international capital market integration, independent macroeconomic policy and be assured of financial stability.

Looking for insight through institutional analysis is not new. For example there was a strong tradition of institutional economics in Germany, Austria, the United States and elsewhere in the early 20<sup>th</sup> century, which can be seen as having developed in reaction to the equilibrium analyses of Marshall and Walras (Rutherford 2001). Modern institutional scholarship offers a range of insights into the organisation and performance of non-financial firms, financial institutions and also the institutional arrangements that support market transactions, especially in addressing the general problem of overcoming ‘transaction costs’ in market exchange (Coase, 1960; Williamson, 1979).

An important contribution of the institutional traditions, echoed in the modern new industrial organisation literature, has been to downplay the purely static benefits of market competition, stressing instead the inherent dynamics of behaviour, both of individual firms and financial institutions and of the markets within which they operate. A classic statement of this viewpoint is of course that of Schumpeter’s view of the dynamic process of capitalism expressed in the phrase ‘creative destruction’ (Schumpeter, 1934; Schumpeter, 1942)

This point is well argued by Rodrik, Subramanian and Trebbi (2004) in their discussion of the role of institutions as a determinant of economic growth. The literature on growth accounting makes clear the principal determinant of the level of output is not factor accumulation per se, but the efficiency with which given factor inputs such as capital, labour and raw materials are employed in production (conventionally measured by changes in total factor productivity of ‘X-efficiency’); total factor productivity is a much more important determinant of output than either geographical inheritance (proximity to markets, natural resources) or the accumulation of fixed capital (acquired through investment).

Institutions are thus critical to determining how effectively factors of production are used in producing output. For further argument and evidence see, for example, Acemoglu, Johnson and Robinson (2005) who explore ‘quasi-natural’ experiments, such as the division of North and South Korea.

### **Financial development**

An extensive literature explores the particular role of financial institutions and financial markets in economic growth and development. The general theoretical arguments are well

known. Banks can overcome contractual and informational frictions that limit the ability of firms and households to borrow for productive investment, by screening and monitoring borrowers. Secure and low cost payment facilities can substantially reduce transactions costs. Access to financial markets may be needed to finance larger investment projects.

The growth of banking, stock and debt markets also offers opportunities for gains from trade in financial claims (inter-temporal exchange of resources and risk diversification) amongst households, firms and the public sector; i.e. the same gains from trade as can be achieved at the international level from exchange in financial claims between residents and non-residents.

The importance of finance to development is confirmed by a range of historical and institutional research, notably by Raymond Goldsmith who examined the historical role of financial institutions in industrial countries (Goldsmith, 1955) and the contribution of financial institutions to growth in developing countries (Goldsmith, 1969). In recent decades more quantitative research has also underlined the importance of financial institutions in economic performance (Levine, 1997; Levine, 2005; and Beck, 2008 provide overviews of theory and evidence).

Much of this work has been conducted at the World Bank, where they have developed a comprehensive database for measurement of the financial sector development across countries (the latest version is described in Beck, Demirguc-Kunt and Levine, 2010). As summarised in the introduction to (Demirgüç-Kunt and Levine 2004), the fullest study using this database, by Beck et al. (2002) found:

*“Measures of bank development and [financial] market development are strongly linked to economic growth. More specifically, the data indicate that economies grow faster, industries depending heavily on external finance expand at faster rates, new firms form more easily, firms' access to external financing is easier, and firms grow more rapidly in economies with higher levels of overall financial sector development. Finally [this research] emphasizes the role of the legal system in producing growth-enhancing financial systems. Specifically, the component of overall financial development explained by the legal rights of outside investors and the efficiency of the legal system in enforcing contracts is strongly and positively linked to firm, industry, and national economic success.”*

Key lessons from this research are: first that the specific form of financial intermediation matter much less than the overall level of financial development (there is little evidence suggesting that either bank or financial market intermediation is specifically associated with better economic performance); second that the enforcement of contracts and protection of private property rights is critical for effective financial intermediation. This is consistent with a large number of studies that follow La Porta et al. (1997), by employing measures of the rule of law showing how investor protections are associated with various measures of financial development, such as the growth of stock markets and public debt markets.

There is no single standard theory of international capital market integration and financial development. A relatively obvious point is that the gains from international trade in financial claims depend on already having achieved a certain level of domestic financial development. One view is that there is a ‘pecking order’ of international capital flows,

depending on the level of domestic financial development (Razin et al. 1998; Daude and Fratzscher 2008). When domestic financial markets and institutions remain relatively undeveloped, then most international capital investment will be in the form of foreign direct investment, avoiding the need to work through domestic banks or financial markets. Then as an economy develops financially, with a supportive environment of investor protection and contract enforcement, there will be an increasing share first of bank and portfolio debt and, eventually, of portfolio equity investment.

It is also argued that international capital market integration may help support domestic financial development. For example theory and evidence suggests that foreign bank penetration may improve the functioning of the domestic banking system, by introducing improved technology for credit assessment and for the execution of payments, and by improving standards of governance (see Agenor, 2003, for a summary of these arguments). As discussed in section 2c, an increased number of market participants, through increased participation of international investors, can increase liquidity and reduce transaction costs on domestic financial markets, both for bonds and equities.

The theory though is not entirely unambiguous. It is at least theoretically possible that opening up to international capital markets could weaken access to capital for at least some firms. Boot and Thakor (2000) demonstrate in the context of a microeconomic model of bank lending how competition in banking can erode the relationships between banks and their customers that have developed to overcome information asymmetries. It is sometimes argued that strong bank-customer relationships in so called 'bank oriented' financial systems, such as Germany and Austria where security markets play a lesser role in the financing of corporate investment, help support investment. However, there is little support for this proposition from the empirical literature on finance and growth.

Recent research (reviewed by Manova, 2009) has documented a strong relationship between the availability of trade credit and global trade patterns. This is one further channel through which financial development can improve economic performance, by facilitating participation in global trade. It is also potentially an aspect of financial development that can be directly affected by capital account liberalisation, through giving domestic firms access to external trade finance.

### **The changing nature of business organisation**

A distinct institutional issue is the (changing) nature of both the organisation and ownership and control of businesses. There is a huge amount of scholarship on these topics, although to date relatively little of this directly addresses the impact of international capital market integration. This subsection briefly considers some relevant strands of literature.

One illustration of the importance of business organisation to understanding international capital markets comes from comparing the first 'golden age' of international capital investment (during the classical gold standard era from around 1870-1914) with the modern era. As described in Annex A, during the earlier period international capital flows were mostly bonds issued in London and other financial centres by governments, railroad companies and also mining and agricultural enterprises. There was little or no foreign direct investment (companies might incorporate in London or other financial centres in order to issue securities, but they were organised and controlled locally in the countries where they operated).



Today, in contrast, a substantial share of total international financial assets consists of foreign direct investment in production and distribution facilities, by multinational enterprises. An extensive body of institutional scholarship examines the role of multinational or transnational enterprise, emphasising the key competitive advantages of technical and product knowledge.<sup>17</sup> Much of this work focussed on the substantial international growth of US manufacturing firms in the 25 years following the Second World War. A striking statistic from Curhan et al. (1977) is that – despite extensive capital controls in most recipient countries - between 1951 and 1975 the largest 180 US manufacturing companies set up or acquired 6,789 overseas facilities, exploiting superior technological, financial, management and marketing assets and skills.

The organisation of this multinational enterprise has itself changed substantially in the past two decades as a result of falling costs of transport and communication. Only two decades ago Markusen (1995), in his review of this literature, could write that:

*“... most direct foreign investment in production facilities seems to be "horizontal," in the sense that most of the output of foreign production affiliates is sold in the foreign country. For example, Brainard (1993) reports that foreign affiliates owned by U.S. multinationals export only 13 percent of their overseas production to the United States, while the U.S. affiliates of foreign multinationals export 2 percent of their U.S. production to their parents.”*

Today an increasing proportion of the products and services of multinational enterprises – including both goods (e.g. apparel, electronics) and services (through business service outsourcing) are stages of production in a collaborative international production chain.<sup>18</sup>

The literature does not fully address the impact of these changing arrangements on the costs and benefits of international capital market integration, but it seems clear that the potential benefits of being open to foreign direct investment have grown alongside the growth of multinational businesses; and that full participation of local operations in global supply chains may rely on companies having sufficient freedom to make payments and transfer revenues across international borders to meet all local financing requirements wherever they arise.

Even before these relatively recent changes in global supply chains, it was usually argued that foreign direct investment (FDI) was especially valuable for promoting technology transfer and improvements in factor productivity. The literature on multinational enterprises investigates the factors that support multinational organisation of business and emphasises the benefits to host countries from transfer of technology and skills through FDI by international companies. This is related to clustering in that the benefits of FDI may be especially large if they have beneficial external impacts, improving productivity and knowledge of domestic firms (Markusen and Venables, 1999). The relevant theoretical literature (see Agenor, 2003 for a review) emphasises the potential positive impacts of FDI on both technology transfer and local economies of scale. It may though be difficult to generate such spill-over effects if a cluster does not already exist (De Propriis 2005).

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<sup>17</sup> Widely cited references include Dunning (2013); Kogut and Zander (1993); Casson (1987); and Caves (1996).

<sup>18</sup> A detailed review of these changes in business organisation by the OECD and the World Trade Organisation is summarised in OECD (2013b).

In terms of the benefits of FDI, it is also worth noting that gross capital flows may matter much more than net capital flows.<sup>19</sup> As Lipsey (2001, 1999) emphasises, two direct investments, from country A to country B and from country B to country A, do not offset each other to the same extent as two portfolio investments. They each have a positive benefit in terms of accompanying technology and skills.

Another aspect of business organisation is ownership and control, which varies considerably between countries, especially in the extent to which company shares are held privately by a small number of shareholders, or are traded on public stock markets companies amongst dispersed shareholders; and to which a majority shareholders can control the company. Faccio and Lang (2002) find that most European firms are widely held (36.93%) or family controlled (44.29%). However, widely held firms are more important in the UK and Ireland, whereas family controlled firms are more important in continental Europe.<sup>20</sup>

These differences are relevant to international capital market integration because they may affect the protection of investors and hence the scope for gains from trade from intertemporal exchange and diversification of risk. The corporate finance literature mostly applies an 'agency' perspective to analyse the financial implications of corporate structure and governance, exploring potential divergence of interests between investors and management or between senior managers and other employees (see in particular Jensen and Meckling 1976; Fama and Jensen 1983).<sup>21</sup> These perspectives are brought to bear in a substantial empirical literature, which explores the importance of institutional arrangement in the financing and investment decisions of companies. As discussed below weaknesses in 'principal agent' relationships of these kinds may have a major impact on the behaviour of financial institutions and hence on the impact of globally intermediated financial flows.

Shleifer and Vishny (1997) provide a survey of this literature up to the mid-1990s, at which time most available empirical work was on the US and to a lesser extent on Japan, Germany, Italy and Sweden; they argue that effective investor control of companies can be achieved *either* through legal and other protections for external investors *or* through relying on a controlling owner providing the majority of a firm's finance. Subsequent research has explored these issues for other countries and in cross-sectional comparisons.<sup>22</sup>

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<sup>19</sup> The definition of FDI does not just mean investment by a multinational corporation. The OECD's recommended definition is ownership of ten per cent or more of the voting shares. Retained earnings also represent an important part of total FDI, although this element of FDI is only reported by some countries.

<sup>20</sup> Claessens et al. (2000) conduct a similar exercise for Asian companies, finding that control is often exercised by via pyramid structures and cross-holdings, especially amongst family-controlled firms and small firms and that more than two-thirds of firms are controlled by a single shareholder.

<sup>21</sup> See also Williamson (1988) who considers the relationship between 'transaction cost' and 'agency cost' perspectives on corporate governance, arguing that these are complementary perspectives and that a transaction cost analysis provides a good explanation of why some particular forms of financing are used in particular contexts such as project finance.

<sup>22</sup> A number of empirical studies employ cross country data to investigate corporate governance arrangements and confirm the importance of institutional arrangements in corporate governance. To mention just two of many contributions: Giannetti (2003) explores how different institutional arrangements for investor protection and corporate governance influence the choice of capital structure; Dyck and Zingales (2004) use premiums paid over market prices for the acquisition of controlling blocks of shares as a measure of the private benefits of managerial control, and find these are associated with less developed capital markets (which they interpret as reflecting relatively weak legal protections for minority investors).

The challenge of effective investor protection is a major reason that firms from some emerging markets seek to list publically traded equity in financial centres such as London and New York, with relatively strict disclosure requirements.<sup>23</sup> Capital market integration may therefore overcome agency problems in domestic markets while also offering revenue opportunities for global financial centres that attract such listings. It may also put pressure on local financial markets and financial regulators to improve their standards of disclosure and investor protection to encourage domestic firms to list domestically.

Note also that variation in ownership structure is related to the institutional arrangements for pensions. In countries such as the UK, the US and the Netherlands a large proportion of household saving is conducted through funded pension arrangements; as a result there is a large demand for both equities and bond investment encouraging the development of public securities markets. Some of the implications of this are explored by Reisen and Williamson (1994), who document how the removal of capital controls in the UK in 1979 was followed by substantial outflows of pension fund investment seeking international portfolio diversification. For other countries with relatively small funded pensions the benefits of such international diversification of pension fund assets can be expected to be smaller.

Another key discipline on the agency costs of dispersed public ownership is the 'market for corporate control' and in particular the potential role of private equity companies in acquiring underperforming companies or buying out underperforming divisions (see Wruck, 2008). This is a further mechanism through which capital market integration may lead to improved corporate performance.

### **The political economy of capital controls**

A large body of work in economics explores the relationship between political economy, macroeconomic institutions and macroeconomic policy, for both emerging markets and developed countries. An important theme of this literature is that governments do not necessarily act to promote some agreed economic goal ('social welfare') but instead themselves respond to incentives like any other economic agents. One obvious example, is that politicians in a democracy may be driven to pursue short term expansionary policies in order to increase the chances of their re-election and this can create a political business cycle (Nordhaus 1975; Alesina and Roubini 1992).

A related and influential perspective on the political economy of macroeconomics and its impact on finance and allocation of resources in emerging markets is to be found in the thesis of financial repression. The work of McKinnon (1973) and Shaw (1973) highlights how political interests can support restrictions both on domestic financial intermediation and on international financial transactions. The driver behind financial repression is the desire of government to control resources in place of the private sector. By imposing controls on rates of interest the government ensures that it has favourable access to finance from banks, because there are few profitable lending opportunities to the private sector. Banks may be required to hold high levels of unremunerated central reserves, or forced to purchase Treasury bills, as a form of taxation on financial institutions. McKinnon (1973) and Shaw

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<sup>23</sup> There is a substantial literature exploring both the reasons for international equity listings and the impact on share valuations (see, inter alia, Sarkissian and Schill, 2009, 2004; Saudagaran and Biddle, 1992, and for a review of this literature, Karolyi, 2006).

(1973) argue that financial liberalisation is key, allowing the rate of interest on lending to rise to market determined levels and hence helping to channel savings into productive investment.

A full review of all this work on the political economy of monetary, fiscal and regulatory policy is not possible here. What can be done is to examine, briefly, what this literature has had to say about the management and control of international capital flows. This reinforces many of the ideas in the previous subsection about the relationship between the institutional environment (legal protections for investors, corporate governance, financial development and financial regulation) and the economic impact of international capital flows. Once again the interaction is two-way: if institutions are relatively weak or undeveloped then the net economic benefits of allowing unrestricted international capital transactions can be small or even negative; but allowing international capital transactions can encourage improvement in domestic institutions. Of particular importance in the context of macroeconomic policy is credibility of policy commitments and the international co-ordination of policy (an issue discussed further in Section 4).

Alesina et al. (1993) review the political economy of capital controls, emphasising the relationship between capital account openness and the ability to levy taxes on financial assets. A key point is the relationship between the tax base, the independence of the central bank and the use of capital controls. Countries with weak tax bases and politically controlled central banks face the temptation to use monetary policy as a source of fiscal revenue (both directly through seignorage and indirectly through low or negative interest rates on government borrowing). Capital controls will then be preferred in order to make it difficult for residents to avoid this taxation by holding financial assets offshore. They find evidence that countries with weak tax bases and politically dependent central banks are indeed more likely to impose capital controls (in a data set of OECD economies from 1950 – 1989). An implication is that a shift in policy, both to a more politically independent central bank and to greater openness of the capital account, may support fiscal reforms and the development of a stronger tax base.

Expectations and credibility are central. Interest rate spreads between countries (covered spreads after controlling for exchange rate risk) reflect not just current capital controls but also investor perception that capital controls may be imposed in the future, i.e. the ‘political risk’ of future intervention, investigated empirically by Dooley and Isard (1980). Provided the abolition is perceived as permanent, the removal of controls on capital outflows can lead to increased net capital inflows (Kenen 1993). Labán and Larraín (1997) argue that this can be viewed as the creation of an additional “option value” for non-residents, in that they are more willing to invest if they can respond to bad news e.g. an adverse change in the tax regime, by liquidating their investment.

But what is to prevent governments renegeing on this commitment, reversing policy and reintroducing controls on capital inflows after an initial liberalisation, and then exploiting immobile non-resident investments? Bartolini and Drazen (1997) explore how the removal of controls can be perceived as a signal about future commitment to capital market integration. In their setting the signal is credible because the abolition of controls reveals a willingness to accept the costs (such as a reduced tax base) associated with international capital mobility. They document four cases (Italy, New Zealand, Spain and Uruguay) where

removal of controls on capital outflows in the 1970s or 1980s was indeed followed by substantial net inflows.

Political economic considerations also help explain some of the financial vulnerabilities exposed by removal of capital controls in emerging markets. Literature on the relationship between international capital flows and financial instability is discussed later in this subsection. The main points to be made here are that: (i) policy commitments, e.g. to maintain a fixed exchange rate or to abstain from imposing capital controls, may be abandoned in adverse economic circumstances; and (ii) international investors may fail to perceive the risks of these policy commitments being abandoned.

Another political economy issue is the impact of capital account liberalisation on the tax base. There is vast literature exploring the relationship between tax competition, fiscal revenues and public spending. These have clear implications for fiscal autonomy when controls on international capital transactions are removed.<sup>24</sup>

The issues involved here are quite nuanced. If residence is taken as a given, then the optimal tax structure is one based on the residence of the investor not of the investment, and is compatible with an absence of restrictions on international capital investments; but inability or difficulty in taxing foreign income may lead to loss of revenue without restrictions on capital outflows (Razin and Sadka 1991). International capital market integration may also limit the ability of governments to use taxation to achieve redistributive goals (Sørensen 2004).

A further issue is that residence may shift. Without controls on international capital flows, corporate activity and corporate form may be relocated relatively easily internationally in order to take advantage of favourable tax arrangements. Standard arguments then suggest that under a wide range of circumstances tax competition will result in inefficiently low levels of corporate taxation and public spending. An early and widely cited model is Zodrow and Mieszkowski (1986) and there are several reviews of this large literature (e.g. Zodrow, 2003; Wilson, 1999; Zodrow, 2010). An implication is that co-ordination of tax regimes to limit tax competition will benefit all.

An alternative position, associated with the political economy of James Buchanan (see for example Brennan and Buchanan, 1980, 1977), views government bureaucracy as a 'Leviathan,' a costly burden on productive activity (both through taxation and diversion of activity in unproductive rent-seeking activities). This perspective emphasises the benefits of tax competition, both regionally and internationally, as a discipline on the expansion of government bureaucracy.

There is of course middle ground between these extreme views of government as being either purely benevolent or purely self-serving. Persson and Tabellini (1992) show how the political impact of capital market integration and the resulting tax competition, may be partly offset by changes in political outcomes (a shift in the 'median voter' whose views are reflected in the outcome of political decision making). Edwards and Keen (1996) explore the circumstances under which co-ordination is of benefit to a 'representative citizen' (their

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<sup>24</sup> This is a point emphasised by Obstfeld (1998), pp. 18-21, in his review of international capital market integration. However, as he points out, there is no clear evidence that countries with very open capital markets (e.g. Germany) have lost all ability to control tax revenues.

results are intuitive depending on the marginal ‘propensity’ of government to waste resources and the marginal international elasticity of the tax base).

All this suggests two main conclusions on the political economy of integration of capital markets:

- Removal of capital controls can be viewed as one aspect of broader institutional and financial development, with many interrelated benefits, including: taking advantage of the positive impact of financial development on growth documented by Beck et. al. (2002); and developing sufficiently mature political institutions to be able to credibly commit to appropriate long term policies that do not seek to exploit non-resident investors.
- International integration of capital markets will increase the need for policy co-ordination between countries. As discussed below and in Section 4 below, this applies to the co-ordination of monetary and fiscal policy just as it does to the co-ordination of tax regimes or of financial regulation.

Finally, while the political economy of capital controls suggests that countries will over time reduce capital controls, the preferred timing and sequencing of these developments will vary from one country to another: relatively open export-orientated economies are likely to prefer the sacrifice of autonomous monetary policy for exchange rate stability and the encouragement of FDI and other forms of capital inflow. Relatively closed economies may put a priority on monetary independence and be reluctant to live with the potential for substantial exchange rate movements associated with removal of capital account restrictions. But as countries become fully developed the balance is likely to shift decisively towards full capital market integration.

### **International financial claims and financial stability**

It was commonly argued before the crisis that increasing opportunities to diversify risk through international globalisation was making financial institutions and the financial system safer than before.<sup>25</sup> Now, in the wake of the crisis, it is recognised that the combination of weaknesses in the governance and regulation of banks, combined with the substantial increase in international capital flows, has heightened the risk of systemic financial instability. This is not of itself a reason for restricting international capital flows but it does suggest a need for close attention to the corporate governance and regulation of financial institutions in a world of large scale cross border capital flows and to the policy steps needed in response to potential macroeconomic and financial instability.

This sub-section on institutional perspectives is therefore completed with a discussion of the circumstances under which international capital market integration might heighten significant risks of financial instability in developed countries.<sup>26</sup> The issues raised here overlap to some extent with the earlier sub-sections on financial development and on

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<sup>25</sup> e.g. Rose (2007)

<sup>26</sup> There is also a substantial literature, reviewed in Annex C, on capital market integration and financial crises in emerging market countries; but as explained there because of the very different structure of the financial system in emerging markets (with few wholesale investment institutions) this of only limited relevance to the industrial world.

business organisation; but they merit separate treatment in order to focus on the implications for financial stability.

It is necessary to discuss this topic, since the global financial crisis has revealed strong connections between international capital market integration and financial instability. This is, though, an incomplete and unsettled literature. In the absence of a recognised and established body of research, this subsection –more than any other part of this literature review – relies heavily on the work and judgement of the author. It should be read as a tentative interpretation of preliminary investigations rather than as a summary of an established body of research.

The main ‘takeaways’ from this discussion are as follows:

- (i) financial intermediaries (banks, investment institutions, dealers and market makers) are needed to overcome transactions costs and information asymmetries, but cannot fully achieve all the inter-temporal and intra-temporal benefits of exchange in financial claims;
- (ii) the actions of financial intermediaries can lead to the creation of new risks within the financial system that can result in occasional episodes of macroeconomic and financial instability, risks that can be heightened by international capital market integration;
- (iii) these risks may be further exacerbated by failures in the international co-ordination of macroeconomic policies (in particular the threat of what is sometimes referred to as ‘secular stagnation’); and
- (iv) the relationship to international capital flows remains unclear, both in respect of the compositions of these flows (is it net or gross capital flows that represent the greater concern for macroeconomic and financial stability?); and in terms of causation (are capital flows simply a symptom of other underlying risks or do they make a direct contribution to risk of financial instability).

To elucidate these issues the analysis presented in this sub-section discusses how three interrelated systemic risk factors – common exposures (e.g. to property markets), maturity mismatch and counterparty risks – contribute to episodes of financial instability, and how in turn these are affected by international capital market integration.<sup>27</sup> International capital market integration *can* exacerbate these systemic risk factors, especially if: there are weaknesses in prudential regulation and in the governance and control of financial institutions; macroeconomic discipline is weak, encouraging unsustainable borrowing or asset price rises; and failure of international policy co-ordination places an unacceptable burden of adjustment on some countries rather than others. It is, though, difficult to assess the extent of such systemic risk exposures before a crisis materialises; or even to identify specific forms of international capital flow that are especially associated with systemic financial risk.

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<sup>27</sup> The choice of these three particular systemic risk factors is motivated by the work of the author of this review (Besar et al. 2011). Others (e.g. Bisias et al., 2012) argue that in the absence of any accepted definition of systemic financial risk, that it is necessary to consider a much wider range of potential sources of financial instability. Focus on these three systemic risk factors is justified by the need to limit the scope of the analysis.

### *Regulation of individual institutions and markets*

Before discussing these interrelated sources of systemic financial risk, it is worthwhile briefly discussing the role of financial regulation in addressing risks of failure and other problems in *individual* institutions. The need for prudential capital regulation of individual firms is widely accepted, both as a counter for the incentives for risk taking created by the bank safety net Santos (2001) and because of the ‘free riding’ problem that discourages both retail and wholesale depositors from adequately monitoring bank safety Dewatripont and Tirole (1994). These arguments are well known and justify the widespread regulation of banks. Financial regulation is also needed to protect customers and to counter market abuse and manipulation.<sup>28</sup>

International capital market integration is relevant to the effective application of these micro-orientated prudential and market conduct regulations. Since the 1970s there has been an increased international co-ordination of financial regulation through various multilateral institutions: the Financial Stability Board, the Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO), the ‘level 3’ pan-European regulatory committees; and also the international accounting standards body.<sup>29</sup> These multilateral institutions have been created to ensure international co-ordination of financial regulation as banking and other financial markets have become increasingly globalised. They can help reduce concerns, for example, that individual jurisdictions may engage in a ‘race to the bottom’ lowering regulatory standards to encourage the relocation of financial institutions (Genschel and Plumper 1997); although arguably in securities markets there can also be a ‘race to the top’, imposing high standard of regulations to attract investors and issuers (Coffee Jr 2002).

### *Three major systemic risk factors*

Episodes of major systemic financial instability are rarely if ever caused by the failures addressed by such micro-focussed regulation alone. Moral hazard is usually regarded a problem for individual banks rather than the banking system as a whole. Most banks have profitable customer franchises and have a lot to lose in the event of large scale losses (Demsetz and Strahan, 1996).<sup>30</sup> Only a minority of banks, those facing possible liquidation, can be expected to deliberately ‘gamble for resurrection’. It is therefore unsurprising that little persuasive evidence can be found suggesting that the moral hazard created by the bank safety net played a substantial direct role in the global crisis of 2008-2009.<sup>31</sup>

Financial instability is instead almost always associated with situations in which the decisions of individual institutions fail to take into account the impact of their actions on other financial institutions. The working assumption adopted here is that such externalities

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<sup>28</sup> See Llewellyn (1999) for a wide ranging review of the issues involved.

<sup>29</sup> There are many accounts of these developments, including Goodhart (2011); Lastra (2003); Calomiris and Litan (2000); Herring and Litan (1995); Alexander et al. (2006); Camfferman and Zeff (2007); and Davies and Green (2013).

<sup>30</sup> A different perspective on the global crisis can be found in Calomiris and Haber (2014) who argue that, like previous crises, it was a consequence of a political bargain in which political interest groups undermined the effectiveness of financial regulation. This mechanism, even if it may have played some role in the global crisis, is less obviously magnified by capital market integration than the three factors considered here.

<sup>31</sup> See Sinn (2010) for an argument that moral hazard did play a role and Milne (2014) for opposing evidence.



mostly fall into three broad categories of risk factor, all of which are potentially magnified by international capital flows.<sup>32</sup>

1. common asset exposures, notably to property markets;
2. widespread maturity mismatch and resulting liquidity risk; and
3. poorly monitored counterparty risks against other financial institutions (through inter-bank deposits, guarantees or derivative transactions).

Systemic financial crises typically emerge from exposure to one or more of these risks, combined with weaknesses of regulation and governance and/or weak macroeconomic disciplines.<sup>33</sup> The impact of international capital market integration on systemic financial risk can therefore be addressed by discussing their impact on exposure to these three systemic risk factors.

Common exposures – most often to either residential or commercial property – are a source of vulnerability in many financial crises. It is difficult to name a banking crisis that did not involve to some degree underestimation of the risks associated with bank loans secured on property. As documented by Davis and Zhu (2004), property lending is typically highly pro-cyclical, with credit extended freely in good times when collateral values are high and the possibility of default and fall of property values seems remote. These risks are exacerbated still further if a widespread belief emerges that average property prices can rise but can never fall. Similar common exposure can sometimes in other contexts, notably when banks are exposed to foreign currency mismatch.

There is at least casual evidence of a relationship between common exposures to property lending and international capital inflows. In the run up to the global crisis many of the worst problems of financial stability, in relation to domestic institutions, arose in those countries (Spain, Ireland and the US) that experienced large increases in house prices and lending secured on housing, financed at least indirectly through capital inflows. A related example is the exposure of UK banks to losses in commercial property markets, in both the early 1990s and again in the late 2000s, losses that were heightened by the entry of foreign banks notably from Germany and Ireland to compete with UK lenders (though overall domestic property related losses for UK banks following the recent global crisis were much lower than in Spain, Ireland or the US).<sup>34</sup>

There is also an obvious connection between international capital market integration and bank liquidity risk created by maturity mismatch. Maturity mismatch – between long term

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<sup>32</sup> Another potential source of systemic financial risk is breakdown of payments systems, a possibility referred to as 'Herstatt risk' because of the role of the failure of the small German trade finance bank Herstatt in the near breakdown of the New York interbank payment system CHIPS in 1974. This form of risk can also be magnified by international capital market integration, but international payments risks are generally thought to be effectively controlled through the CLS settlement arrangements. See Galati (2002). Besar et al. (2011) provide a more detailed discussion of these different sources of systemic financial risk distinguishing common exposures from maturity mismatch and direct counterparty risks.

<sup>33</sup> This three-fold categorisation does not explain equity price bubbles and crashes, such as the portfolio insurance and the 1987 collapse of stock prices, the tech stock price boom in 1999-2001 of the 'flash crash' of March 2010. It is questionable though whether any of these episodes represented risks to the financial system as a whole.

<sup>34</sup> See Benford and Burrows (2013); Milne and Wood (n.d.) for further discussion.

illiquid assets and short term liabilities - can result in bank runs, which can be seen either (as in the modelling of Diamond and Dybvig (1983) as being driven by depositor beliefs (in modelling terms the run is one of two equilibria, created by the 'sequential service constraint' on bank deposits, i.e. the condition that return of deposits is 'first come first served'); or as in other theoretical analysis, notably by Franklin and Allen and summarised in (Allen and Gale, 2007), by new information about asset returns.

While the theory draws no sharp distinction between retail and wholesale depositors, in practice retail deposits are relatively sticky and less susceptible to such runs (because of deposit insurance and also simply inertia). The risks of liquidity problems arise primarily in banks that rely on substantial wholesale borrowing (see Huang and Ratnovski, 2011); and the global capital market integration since the mid-1980s was an important factor allowing banks in some countries (notably the US and the UK) to rapidly expand their balance sheets using wholesale funding, either from off-balance securitisation or from direct money market borrowing.

Central to addressing concerns with maturity mismatch is the role of the 'lender of last resort'. As Martin (2006) argues, a pure liquidity crisis of the kind modelled by Diamond-Dybvig can relatively easily be addressed through a central bank acting as lender of last resort. This formalises the insights of Bagehot (1873) on the role of the lender of last resort:

*"The great majority, the majority to be protected, are the 'sound' people, the people who have good security to offer. If it is known that the Bank of England is freely advancing on what in ordinary times is reckoned a good security on what is then commonly pledged and easily convertible the alarm of the solvent merchants and bankers will be stayed. But if securities, really good and usually convertible, are refused by the Bank, the alarm will not abate, the other loans made will fail in obtaining their end, and the panic will become worse and worse."*

Bagehot (1873) Chapter VII

This quotation expresses Bagehot's advice to lend freely on good collateral. Capital market integration though complicates the role of lender of last resort. Central banks and regulators, while obliged *in extremis* to act as the lender of last resort to prevent a self-fulfilling liquidity crisis, must ensure that the provision of emergency liquidity does not allow banks to take great risks that could worsen systemic problems. They need therefore to be ready to ask illiquid banks to raise additional capital and be prepared to close them if they fail to do so. This responsibility is more difficult in a world of internationalised banking.

International capital market integration can also intensify liquidity problems if access to lender of last resort liquidity is in doubt. This was dramatically highlighted in the global crisis of 2008-2009, when many banks especially in Europe, found they were unable to finance dollar assets in short term money markets; and faced extreme liquidity problems because as foreign banks they were unable to access US dollar lender of last resort facilities at the US Federal Reserve (see McGuire and Von Peter, 2009).

The third factor frequently present in episodes of financial instability is direct counterparty exposures between financial institutions. These were a considerable concern in the recent crisis, both because of concentrated exposures to AIG and the various monoline bond

insurance companies in the US;<sup>35</sup> and because of the complex web of trading relationships, including the re-hypothecation of collateral, exposed by the failure of Lehman Brothers. It appears, at least *prima facie*, that internationalisation of financial claims has made it more difficult for market participants or their regulators to be sufficiently aware of the counterparty risks in their trading.

### *Can international capital market integration magnify these systemic financial risks?*

One or more of these three risk factors – common exposures e.g. to property markets, maturity mismatch and counterparty risks – play a role in most systemic financial crises. The experience of the global financial crisis makes clear that international capital market integration can exacerbate these risks, especially when regulation, governance and control of financial institutions is weak and when there are failures of macroeconomic discipline that allow unsustainable borrowing and asset price increases. The challenging question – one that is extremely difficult to answer – is determining the extent to which exposure to these systemic risk factors is increased by international capital integration.

Before the global crisis the general consensus was that the impact of international capital market integration on systemic financial risk was relatively small and, if anything, served to reduce rather than increase the risk of financial instability. This is not to say that there were no concerns at all about international capital market integration and systemic financial risk. The experience of emerging markets (reviewed in Annex C), as well as episodes of financial instability in for example Scandinavia in the early 1990s illustrated how credit expansions financed by large scale international net capital inflows could trigger financial instability.

These episodes were though primarily viewed as a consequence of weaknesses in domestic financial regulation and the inherent vulnerabilities of a fixed exchange rate peg. Yes, international capital market integration could support larger cyclical fluctuations in financial intermediation and credit than would be possible from purely domestic financing. But provided there was effective financial regulation and monetary policy was focussed on price rather than exchange rate stability, then it was believed that these fluctuations were quite normal and would only very rarely lead to systemic problems.

The experience of the more domestically driven banking problems in the US savings and loans crisis in the 1980s and in Japanese banking in the 1990s appeared to offer similar lessons. Shortage of capital or liquidity could emerge in a number of banks, but this would not trigger severe systemic problems, provided that regulators intervened promptly to deal with individual troubled institutions.<sup>36</sup> Systemic problems could be contained, provided there was prompt regulatory intervention to resolve insolvent institutions, and prevent continued trading and rising losses in ‘zombie’ institutions, exacerbated by incentives to take large scale risks in the hope of escaping insolvency, or engaging in fraud.<sup>37</sup>

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<sup>35</sup> The key role of the monolines and AIG in supporting the ‘negative basis trade’ that underlay much of the losses in the global financial crisis is documented in Milne (2009b), Chapter 6.

<sup>36</sup> This point is discussed in the literature on regulatory forbearance, prompted by the experience of the Savings and Loans crisis in the United States (see, amongst others, Benston (1986); Kane (1993, 1985); White, (1991)). This motivated the 1991 US FDICIA act, which obliges regulators to intervene promptly when the equity book capital ratios of regulated banks fall below precisely defined bounds.

<sup>37</sup> The incentives for fraud are discussed by Akerlof et al. (1993).

An acknowledged further concern, arising when banks provided services in multiple jurisdictions, was the problem of 'home host' banking regulation.<sup>38</sup> The home supervisor (supervising the parent institution of a banking group), responsible for ensuring adequate capital and liquidity for the entire bank, may not have an incentive to take sufficiently prompt action to deal with problems arising in a subsidiary, relying instead on the safety net in the host country; and even if they are prepared to take action when necessary they may not have sufficient information about the subsidiary to do so. But still this was regarded as a manageable problem that could be addressed by appropriate international policy co-ordination.

These sanguine views of the impact of international capital market integration on systemic financial risk were thought to be further supported by the standard static theory reviewed in the second part of this section. Globally integrated capital markets provide increased opportunity for diversification of risk. Large scale losses at one financial institution should therefore have a relatively smaller effect on other financial institutions, as long as they take advantage of global capital market integration to achieve greater diversification of risk exposures, especially those such as common exposures and counterparty risks that contribute to systemic financial risk. In theory exploiting the opportunities for gains from trade through 'intratemporal' trade in risk exposures made possible by capital market integration should reduce systemic financial risks.

With the benefit of the hindsight provided by the global financial crisis, it now seems clear that capital market integration can increase these systemic financial risks. As the following discussion suggests, it appears that systemic risks can be created both by large global savings imbalances (a development associated with large net international asset positions) and by substantial increases in the risk exposure of financial intermediaries (a development associated with large fluctuations in gross international assets and liabilities). While the literature offers some theoretical insight into the causes and consequences of large net international asset positions, we have only limited understanding of the reasons why the risk exposures of financial firms can vary so much over the cycle and in consequence why there are large observed fluctuations in gross international assets and liabilities.

International savings imbalances can be expected to emerge when the macroeconomic policies of individual countries are focussed on achieving domestic objectives.<sup>39</sup> As consequence international policy co-ordination may be needed in order to ensure an orderly adjustment of large international savings imbalances, with surplus countries increasing their absorption as well as deficit countries reducing absorption and expenditure. This was a concern globally before the crisis. Although the global policy response to the crisis has helped to reduce international savings imbalances, the challenge of coordination has not gone away (for example, there are calls for some countries to maintain relatively expansionary fiscal policy in order to help others reduce their fiscal deficits).<sup>40</sup> International

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<sup>38</sup> Mayes and Vesala (1998) provide discussion emphasising the resulting incentive and information problems.

<sup>39</sup> This though does not resolve the puzzle of 'uphill' capital movements Lucas (1990). Net international capital flows are largely from relatively low income countries, with a shortage of physical capital and hence presumably large potential returns to investment, to higher income countries with abundant physical capital and hence presumably low returns to investment.

<sup>40</sup> An argument often made by columnist Martin Wolf of the Financial Times, see Wolf (2010).

policy co-ordination remains a particularly difficult challenge for the Euro area, where the large part of the burden of adjustment has fallen on the countries of periphery Europe.<sup>41</sup>

One dramatic expression of this concern was recently argued in a widely cited conference panel presentation by Larry Summers (reported by Wolf, 2013), when he suggested that we may be entering an era of ‘secular stagnation’ (to use the term coined originally by Alvin Hansen (Hansen, 1939)) in which there is a structural excess of savings over investment and hence a permanent shortage of demand. If so, can this be attributed to a failure of international co-ordination of policy? These worries may have abated with relatively strong recent economic performance in a number of major countries including the UK, but this is a long term not a short term issue, and the extent to which it is real concern will only be revealed in the next global downturn.

What about gross international assets and liabilities? The importance of gross flows is stated succinctly by Borio and Disyatat (2011) when they write *“We conjecture that the main contributing factor to the financial crisis was not ‘excess saving’ but the ‘excess elasticity’ of the international monetary and financial system: the monetary and financial regimes in place failed to restrain the build-up of unsustainable credit and asset price booms (‘financial imbalances’). Credit creation, a defining feature of a monetary economy, plays a key role in this story.”*

In a perceptive paper, written before the global crisis Rajan (2006) similarly argues how, while globalisation of finance allows for greater diversification of risks, it has also allowed *“...the emergence of a whole range of intermediaries, whose size and appetite for risk may expand over the cycle. Not only can these intermediaries accentuate real fluctuations, they can also leave themselves exposed to certain small probability risks that their own collective behaviour makes more likely. As a result, under some conditions, economies may be more exposed to financial-sector-induced turmoil than in the past.”*

The term ‘risk appetite’ used here by Rajan, along with the related term ‘search for yield’, deserves particular attention. Practitioners, policy makers and commentators on financial markets make quite frequent use of both these terms, but neither of them have any clear foundation in the research literature.<sup>42</sup> There is no obvious theoretical reason why the final investors should have a greater preference for risk when average returns fall or when recent returns have been good (for example it might instead be argued that since lower returns reduce the life time consumption of final investors, standard theory of precautionary saving should result in greater aversion to risk when yields are low). These changes in attitudes to risk appear inconsistent with standard theory of the kind reviewed in Sections 2b and 2c.

This is not to say that risk appetite and search for yield did not play a major role in the build of exposures before the global crisis. Turner (2009) argues that historically low medium- and long-term real interest rates encouraged market participants to invest in complex products

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<sup>41</sup> See De Grauwe (2013) for an argument that too much of the burden of adjustment has fallen on the Euro periphery.

<sup>42</sup> Entering “search for yield + risk + appetite” in Google Scholar yields remarkably few references. Rajan (2006) and Gai and Vause (2005) appear to be the first mention of these terms in scholarly research. Other papers include Agur and Demertzis (2010); Altunbas et al. (2010); Ashton (2009); Bekaert et al. (2013); Buch et al. (2014); Ciarlone et al. (2009); Delis and Kouretas (2011).

that they did not fully understand in order to maintain rates of portfolio return when risk-free rates were low. Practitioners also often refer to changes in market participants' risk appetite, or even more crudely to episodes of "risk-on" and "risk-off", when they are willing to take greater and lesser portfolio risks.<sup>43</sup> While inconsistent with standard theory, there is substantial further empirical support that both bank lending and market risk exposures fluctuate procyclically (this evidence is documented in the following section).

The reasons why appetite for risk expands so much over the cycle are far from fully understood. One possible reason is that remuneration arrangements incentivise individuals on trading desks to take excessive risks, because they are not personally liable to losses.<sup>44</sup> Similarly loan officers may be rewarded according to the volume of loans they make.<sup>45</sup> Traders may make money until an unanticipated 'Black Swan' event triggers large losses.<sup>46</sup> The shift from partnership to for-profit organisation is also thought to have encouraged greater focus on short term returns and less attention to customer interests.<sup>47</sup>

Another factor at play before the crisis was that Basel II 'Internal Ratings Based (IRB)' calculations of regulatory capital requirements, encouraged procyclicality, because they were based on short time series of data. These measures of bank risk fell substantially during periods of rapid expansion of credit and increases in the price of assets used as collateral for lending. The widespread industry practice of targeting 'return on economic capital', i.e. profits as a proportion of some measure of tail risk, has a similar impact, even though such behaviour seems inconsistent with standard models of asset pricing based on the risk preferences of investors.<sup>48</sup>

This procyclicality was also facilitated by the shift during the 1980s amongst both commercial and investment banks to the practice of 'liability management', in which banks were able to lend money to customers or acquire trading assets without much concern about how these exposures would be funded. They could always raise funds, secured or unsecured, in domestic or international money markets, and provided they maintained strong credit ratings the cost of funding bore no relationship to the risk of the exposure it was used to finance. There was thus little restriction on their ability to expand their business using money market finance when 'risk appetite' was strong. In this respect, the

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<sup>43</sup> These terms are widely discussed on practitioner websites e.g. <http://www.investopedia.com/terms/r/risk-on-risk-off.asp>

<sup>44</sup> A problem highlighted by episodes of rogue trading such as Nick Leeson and Joel Kerviel: see (Demski 2003) for discussion of the Leeson case.

<sup>45</sup> Muolo and Padilla (2010) detailed account of the US sub-prime mortgage crisis documents such arrangements amongst mortgage brokers.

<sup>46</sup> For example, as in the case of AIG financial, by writing CDS protection on what are perceived as low risk and unlikely events. Both board members and risk managers at financial institutions can be accused of failing to recognise or take sufficient action to deal with the possibility of extreme events materialising in the years preceding the crisis (Taleb et al. 2009).

<sup>47</sup> Since the early 1970s the traditional partnership arrangements for US broker dealers have broken down (Morrison and Wilhelm, 2008; Morrison and Wilhelm Jr, 2007). Arguably the abandonment of partnership arrangements encourages bank employees to take excessive risks and to pay insufficient attention to conflicts with the interests of customers (Hill and Painter, 2009).

<sup>48</sup> For a related argument, that bank performance measures are inconsistent with standard asset pricing, see Milne and Onorato (2012).

globalisation of finance provided further support for pro-cyclicality of financial intermediation.<sup>49</sup>

More generally, the pro-cyclical shifts of risk appetite and search for yield seem to be related to the behaviour and incentives created by the 'principal agent' relationships that frequently arise both within financial intermediaries and between customers and intermediaries. To summarise some key findings from a large literature: (i) standard economic theory treats financial intermediaries in a highly schematised way, ignoring conflicts of interest both between tax payers (as providers of the bank safety net and the guarantors of deposit insurance) and shareholders, between shareholders and managers and between senior management and other employees, and ignoring bankruptcy costs;<sup>50</sup> (ii) In practice the arrangements between these 'principals' (taxpayers, shareholders, managers) and agents (shareholders, managers, employees) may introduce considerable distortions in behaviour and encourage risk-taking especially in times of rapid credit expansion;<sup>51</sup> and (iii) risk management practices within banks, instead of limiting such risk taking, can lead to substantial departures from the creation of shareholder value.

While there is clearly considerable scope for further research, it seems that greater international capital market integration created the opportunity for increased procyclicality of credit, both because funding could be drawn from a much larger international capital markets and also because the greater complexity of financial exposures masked the degree of risk exposures of individual firms and encourages 'endogenous' risk; and that in the absence of effective international policy co-ordination policy makers in some countries may have relied excessively on inducing credit expansion in order to meet domestic policy goals.

A further and in retrospect rather obvious failure was that before the global financial crisis regulators did not anticipate and respond to the risks of problems in the financial system as a whole. As highlighted by the former chairman of the UK FSA (Turner, 2009) regulators mistakenly thought that ensuring that, in their judgement, individually institutions were reasonably safe, would be enough to ensure safety for the system as whole.

The combination of international capital market integration with this focus on individual institutions clearly increased the potential that misjudgements by individual firms could trigger systemic financial problems. A UK example is the overpriced 2007 international cash acquisition of ABN-AMRO by Royal Bank of Scotland. From the microeconomic perspective this was a risky deal that threatened to destroy substantial shareholder value, but it did not appear to be a major threat to UK systemic financial stability and therefore not a transaction that could have been blocked by the regulator, the UK Financial Services Authority. But as it turned out the losses on this ABN-AMRO acquisition were a key mechanism for transmitting the problems of US structured credit to the UK banking system.

There are of course many other examples of systemic financial risk created by international bank exposures during the global financial crisis, for example the losses in the Icelandic

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<sup>49</sup> A major change post crisis at least for commercial banks has been a shift back to more traditional 'asset management' with lending capacity determined by the availability of funds (Allen et al. 2012).

<sup>50</sup> The agency costs of debt and equity described in the corporate finance textbooks.

<sup>51</sup> Tufano (1998) investigates how hedging of cash flow risks in non-financial companies can increase such agency costs; similar arguments can be made about risk management in financial intermediaries.

banks or the widespread use of money market funding from non-resident investors to finance unsustainable credit expansions e.g. in Ireland, Spain, Portugal and Greece.

To conclude, while there is little detailed research, it appears that the integration of capital markets amongst the developed countries was a factor contributing to the build up of systemic financial risk prior to the global financial crisis. But the crisis would not have materialised, or at least not have been anything like as severe as it turned out to be, without there also being: weaknesses in the regulation and governance and control of financial institutions; failure to perceive and respond to the emerging macroeconomic risks; and a lack of co-ordination of the international policy response to rising macroeconomic risks.

Since then several steps have been taken to address the weaknesses of financial regulation and of governance and control that allowed increased international capital market flows to lead to increase systemic financial risk.<sup>52</sup> New macroprudential policy institutions have also been created, tasked with taking steps to counter potential systemic financial risks. The problem of international policy co-ordination remains though largely unaddressed. Section 4 assesses the effectiveness of these policy measures.

#### *What types of international capital flow matter for financial instability?*

This sub-section can be completed with a brief discussion of whether any particular forms of international capital flow are associated, more than others, with risks of systemic financial instability. A central question is whether gross or net capital flows are more associated with concerns about financial stability. This is addressed by Borio and Disyatat (2011). They consider the widely held view that an important source of vulnerability before the global crisis were large net capital flows from some 'excess saving' countries – including China, Germany and the major resource exporters – to other 'excess borrowing' countries, include the US, the UK and Spain, financing their substantial current account deficits. While these net capital inflows did not directly increase systemic financial risk, they allowed what in retrospect can be seen as unsustainable borrowing and asset price increases to continue for longer and further than would otherwise have been possible, and hence also increased systemic financial risk.

But as Borio and Disyatat (2011) point out there are many examples where gross rather than net international capital flows have been associated with episodes of systemic financial risk. The cases of Japan in the crisis of the early 1990s and of the losses of German banks on US dollar structured credit securities in 2007-2009 spring to mind as examples where substantial bank losses have occurred without being preceded by large net international capital inflows.

A focus on net international capital flows also masks important details about the composition of these flows. One well known argument is that countries (the US and the UK are examples) may quite safely run a negative net asset position composed of relatively large debt liabilities and relatively small foreign equity assets (both portfolio equity investment and direct investment). Higher rates of return on equity may make this a

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<sup>52</sup> Including the new 'Basel III' capital and liquidity requirements, the range of other restrictions and requirements on banks and other financial institutions agreed at the 2009 Pittsburgh G30 summit and subsequently being implemented under the auspices of the Financial Stability Board in all the major global financial centres; and further requirements imposed domestically for example in the US Dodd-Frank Act.



sustainable position and one which can be managed provided short term capital can be attracted to compensate for the riskiness of equity returns. A second is that much higher financial stability risks may arise where a large proportion of liabilities are short term.

As yet there is no clear consensus in the research literature on whether it is gross or net capital flows that matter most for financial stability. The most obvious answer is that both can matter. Large changes in net international assets suggest underlying macroeconomic imbalances, which if not corrected in a timely fashion could require painful macroeconomic adjustment and hence trigger large scale losses on common exposures in bank lending and traded financial assets. Large increases in gross international assets and liabilities could be associated with increasing maturity mismatch or counterparty risks, which might also trigger systemic financial problems. The difference is in the causal mechanisms: large scale net capital inflows are a symptom of underlying problems of unsustainable macroeconomic imbalances; large scale gross capital flows, if they are of the wrong kind especially substantial short term debt flows secured on illiquid assets, reflect weaknesses in risk management and regulation and so may directly contribute to risks of financial instability. While considerable more research is called for, this tentative answer seems consistent with the empirical evidence reviewed in the next section.

A closely related question, another on which there is not yet any established consensus, is the extent to which systemic financial problems can arise from poor decision making within the financial sector alone (as the quotation from Rajan suggests); and the extent to which financial instability is also a consequence of weak macroeconomic discipline. If weaknesses of regulation, governance and control allows poor incentives and excessive exposure to maturity mismatch or counterparty risk in financial institutions, and these in turn create vulnerabilities to systemic financial risk, then this risk should be associated with large gross international capital flows. To the extent that systemic financial vulnerabilities are associated with unsustainable borrowing and asset prices increases, then there will also be large net international capital flows. Again it seems that either or both mechanisms can be important.

There is a little more agreement about the relationship between different categories of international capital flow and financial instability. Foreign direct investment (FDI) and portfolio equity investments are regarded as posing the least risks for the recipient economy (Prasad, 2013). Short term deposits are regarded as the riskiest form of capital (this is consistent with the experience of emerging markets reviewed in Annex C). But it is less clear that the distinction between international short term international capital inflows held by non-residents and short term domestic wholesale deposits held by residents makes such a difference.

### 3. Empirical evidence on some specific issues

There is a large research literature offering evidence on the costs and benefits of the relaxation of capital controls and on the impact of some forms of capital flow management. This review discusses only part of the relevant empirical literature. It focuses on some specific branches of research that appear to offer the most insight into the costs and benefits associated with the control and management of international capital flows.

Section 3(a) summarises statistical and descriptive studies of the globalisation of financial markets over the past forty years, documenting the large increases of international capital flows. Cross-border banking, international portfolio investment and foreign direct investment have all grown rapidly. In contrast to the earlier period of globalised capital markets, before the First World War, these flows are much larger when measured on a gross basis i.e. international financial claims are both issued and held at the same time, especially in advanced countries with sophisticated financial systems. With the partial exception of FDI, all these flows are highly cyclical, increasing rapidly at times of economic expansion and often as quickly reversing.

Section 3(b) looks at an extensive literature on the relationship between capital account liberalisation and economic performance. This literature is large, but the cross-country statistical research is mainly concerned with the experience of emerging markets, since OECD countries have had largely open capital accounts since the early 1990s. Alongside the cross-country studies, some case study and narrative analysis deals with the experiences of one or a small number of countries.

The cross country statistical research provides only relatively weak support for the hypothesis that capital account liberalisation is followed by improved economic performance. This may seem rather surprising given the presumption from the theoretical literature that free international exchange of financial claims should lead to substantial gains from trade. However, there are a number of inherent limitations to this kind of research. First, the measurement of the extent of capital controls is extremely difficult. Second, there are the usual problems of endogeneity - growth may encourage the dismantling of capital controls.

Other studies have looked at the relationship between capital account liberalisation and other more specific aspects of economic performance, revealing stronger evidence in support of the benefits suggested by the theory of capital market integration. There is evidence of lower costs of both equity and debt; and of reduction in constraints in access to external finance and convergence of interest rates to international levels, following capital account liberalisation.

Section 3(c) discusses research on the economic impact of liberalising transactions in specific types of capital flow: (i) foreign direct investment in non-financial and financial industries; (ii) the use of international financial claims for financing of trade; and (iii) the opening up of domestic stock markets to international portfolio investment.

Section 3(d) reviews work on the relationship between capital flows and financial instability, focussing on the role of financial intermediaries in developed countries (and with passing reference to the experience of emerging market countries and of the pre-1914 gold

standard era).<sup>53</sup> This provides suggestive (but not compelling) evidence about the role of international capital flows in contributing to systemic financial risk.

#### **a. Liberalisation and the growth of cross-border financial claims**

Before examining empirical evidence on the economic impact of cross border capital flows, it is helpful to describe both the substantial liberalisation of policy towards international capital flows over the past fifty years and the key features of the subsequent surge in cross-border financial claims.

The overall impression is relatively clear: in the past half century there has been a decisive shift towards capital account liberalisation in advanced countries, in a few countries including the UK these changes go back to the late 1970s or earlier, and then adopted by the entire industrial world from the late 1980s onward.<sup>54</sup>

A similar shift has since taken place in many emerging markets. Hard restrictions on capital flows are still found in most low income countries with little or no domestic capital market development and relying on official sources for any international borrowing; and also some emerging markets that maintain restrictions on capital flows in order to be able to pursue domestic economic objectives (Mallett-Outtrim 2014). But many other emerging markets, for example much of Latin America and a number of countries in Asia, have followed the example of the advanced industrial countries and removed most controls on capital flows.

This impressionistic picture (based on Annex A) is broadly confirmed by Quinn and Toyoda (2008) Figure 1. This reports the changes over time of the Quinn (1997) index of global capital account openness from 1948-2006, a sample average of an eight point coding of information reported in the International Monetary Fund Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).<sup>55</sup> As presented in this Figure, zero per cent represents complete capital account closure while 100 per cent represents an absence of any restrictions on capital account transactions. This index indicates a period of initial liberalisation between 1948 and 1961 (the index of capital account openness increasing from 40 per cent to 60 per cent); followed by twenty years of reintroduction of capital controls (the index falls back to 47 per cent in 1982); and then a further and even more far reaching capital account liberalisation over the next two decades (with the global index rising to 78 per cent in 2000). This capital account liberalisation of the 1980s and 1990s was followed by an explosive growth in the magnitude of international financial claims.

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<sup>53</sup> Annex C discussed the experience of emerging market countries, notably the Asian crisis and other examples of 'sudden stops' of international capital flows

<sup>54</sup> Annex A recounts the history of capital account liberalisation in the developed world in greater detail. There were wide ranging controls on both current and capital account external transactions in most countries of Europe after World War II. Their currencies were also then inconvertible and international trade financed on a bilateral basis. Restoration of current account convertibility was achieved relatively soon, by the late 1950s. But capital controls in European countries, while temporarily relaxed in the 1960s, were reinforced in many countries during the early 1970s at the time of the break-up of the Bretton Woods fixed exchange rate system. There was then a marked shift in policy, most notably in the UK which unilaterally abandoned all capital controls in 1979. Such dramatic policy shift was unusual but by the late 1980s, with France playing a leading role, all advanced countries were pursuing strong capital account liberalisation (see also Annex B for discussion of the resulting changes in the OECD code of liberalisation).

<sup>55</sup> The necessity of constructing such an index from only eight qualitative variables illustrates the challenges to effective measurement of de jure capital controls.

It is necessary to begin with some cautionary remarks about the quality of the underlying data. As noted by Lane and Milesi-Ferretti (2007) there are large discrepancies in the data on gross international financial claims, with aggregate liabilities substantially exceeding aggregate assets. Their Figure 1 reveals a discrepancy that increases from one per cent of global GDP in 1980 to around six per cent of global GDP in the early 2000s.<sup>56</sup>

This is not such a serious problem when we are considering gross external asset and liabilities - six per cent is a relatively small proportion of the individual aggregates which are each around 150 per cent of GDP. However, it does mean that we should treat the official statistics on *net* external asset positions with a degree of caution, because this is computed as a difference between two large figures of similar size measured with error.

Lane and Milesi-Ferretti (2007) construct estimates of gross external assets and liabilities for 145 countries for the years 1970-2004. Their summary of this data, and a number of more recent studies reporting updates of their data, reveal the following 'stylized facts' about global capital flows:

- An exceptionally rapid growth of *gross* financial assets and liabilities in industrial countries as measured by the Lane and Milesi-Ferretti (2007) "index of financial integration" (IFI). This is the sum of gross financial assets and financial liabilities expressed as a ratio of GDP. IFI increases in the industrial countries by factor of seven in 24 years, from 45 per cent in 1970, climbing slowly at first to 100 per cent in 1987 and then accelerating in the 1990s to reach 300 per cent in 2004 and climbing further up to the beginning of the financial crisis in 2007.<sup>57</sup>
- The corresponding IFI for emerging and low income markets tracks that of advanced countries until the late 1980s. Its growth continues but does not accelerate in the 1990s, reaching about 150 per cent in 2004. This indicates that the increase in financial globalisation from the early 1990s to 2004 is much more marked amongst industrial countries than between industrial countries and emerging and low income countries or amongst emerging and low income countries.
- Unsurprisingly, given the position of London as the leading international financial centre in the world, the UK records a particularly high IFI. The UK IFI increases from 130 per cent in 1970 to 350 per cent in 1986 (the year of the 'big bang' in the City of London) and then remains relatively flat until 1991. Thereafter the UK's IFI climbs rapidly to 730 per cent in 2004 and climbs further to around 1300% in 2007, remaining relatively flat thereafter.<sup>58</sup>

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<sup>56</sup> Zucman (2013) argues that the negative net foreign asset position recorded in the IMF-BOP statistics for much of the rich world (the US, Europe) is an illusion caused by underlying data problems. He reports an estimate of unrecorded household wealth held in tax-havens of 7.3% of world GDP in 2008. This compares to a net asset position recorded in the official statistics for Europe of -4% and of the US of -6% (both per cent of World GDP; the corresponding figures as a share of domestic GDP are -11% and -18%). He concludes that after correcting for this missing data Europe was actually a net creditor in 2008 (possibly as much as 13% of domestic GDP) and the US a much smaller net debtor (possibly as little as 3% of GDP).

<sup>57</sup> Updates of the IFI ratio reported in Lane (2013) Figure 3 and Obstfeld (2012) Figure 2. Note that Obstfeld reports average, not sum, of capital inflows and outflows as a percentage of GDP, so his figures are one half of those in the other studies. In the Euro area the IFI ratio increases from 400% in 2004 to 520% in 2007; in the US from 175% in 2004 to 290% in 2007; and in Japan from 150% in 2004 to 190% in 2007.

<sup>58</sup> In Switzerland and the UK, both major international financial centres, the IFI ratio increases from around 400% in the mid-1990s to 1300% in 2007. Thereafter the ratio is pretty much flat (falling slightly in Switzerland).

- A similar picture emerges for ‘equity integration,’ measured by the sum of aggregate equity assets and liabilities (both portfolio and foreign direct investment) as a percent of GDP. This index is fairly flat from 1970 to the mid 1980s (around 16 per cent in industrial countries, 8-10 per cent in emerging and low income countries) but then increases dramatically especially in the 1990s, rising by 2004 to 120 per cent in industrial countries and 60 per cent in emerging and low income countries. Equity investments therefore seem to account for about one third of the total global financial integration.
- Many advanced countries, including the US and the UK, are ‘long equity – short debt’.<sup>59</sup> In the US the net holdings of equity (all equity assets minus all equity liabilities) was 9% of GDP in 2004 while net debt liabilities (all debt liabilities minus all debt assets) was 32% of GDP in 2004. In 2004 the UK had a long equity position of 19 per cent of GDP and a short debt position of 35 per cent of GDP.
- While absolute measures of net financial assets are unreliable, changes over time are more meaningful. Lane and Milesi-Ferretti (2007) compare the 1996 and 2004 ratios of net foreign assets to GDP, for different groups of countries (see their Figure 10). Amongst industrial countries there is a rapid dive into indebtedness in Greece, Portugal, Spain and Iceland amounting to up to 50 per cent of GDP or more; and a more modest increase of around 10-15% of GDP in the US and Italy; in the UK there is a even more modest increase in net financial assets. Other countries exhibit the opposite pattern, some are rapidly accumulators net assets (Norway, Belgium Finland and Sweden) and others more modest accumulators (Canada, Netherlands, Denmark and Japan).

Complementary work by Bluedorn et al. (2013) focuses on gross capital flows (as opposed to gross stocks of assets and liabilities) and net capital flows for a panel of quarterly data for 147 countries over the period 1980-2011. They focus on flows to private borrowers (i.e. exclude domestic government international lending and borrowing). Gross global capital inflows to advanced countries, rose fivefold from around 5% of GDP in the early 1980s, and rose dramatically from 1992 onwards, climbing fairly steadily to 25% of advanced country GDP in 2007. They then turned negative in the crisis, falling to -10% (on a half yearly basis), before rising again to levels similar to the 1980s and then falling with the intensifying of the Euro crisis. In contrast net capital inflows to advanced countries remained in aggregate fairly stable at around 3% of GDP over most of this period (falling somewhat after the crisis). They also report (Figure 4) the ‘coefficient of variation’ (the ratio of the standard deviation to the mean) computed on a rolling 10-year basis. The median value amongst advanced countries for both gross capital inflows and outflows is fairly stable through most of their sample at around 0.5 but rises to 1 after the crisis.

A number of studies have broken down global capital flows into their various components. A useful summary is provided by the Committee on the Global Financial System (2009). They confirm the usual understanding that FDI is the most stable form of capital flow, whereas portfolio investment is more volatile and possibly procyclical. This relies mainly on the work

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<sup>59</sup> ‘Long equity’ because resident firms and households hold more foreign equity than non-resident firms and households hold domestic equity. ‘Short debt’ because the debt liabilities of resident firms, households and the government held by non-residents exceed the debt liabilities of non-residents that are held by residents.

of Felices et al. (2008), who find that flows into equity investments (FDI or portfolio equity) between 1980 and 2007 have been more stable than flows into debt securities.

Bluedorn et al. (2013) also look at the major components of gross capital flows, showing (in their Figure 4) that a collapse of bank flows accounts for most of the substantial reversal and subsequent recovery in gross capital inflows to advanced countries during the global financial crisis. FDI flows are also notably less volatile than other categories of gross capital inflow. They also report (Table 5) fairly large positive correlations of domestic GDP growth in advanced countries with bank inflows (correlation = 0.33) and FDI inflows (correlation = 0.14) with corresponding negative correlations of bank outflows and FDI outflows with domestic GDP. The other categories of capital flow (portfolio equity and portfolio debt) are uncorrelated with domestic GDP growth.

Finally a key feature of international capital flows, reported by both Forbes and Warnock (2012) and Bluedorn et al. (2013) is that fluctuations in gross capital flows, for both advanced and developing countries, are largely driven by global factors, primarily interest rates and measures of market volatility (the VIX index), rather than individual country factors.

It is worth paying a little more attention to Foreign Direct Investment (FDI), given the presumption discussed in Section 2 that this can be especially beneficial for transfer of technology and human capital. The nature and pattern of FDI has changed substantially over time.<sup>60</sup> From before World War I until the 1990s the principal supplier of foreign direct investment, accounting for more than one half of total global gross FDI, was the United States (Lipsey 2001; Lipsey 1999). The overwhelming majority of FDI was between developed countries, with both inward and outward FDI between Europe, the United States and most recently Japan.

Since 1980, the flow of FDI to developing countries has substantially increased. This in part reflects the changing nature of the global supply chain. Feenstra (1999) reports that between 1990 and 1995 developing markets accounted for about one third of the flow of global FDI. The sources of these flows were concentrated in a relatively small number of countries, particularly China and including Mexico (before it joined the OECD). Alfaro et al. (2004) reports World Bank data indicating an increase in the stock of FDI in developing countries was growing at between 9% and 18% per year from 1986-2000.

While non-financial corporate sector FDI is more stable than other forms of capital flow a different picture emerges for financial sector FDI. Reinhart and Dell'Erba (2013) report that financial sector FDI increases and declines pro-cyclically in much the same way as international portfolio investment; moreover it tends to increase in emerging markets when efforts are made to control other components of capital flows. Cross border bank credit behaved similarly in the build up to the global crisis (Hills and Hoggarth, 2013).

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<sup>60</sup> The definition of FDI does not – as is sometimes imagined – correspond precisely to investment by a multinational or transnational corporation. The usually applied statistical criterion, recommended by the OECD, is ownership of 10% or more of the voting shares. Also retained earnings represent an important part of total FDI, although this element of FDI is only reported by some countries not others.

## b. Capital account liberalisation and economic performance

This subsection reviews the large body of empirical research exploring the impact of capital account liberalisation on economic performance. This work falls into two broad groups:

- Direct examination of the relationship between capital account liberalisation and economic growth. This reveals remarkably little evidence that liberalisation is followed by anything more than a temporary increase in growth.
- Examination of the interrelationship between capital account liberalisation, financial development and subsequent growth. This is more supportive of a positive growth impact, with strong evidence of increases in stock market valuations and weaker evidence that this is associated with higher levels of investment and growth.

### *Evidence on the direct impact of capital account liberalisation on growth*

Edison et al. (2004), Eichengreen (2001), Kose et al. (2006), and Quinn and Toyoda (2008) review the substantial literature that studies panel or cross-sections of advanced and emerging market country data, to investigate the impact of capital account liberalisation on economic performance.

Much of this research is motivated by the substantial increase in capital flows to emerging markets during the 1980s and 1990s and the subsequent reduction in capital flows following the Asian crisis of 1997-1998. For example, gross capital inflows to emerging markets rose from around three per cent of emerging market GDP in 1990 to around seven per cent of GDP in 1993, remaining around that level until the onset of the Asian crisis in 1997 (see IMF, 2013, Figure 4.1).

The Asian crisis fuelled concerns about the volatility of capital flows, leading many to question whether the beneficial impact of unrestricted capital flows was as great as standard economic theory suggests.

In an influential essay, Rodrik (1998) demonstrated that there was no bivariate correlation between the proportion of years (between 1975 and 1989) a country had a liberalized capital account and either GDP growth or investment.<sup>61</sup> Alesina, Grilli, and Milesi-Ferretti (1993) (for advanced economies) and Grilli and Milesi-Ferretti (1995) (for developed and developing countries) also found little evidence of a link between capital account openness and growth in cross-sectional comparisons. Rogoff et al. (2004) report that only three of 20 cross-sectional studies of this kind found evidence that capital account liberalisation was associated with a higher rate of growth.

This lack of evidence of a positive growth impact of capital account liberalisation is a little surprising, but this does not imply that the standard static theory is wrong. As Henry (2006) discusses, most of these cross-sectional studies are testing the hypothesis that capital account liberalisation will result in a permanent increase of a country's growth rate. The rejection of this hypothesis does not imply that capital account liberalisation does not increase output. The standard theory predicts that, following capital account liberalisation, the domestic interest rate should converge on the world rate of interest, allowing a country with a relatively low stock of physical capital to invest more (through external borrowing) and hence grow more rapidly. Once these 'static' efficiency gains are exhausted, a new

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<sup>61</sup> A residual measure after accounting for other factors.

steady state is reached with a permanently higher output, but there is no permanent impact on growth.

This is not to say that capital liberalisation cannot cause output to increase over many years. These static efficiency gains could increase investment and hence output for a number of years. The dynamic efficiency gains from capital account liberalisation can be expected to unfold over several years more.<sup>62</sup> However, this creates a different problem in that there is a very slow response to capital account liberalisation.

In any case there are substantial statistical problems affecting most of these cross-sectional studies. Firstly, many of them make use of a simplistic 1,0 dummy variable (capital controls on/capital controls off) using a single measure of capital controls (the IMF Annual Report on Exchange Arrangements and Exchange Restrictions). Secondly, many studies fail to address the problem of endogeneity of current account liberalisation: even where a positive association between capital account liberalisation and growth is found, it may be that higher growth is encouraging countries to liberalise their current accounts rather than the other way around.

Among the many studies of this kind three offer particular insights and are worth reviewing in greater detail. One of the most comprehensive studies of the impact of capital account liberalisation on growth is that of Edison et al. (2002). They employ a wide range of measures of capital account integration (de jure indices, and also measures of the accumulated stock and the flow of capital, both inward and outward) and look for impact on growth in a panel of data for 57 countries over the years 1976-2000. In a large number of cross-sectional and panel estimates, estimated using both ordinary least squares (OLS) and a variety of instrumental variable techniques to correct for the bias arising because of reverse causation of growth on capital account, they found almost no significant impact of capital account liberalisation on growth (though their instrumental variable results provide some indication of reverse causation).

Historical insight is provided by Schularick and Steger (2010) using a de facto measure of capital market integration (net capital flows from the UK). They estimate the impact of capital market integration on economic growth for the period 1880–1914 (the first era of international capital markets), and comparing with the results of estimating the same model on a matching data for the modern period (1975–2002).<sup>63</sup> They report a strong and significant impact of capital account liberalisation on growth for the 1880–1914 period, but no impact for the period 1975-2002. They go on to examine the underlying mechanism, finding no evidence of any *dynamic* impact on total factor productivity in the historical era. The growth impact for 1880 – 1914 can be entirely explained by higher rates of investment, financed by capital inflows from capital rich to capital poor countries. This also helps explain the lack of impact in the modern era; while gross capital inflows and outflows have increased markedly post-capital account liberalisation, there has been relatively little net

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<sup>62</sup> The division between static and dynamic can be confusing, because even static gains can be expected to unfold over time; the difference between them is that dynamic gains allow for the impact on factor productivity, through improving techniques of production and labour force skills and also the development of new goods and services

<sup>63</sup> See Annex A for a fuller description of this period.



capital inflow in most emerging markets. The second era of globalised financial markets has therefore not financed higher rates of investment in capital poor countries.

Somewhat more persuasive evidence of an impact of capital account liberalisation on growth in modern times is reported by Quinn and Toyoda (2008). They work with an extensive panel of data for the period 1950-2004 (an unbalanced panel with 44 countries in 1950 increasing to 85 by the late 1960s). They estimate a range of panel growth regressions, using non-overlapping five year averaged data on capital and current account openness, controlling for time and fixed country effects. For the measure of openness, they employ a version of the Quinn (1997) index of capital account restrictions on both residents and non-residents (where 0 per cent = entirely closed and 100 per cent = fully open). These findings are based on a range of panel growth regressions using non-overlapping 5 year averaged data, and therefore 5-year lags on capital and current account openness, and including time and fixed country effects.

Their investigation makes two contributions

- First, they find evidence of a relatively strong association between capital account openness and subsequent growth. An increase in capital account openness of ten per cent (around one quarter of the aggregate change in the 1980s and 1990s) is associated with a 0.5 per cent increase in annual growth in the following five year period.<sup>64</sup>
- Second, they show how a range of results found in prior studies can be reconciled with their own data set. For example, they show that Rodrik's finding of no association between capital account openness and residual unexplained growth turns into a positive association once Rodrik's binary measure of openness is replaced with the authors' more detailed index. A caveat, however, is that this relationship may be driven by a few outlier observations (e.g. Argentina, Panama, see their Figure 3).

This specification is somewhat more persuasive than some other studies because the focus on subsequent growth at least partially addresses concerns about potential endogeneity that arise in cross-sectional regressions. The specification also (because of the use of panel data) tests one of the main predictions of the standard static theory properly, i.e. whether or not there is a *temporary* growth increase following capital account liberalisation.

Still there are reservations. While Quinn and Toyoda (2008) report a range of results, are their findings robust to, for example, the removal of outlier observations? Also, do they adequately correct for endogeneity, since it is possible that high recent and expected growth leads countries to remove capital account restrictions?<sup>65</sup> This endogeneity could also mean that their results (and those of other studies) actually understate the impact of capital account liberalisation. Capital account liberalisation may be undertaken because the authorities are aware that without it growth will slow down relative to past or average performance. Without a control for this counterfactual of no capital account liberalisation

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<sup>64</sup> This particular result is obtained from a "Generalised Method of Moments System estimator," instrumenting independent variables.

<sup>65</sup> Quinn and Toyoda (2008) seek to allow for this in their Table 11 by using the acceleration of growth as an alternative dependent variable

(i.e. without a 'treatment effect') it is very difficult to be confident that a causal relationship is being uncovered.

### *Capital account liberalisation and financial development*

Another group of papers focus on the impact of capital account openness on the various standard measures of financial development such as the ratio of credit to GDP, stock market capitalisation to GDP or the value of stock market transactions to stock market capitalisation.<sup>66</sup> A number of these studies then, in turn, consider the impact of any resulting financial development on growth. This line of research suggests somewhat stronger but still far from overwhelming evidence of a positive impact of capital account liberalisation on economic performance.

One of the first papers studying the impact of openness on financial development is Levine and Zervos (1998), who investigate stock markets in 16 emerging markets over the period 1980-1993. They select one date for each country where there was a major opening up of the stock market to international investors, through removal of investment or dividend repatriation restrictions.<sup>67</sup> They find that after these liberalisations stock markets become larger and more liquid.<sup>68</sup> Stock market development is also associated with wider dissemination of information to investors and stronger investor protection laws.<sup>69</sup>

Examining twelve emerging market stock markets over much the same time period, Henry, (2000a) shows that local markets perform strongly in the months before and after liberalisation and Henry (2000b) shows that this is associated with a subsequent but temporary increase in the ratio of investment to GDP.

Other research by Kose et al. (2009) suggests that while stock market valuations have benefits from liberalisation, the opportunities of risk-diversification have been largely confined to residents of developed countries. They measure 'risk sharing,' as the correlation between consumption and output and use annual data on 21 developed economies, 21 emerging markets and 27 other lower income developing countries from 1960-2004. They find that liberalisation has promoted risk sharing in developed countries but it has not had this effect in emerging or other developing countries.

A similar contrast between developed and developing countries is found in Klein and Olivei, (2008) in their investigation of the impact of capital account liberalisation on two standard

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<sup>66</sup> A reservation about some these studies is that the underlying hypotheses being investigated can be unclear. Capital account liberalisation might promote financial development for several reasons: (i) the static gains from trade should increase stock prices because of lower required returns (a consequence both of reductions in domestic market rates of interest to world levels and of better risk diversification), but not affect the ratio of bank credit to GDP; (ii) if capital account liberalisation sets in train a process of dynamic institutional change in the financial sector then both bank credit to GDP and stock market capitalisation to GDP should rise but only slowly over time; and (iii) the standard theory makes no predictions about the volume of stock market transactions.

<sup>67</sup> In the case of Korea, two.

<sup>68</sup> And also more volatile and more correlated with international equity markets. Consistent with this, Levine and Schmukler (2004) find that stock market openness may be associated with greater risk of instability where exit of non-resident investors reduces liquidity on domestic markets

<sup>69</sup> Potentially explaining other findings of Kim and Singal (2000) and Bekaert and Harvey (2000), who report post-liberalization increases in stock market valuation.

measures of financial depth – the ratio of private sector credit to GDP and the ratio of money (bank money plus notes and coins) to GDP – and also on growth. They use a sample of 95 developed and emerging markets to examine the impact of capital account liberalisation in either the years 1985-1995 or 1975-1995 on financial depth and growth in the years 1990-1995. They find a positive impact on both financial depth and growth but this is largely restricted to developed countries with relatively well developed financial sectors.

An impact of capital account liberalisation on stock market capitalisation and valuation seems fairly well established, but whether there is a further impact on growth is more questionable. Bekeart et al. (2005) report a positive relationship between equity market liberalisation and GDP growth.<sup>70</sup> Edison et al. (2004) however show that this becomes statistically insignificant when an additional measure of government reputation is included in the regression.<sup>71</sup> This variable similarly displaces the impact of capital account liberalisation on growth in replication of three other studies (Quinn, 1997; Grilli and Milesi-Ferretti, 1995; and the unpublished paper of Arteta et al., 2001a).

More positive evidence is reported by Manova (2008) in a panel study of 91 countries for 1970-1987. Equity market liberalisation is associated with relatively greater export growth in sectors which find it more difficult to obtain external bank finance (for example because they lack collateral that can be pledged for a bank loan). This association suggests that improved access to external finance, through the local equity market, can reduce external financing constraints and boost trade.

A further set of studies consider the importance of institutional development to realising the benefits of capital account openness. Chinn and Ito (2006) use their own measure of capital account openness, to build a panel data set for 108 countries from 1970 to 2000.<sup>72</sup> They find that financial openness encourages financial development and growth, but only once a certain level of legal protections is reached. They also find that banking system development is a necessary precondition for capital account openness to lead to development of the domestic equity market. Buitert and Taci (2003), who provide an informative narrative account of capital account liberalisation in central and eastern Europe, suggest that underdeveloped legal systems and other institutional weaknesses were to blame for the financial problems that these countries (who had liberalised capital accounts) suffered following the 1998 Russian debt crisis.

The relationship between capital account liberalisation, financial development and growth is clearly not a simple one. One final illustration of this is found in the work of Braun and Raddatz (2007) who report that there is a relationship between financial development and growth, but this *weakens* after the capital account is liberalised.<sup>73</sup> The interpretation of this

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<sup>70</sup> A similar result appears in Chari and Henry (2004a), who find increased investment following stock market liberalisation.

<sup>71</sup> A scaled index ranging from 1-10 developed by Knack and Keefer (1995), computed from published country risk assessments and representing the risk of that country defaulting on its contracts.

<sup>72</sup> Their measure, KAOPEN, is the first principal component of four binary (0,1) measures of capital account restrictions: (i) the existence of multiple exchange rates; (ii) restrictions on current account; (iii) the standard binary capital control dummy of earlier studies; and (iv) requirements on the surrender of export proceeds. KAOPEN is highly correlated with the Quinn index and available for more countries.

<sup>73</sup> Using a panel of 105 countries from 1980 – 2003.

result is unclear. It may not be causal, but instead represents a declining impact of standard measures of financial development on growth as other relevant factors (e.g. institutional development, income per head) change.

### **c. Evidence from disaggregated data**

The evidence reported in the previous sub-sections 3b, using aggregated country-level data, presents a mixed picture of the impact of capital account liberalisation on economic performance. This is not to say that there is no positive effect. The main lesson to be drawn from this work is that these investigations using aggregated data are really not up to the task of untangling cause and effect in a complex institutional environment in which all the observed variables are endogenous. Therefore it is necessary to turn to the evidence available from more disaggregated data. This section focuses on research on the economic impact of foreign direct investment (FDI) by non-financial companies. It also discusses the impact of capital controls at the industry or firm level.

#### *Capital account liberalisation, foreign direct investment (FDI) and economic growth*

The economic impact of foreign direct investment (FDI) is a substantial research area of its own. Some preliminary remarks are appropriate. First, as covered in section 2, theory suggests that there are substantial positive benefits to the host country from FDI. Second, as section 3a sets out, the nature and pattern of FDI has changed substantially over time. Finally, it should be noted that complete capital account liberalisation is not necessary for FDI to take place. US firms, for example, made substantial direct investments in Europe in the 1950s despite widespread controls on both current and capital account transactions. Capital account liberalisation may of course make FDI more attractive.<sup>74</sup>

Alfaro et al. (2004), using a panel of data on 71 developing countries from 1975-1995, to explore the interaction between FDI, financial development (measured by the log of the private credit to GDP ratio) and economic growth. They report (Table 4) a modestly significant positive impact of FDI on GDP growth and a much more statistically significant positive impact from the interaction of FDI and financial development. This result is robust to the inclusion of a number of other control variables and suggests quite strong growth effects from FDI for those countries with sufficiently well developed financial sector. This is broadly consistent with the finding of Klein and Olivei (2008), discussed earlier, who find a positive relationship between capital account openness, financial development and growth for developed but not developing countries. Another perspective on the relationship between financial deepening and FDI is found in Di Giovanni (2005), who finds, in his study of world cross border mergers and acquisitions activity, a strong association between financial deepening and the decision for a domestic firm to acquire a foreign firm.

A substantial branch of the research literature examines capital account openness on FDI, alongside other factors, such as subsidies or host national characteristics (e.g. the degree of corruption). Gastanaga et al. (1998) find a large and statistically significant positive impact

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<sup>74</sup> For example if this makes it easier for a local subsidiary to independently raise debt or equity finance in local or international markets; or if this gives greater assurance that there will be no intervention to limit repatriation of profits.

of capital account openness on the level of FDI, for 49 developing countries over the period 1970-1995.<sup>75</sup>

However, somewhat weaker results are reported in other studies. Asiedu and Lien (2004) examine the impact of capital controls and liberalisation for 96 countries on FDI for the period 1970-2000. They find that capital controls (measured by multiple exchange rates, restrictions on capital account flows, and limits on repatriation of earnings) has some negative impact on FDI but only in the 1990s and for Asian and Latin American regions.

Noy and Vu (2007), for a cross country sample of 83 countries for 1984-2000, find that capital account openness is positively but moderately associated with FDI inflows (these are primarily determined by other country characteristics, including institutional development). This is consistent with the findings of Faria and Mauro (2009), who find that institutional development is associated with higher levels of both FDI and portfolio equity investment.

Desai et al. (2006) is a further study establishing a close link between capital account liberalisation and the impact of foreign direct investment. They exploit a data set documenting the activities of US multinational firms, showing how these firms both circumvent capital controls (through internal transfer pricing and internal dividend repatriation) and how capital account liberalization is significantly associated with higher levels of activity in host countries.

As with the literature outlined in section 3b on the relationship between capital account liberalisation and growth, cross-country studies of the impact of FDI on growth suffer with problems of endogeneity. Agenor (2003) reviews twelve studies of the impact of FDI on economic growth.<sup>76</sup> While many of these studies find a statistically significant positive impact, few pay much attention to the problem of endogeneity - FDI may be attracted to countries that grow relatively fast. Also in parallel with the literature in section 3b, Borensztein et al. (1998) consider the impact of FDI in the presence of other variables. Their key finding is a large and statistically significant interaction effect on growth, between FDI and levels of schooling: FDI is associated with a positive growth impact but only for countries with a relatively high level of education attainment. They also report a positive association between FDI and domestic investment: crowding in rather than crowding out.

More compelling evidence comes from micro-level studies. A theme in some recent research on FDI is the incentive for transferring technology and skills to local suppliers, as part of the multinational's global supply chain. Blalock and Gertler (2008) provide industry level evidence that this can have a substantial positive welfare impact on foreign direct investment. They investigate the effect of FDI on the productivity of large panel of 20,000 Indonesian manufacturing companies, both locally and foreign owned, from 1988 to 1996 (i.e. before the Asian crisis). Their estimates of firm level productivity reveal quite strong downstream impact of FDI on local supplier productivity and also on the competitiveness of input markets. Output and profits increase for all firms.

Overall, while like other cross-country panel research it is again somewhat inconclusive, this empirical evidence can be taken to be consistent with the view that, especially for countries

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<sup>75</sup> Capital openness is measured by DGOPEN, an index summarising several elements of capital controls similar to that of Quinn (1997).

<sup>76</sup> Agenor (2003), pp. 1104 - 1105

with relatively high levels of institutional and human capital development, liberalisation of capital accounts can encourage greater volumes of FDI and this in turn can have substantial positive impact on the host economy.

#### *The impact of capital controls at the industry or firm level*

While there is comparatively little peer-reviewed research, some of the strongest empirical support for the benefits of liberalisation of capital flows comes from micro-level data. Forbes (2007) reviews this evidence on the impact of capital controls and summarises it as follows (more detailed review appears in Annex C):

*“First, capital controls tend to reduce the supply of capital, raise the cost of financing, and increase financial constraints—especially for smaller firms and firms without access to international capital markets. Second, capital controls can reduce market discipline in financial markets and the government, leading to a more inefficient allocation of capital and resources. Third, capital controls significantly distort decision making by firms and individuals as they attempt to minimize the costs of the controls, or even evade them outright. Fourth, the effects of capital controls can vary across different types of firms and countries, reflecting different pre-existing economic distortions. Finally, capital controls can be difficult and costly to enforce, even in countries with sound institutions and low levels of corruption.”*

The first point, that reductions in capital controls remove financing constraints on firms, receives econometric support from the work of Harrison et al. (2004), showing that financing constraints (measured by sensitivity of investment to cash flows) are reduced by capital account liberalisation.<sup>77</sup> This can be expected to support higher investment and also, as suggested by the literature on financing constraints and trade, promote exports.

However, this reduction of financing constraints could be a consequence of other financial liberalisations happening simultaneously with removal of capital controls. (Galindo et al. 2002) examine the impact of both domestic financial liberalization and capital account liberalisation using sectoral value added data for 37 industries in 28 emerging market countries over the period 1972–98. They follow Rajan and Zingales (1998) by testing the hypothesis that liberalization leads to faster growth in industries that rely relatively more on external finance. They do find that liberalisation does lead to faster growth, but this is driven by domestic rather than external capital account liberalisation.

Levchenko et al. (2009) pursue a related approach using industry data on 28 manufacturing sectors for 56 countries over the period 1980-2003. Their key explanatory variable is the identification of liberalization events which incorporates both capital account liberalisations and domestic liberalizations. They compare behaviour for a ten year period after liberalisation and 10 years before. As a control, they compare this result to countries that did not liberalise during the ten year period. They find that liberalisation is associated with both more rapid growth and with greater volatility of output.

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<sup>77</sup> Further case study evidence of reduction in financing constraints reported in Love (2003), Forbes (2003) and Gallego and Hernandez (2003) (for Chile) and in several other studies cited in Forbes (2007).

#### **d. Intermediary balance sheets and gross capital flows**

The final part of sub-section 2d considered reasons why, in theory, international capital flows might be associated with heightened risk of financial instability, arguing that this can arise both because of fundamental macroeconomic imbalances associated with large net capital inflows and because of weaknesses of risk management and regulation of financial intermediaries, associated with substantial fluctuations in gross capital flows and increased vulnerability of the financial system.

The case for a link between international capital flows and macroeconomic and financial instability has frequently been made for emerging markets (see Appendix C for fuller review and discussion). Stiglitz (2000) and Bhagwati (1998) have famously argued that the case for capital account liberalisation, based on the analogy between capital and trade account liberalisation, is misleading not just because it overstates growth benefits but also because it ignores potential instability of the kind that occurred in the Asian crisis. Capital inflows or surges can quickly turn into capital flight and crisis.

The suggestion that unfettered capital account transactions can lead to financial instability also receives some support from the pre-1914 experience<sup>78</sup>. There is a pattern, similar to more recent emerging market experience of capital inflows (surges) followed sometimes by crisis. These crisis episodes tended to spread contagiously to several countries. The crises in the years 1880-1913 were though individually very varied. Some involved severe credit and output losses, while others were relatively mild; some were clearly driven by global credit conditions, while others were driven by idiosyncratic factors.<sup>79</sup> They cannot be solely attributed to international capital market integration.

Somewhat less clear cut is the case for an association between international capital flows and financial instability for developed countries in the modern era. Unlike emerging market countries, developed countries are not subject to the same extent to a risk of a sudden reversal of capital flows (a 'sudden stop'). There is though considerable empirical evidence of substantial volatility in gross international capital flows, both amongst developed countries and between emerging markets and developed countries.

Much of this evidence comes from the work of Hyun Song Shin and co-authors (Adrian and Shin, 2010; Adrian et al., 2011a, 2011b, 2010; Bruno and Shin, 2013; Etula, 2013; Shin, 2012), focusing on the role of capital market intermediary balance sheet in market pricing. They note that broker dealer balance sheets in the US are markedly pro-cyclical, becoming more leveraged (with an increasing ratio of debt to assets) when the prices of the assets they hold rise. Pertinently, from the perspective of understanding global capital flows and their market impact, these balance sheet movements are predictive of a range of global exchange rate and market prices.

Similar mechanisms appear to impact on bank intermediated flows. Bruno and Shin (2013), building on the earlier work on international transmission of broker dealer balance sheets

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<sup>78</sup> See Annex A for discussion of the work of Eichengreen and Bordo (2002) on these episodes.

<sup>79</sup> An example of the latter is the French banking crisis of 1889, triggered by the failure of the French bank the Comptoir d'Escompte because of its involvement (with other French banks) in a failed attempt to corner the world copper market (Meissner, 2013 provides discussion and references).

by Adrian and Shin, examine how the borrowing by global banks leads to transmission across countries. Using a panel of 46 countries they find that global factors dominate local factors as determinants of banking sector capital flows. Again, this is consistent with a substantial global impact on domestic credit expansion.

Similar evidence is reported by Lane (2013) who finds an apparent close association between capital market volatility and Euro area cross border capital flows<sup>80</sup>. Euro area global capital flows increase when market volatility is low (2003-2007), fall sharply when it is high (2008-2009) and recover modestly as volatility falls again. From 1993-2003, in contrast, market volatility and the level of Euro area gross capital flows are positively correlated.

Further related analysis is offered by Rey (2013) and by Turner (2014). Rey (2013) argues for the existence of what she describes as a “global credit cycle” i.e. monetary policy transmitting through global capital markets from the core country the US, via intermediary balance sheets, financial markets and the extension of credit.

Turner (2014) offers a similar perspective to that of Rey, also focusing on the endogenous creation of credit at both the domestic and global level but with more attention to the role of property related lending. His proposed policy solutions are completion of the current efforts at re-regulation of the financial system under Basel III, and related measures. He also calls for a more aggressive application of macroprudential tools and specific measures aimed at addressing economic inequality (through supply side measures and taxation taming property price cycles).

Still, while there is clear evidence that capital flows amongst the advanced countries are highly cyclical, the implications for policy are less clear. Are these flows fundamentally malign or benign? Current views are strikingly reminiscent of debates amongst the professions, going back seventy years or more, about the stability of unrestricted financial transactions. As discussed in Annex A, the instability of the 1930s was interpreted in contrasting fashion by Nurkse (1944) and Friedman (1953). Nurkse (1944) saw unrestricted capital flows and resulting exchange rate instability as an economic menace, whereas Friedman (1953) viewed unrestricted exchange rate transactions as a naturally stabilising arrangement.

Much the same debate was revived a half century later between Dooley et al. (2004) and Eichengreen (2004). Dooley et al. (2004) argued that the imbalances and capital imported by advanced countries, such as the US and the UK, are sustainable and part of the natural development of the international economy as lower income economies emerge and become fully integrated into the global financial system. If this is the case then dealing with domestic vulnerabilities should be enough to prevent a repeat of the costly macroeconomic adjustment such as that triggered by the crisis of 2008-2010. Eichengreen (2004) argues that such imbalances cannot be indefinitely continued. As discussed below in Section 4c, Eichengreen (2004) argues a policy response may have to be considered.

Other recent contributions offer a more optimistic interpretation of large scale gross global international flows, such as Friedman (1953) on exchange rates or Dooley et al. (2004) on

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<sup>80</sup> Capital market volatility is measured by the Chicago Board of Options VIX index. Cross border capital flows are the sum of inflows and outflows as a percentage of GDP.



savings imbalances. Gorton and Metrick (2010) and Gorton (2010), like Shin and his co-authors, focus on the role of repo funding, but they see no inherent instability; rather the key problem was simply a lack of supply of safe and secure assets that could be held by international and domestic investors. In their view, the global crisis was essentially a liquidity problem arising because too many assets that were perceived as safe ('informationally insensitive') turned out not to be so.

But it can be equally well argued (Rajan 2006; Rey 2013; Turner 2013) that large scale and highly cyclical gross capital flows, as well as substantial net capital flow imbalances, represent a vulnerability that could trigger future financial stability problems.

## 4. Policy proposals and discussion

This section examines some recent debates about the appropriate policies for the management or control of international capital flows. It is organised into three sub-sections: (i) examination of the recent debates over the scope for using limited and temporary measures to manage international capital flows; (ii) discussion of some arguments for more fundamental interventions in financial transactions; and (iii) consideration of the challenges of international policy co-ordination in a world of substantial international capital flows.

There can still be a case for temporary, emergency imposition of controls on capital outflows in a financial crisis, especially for smaller countries, where exchange rate management is critical to containing systemic risk. Recent examples are Iceland and Cyprus.<sup>81</sup> In the EU, this has been recently accepted by the European Commission, when Cyprus introduced capital controls in March 2013.<sup>82</sup> An obvious rationale for such widespread but temporary controls on capital outflows is to buy time, allowing the authorities in a crisis situation to deal with distressed institutions in an orderly fashion, without destabilising withdrawal of short term deposits creating both liquidity and exchange rate problems. However, the emergency introduction of widespread capital controls is not without costs. For example, by undermining the credibility of the authorities' commitment to respect the interests of foreign investors, government borrowing costs could increase substantially.

Such emergency imposition of capital controls is distinct from the use of capital controls as a macroprudential measure to limit the build up of systemic risk. The case for such measures has often been made for emerging market countries, and recently endorsed by the IMF (see Annex C). On the other hand, the practical experience reviewed in Annex C provides mixed evidence of the effectiveness of such measures.

Others would go further in containment of international capital flows. One minority view is that the world should return to the widespread and *permanent* capital controls of the 1960s and early 1970s.<sup>83</sup> Proponents appear to see the principal obstacle to this as being the politics and governance of global finance, and not the economics. But the bigger problem is that the uncertain benefits, substantial costs and practical difficulties make it unlikely that any major country will seek to reintroduce widespread permanent capital controls.

Still, especially since the global financial crisis, the same fundamental concerns about the impact of international capital flows that underlie such radical proposals have come to be quite widely voiced. A number of researchers and policy makers have stated serious reservations about the destabilizing impact of both domestic and international capital flows. Measures aimed at controlling some of the undesirable consequences of capital flows, while retaining the efficiency benefits of international exchange of financial claims, have been proposed.

Two have attracted particular attention and are described in this section:

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<sup>81</sup> The case of Iceland is considered by Viterbo (2011). That of Cyprus more briefly by Coutinho (2013).

<sup>82</sup> See European Commission (2013b)

<sup>83</sup> This view is found mostly in the work of scholars of international relations.

- Some form of financial transactions tax, in order to put some ‘sand in the wheels’ of global financial transactions - while a tax of this kind is now being discussed in the EU, the evidence on the efficacy of such a measure is far from compelling.
- Supplementing discretionary macroprudential policy responses to systemic financial risk with permanent ‘Pigovian taxes’, designed to offset systemic risk externalities created, for example, by leverage or maturity mismatch. Applying such measures would require taxation of specific financial claims and, to prevent avoidance, would have to apply to residents and non-residents alike.

The final issue discussed in this section is the need for international policy co-ordination, in a world of large scale international capital flows. These include treaty agreements on the management and control of capital flows, co-ordination of tax regimes applied to financial and corporate assets, co-operation on financial regulation and the co-ordination of macroeconomic policy. While much of this co-ordination works well, the extensive historical experience of failures in co-ordination of monetary and fiscal policy suggests some caution.

In sum, while international exchange of financial claims offers very substantial microeconomic benefits, it is also associated with episodes of macroeconomic and financial instability. Novel policy responses, going beyond those being considered in the mainstream discussion of macroprudential policy and capital flow management are attracting attention. These challenges might be summarised by stating that in a world of large scale global capital flows policy makers face a new macroeconomic policy trilemma. They cannot easily achieve at the same time: (i) global capital market integration; (ii) the achievement of domestic macroeconomic policy goals; and (iii) assurance of financial stability.

#### **a. Is there a case for ‘capital flow management’?**

This subsection describes the recent discussions of the use of capital controls and capital flow management as a policy tool for averting potential systemic financial risk. It begins with a short account of the case for ‘macroprudential’ regulation – since measures to influence international capital flows can be thought of as one of the available macro-prudential policy instrument, alongside several others – such as pro-cyclical capital requirements, loan-to-value ratios on property lending or the imposition of haircuts on collateralised money market borrowing. It then considers the particular arguments put forward for using measures to influence capital flows. While these appear relevant to many emerging markets, they seem to have less application to developed countries.

Since the crisis the traditional tools of micro-prudential regulations have been strengthened, but they have also been supplemented with a new ‘macroprudential’ policy function, responsible for overseeing the risks to the financial system as a whole and with additional policy instruments to address systemic financial risk. There is now a substantial literature on macroprudential policy, addressing several related issues:<sup>84</sup> institutional arrangements for macroprudential policy;<sup>85</sup> macroprudential instruments and their effectiveness;<sup>86</sup> the

<sup>84</sup> Overviews include Clark and Large (2011); Galati and Moessner (2013); Hanson et al. (2011); Milne (2010); and Yellen (2011).

<sup>85</sup> The way in which these new macroprudential responsibilities are organised varies considerably from one jurisdiction to another. In some newly created bodies or committees have been given macroprudential responsibility, within or outside the central bank; in others the function is more advisory. (Nier et al. 2011; Goodhart 2012) consider these institutional arrangements.

interrelationship between macroprudential and other policy instruments; and the choice between rules or discretion in the application of macroprudential instruments.<sup>87</sup>

The management and control of capital flows are not usually considered part of the macroprudential policy toolkit for developed countries. Korinek (2011) though argues that ‘prudential capital controls’ can be a useful tool for offsetting systemic risk externalities:<sup>88</sup>

*“The defining feature of capital controls is that they discriminate based on the residency of investors. This is desirable because international investors who withdraw funds in a financial crisis give rise to a transfer problem —any capital outflow puts further pressure on the exchange rate and causes further pecuniary externalities through the resulting exchange rate movement. International investors care more about the level of the exchange rate than domestic investors who consume goods denominated in the domestic consumption basket. This creates a role for discriminating regulations based on residency, that is for imposing prudential capital controls rather than other macroprudential regulations.”* Korinek (2011)

Arguments of this kind for controlling or managing external capital flows are now quite widely accepted as appropriate for emerging market countries (see Annex C for discussion of their experience). In particular the use of tools for management and control of capital flows in order to address potential exchange rate risks has been endorsed by the IMF (see International Monetary Fund, 2012). A detailed discussion is provided by Ostry et al. (2010) in a IMF Staff Position note (see also Ostry et al., 2012). They write:

*“A key conclusion is that, if the economy is operating near potential, if the level of reserves is adequate, if the exchange rate is not undervalued, and if the flows are likely to be transitory, then use of capital controls—in addition to both prudential and macroeconomic policy—is justified as part of the policy toolkit to manage inflows. Such controls, moreover, can retain potency even if investors devise strategies to bypass them, provided such strategies are more costly than the expected return from the transaction: the cost of circumvention strategies acts as ‘sand in the wheels.’”* Ostry et al. (2010)<sup>89</sup>

A key point is that the application of these tools should be subject to an appropriate process of governance.<sup>90</sup> Broadly, this requires that tools of capital management should be a policy of last resort. Only after the standard tools of monetary and fiscal policy that are

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<sup>86</sup> See Galati and Moessner (2013) and Lim et al. (2011), who review a wide range of available macroprudential instruments.

<sup>87</sup> See Milne (2010) and Agur and Sharma (2013)

<sup>88</sup> Moreno (2011) also discusses capital flow management from a macroprudential perspective.

<sup>89</sup> See page 5.

<sup>90</sup> This can be thought of as a ladder or check list, a series of prior questions that should be asked and answered in the affirmative before intervening to manage capital flows (see Figure 1 of Ostry et al. (2010), which provides a more detailed flow diagram for considering this decisions).

conventionally used in response to capital inflows (for example, sterilization or fiscal tightening) have been exhausted should capital management be considered.

This seems advisable to ensure that capital controls or management policies do not undermine policy commitments or are used in an attempt to avoid necessary fundamental adjustment of exchange rates. However the jury is still out on how well these measures can work: as Ostry et al. (2010) recognise, while a number of countries have applied controls on capital inflows there is only limited evidence on the effectiveness of these policies, and what evidence there is suggests that these tools do not work well in those emerging market countries with relatively developed financial markets (see Annex C for review of this evidence).

Are these policies, which seek to restrict volumes of capital inflows or alter their composition, relevant to developed countries? In particular could they have helped reduce the systemic risks that emerged prior to the global financial crisis or, subsequently, in the Euro area? Some parallels can be drawn, especially for the problems of periphery countries in the Euro area. But there are substantial differences from the situation of emerging market countries, which suggest considerable caution about endorsing the same policy instruments for use in countries with highly developed capital markets.

This is especially true for larger developed countries such as the UK, whose currencies are actively traded in global foreign exchange markets. Measures that discriminate between residents and non-residents come into conflict with the OECD code of liberalisation (see Annex B). In countries with more sophisticated financial sectors, there is plenty of scope for avoiding capital measures based on residency, for example through offshoring via foreign exchange derivatives.<sup>91</sup> Such measures would also be especially problematic in the Euro area. Controls that discriminate between residents and non-residents of an individual Euro area countries conflict with both the EU Fundamental Freedom of Freedom Movement of Capital (see Annex A) and the use of the Euro as the common currency. Finally even if these measures could be made effective, deep and liquid markets for foreign exchange would suggest that the exchange rate impact of capital flows is small, relative to expectations of future macroeconomic policy and performance.

If the motive for considering intervention in financial markets is not limiting exposure to exchange rate risks, but rather some other aspect of systemic financial risk – containing common exposures, maturity mismatch or counterparty risks – then other more domestically orientated responses, using monetary or fiscal policy or the newer domestic macroprudential instruments will be more appropriate. So the balance of policy discussion would seem to favour the use of other macroprudential policy tools, such as pro-cyclical requirements on bank capital, rather than capital management or controls.

If the concern is that large scale capital flows invested in domestic money markets might create systemic risk through excessive maturity mismatch would be most appropriately addressed through tightening of liquidity requirements on banks and other borrowers in

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<sup>91</sup> Fritz and Prates (2014) discuss this point in relation to both South Korea and Brazil.

money markets, without regard to whether the deposit is from a resident or non-resident.<sup>92</sup> This is not to say that the impact of international capital flows on systemic financial risk is not a policy concern for larger countries, but it does suggest that the appropriate macroprudential policy response will not be specifically focussed on these capital flows or rely on any distinction based on residency.

Even if the exchange rate is a concern, it is far from clear that the distinction between resident and non-resident matters in developed countries. For example if the goal is to limit the potential for net capital outflows, whether from residents or non-residents, weakening the exchange rate, then any policy response should be applied to resident and non-resident alike. Ultimately of course the question is empirical, but there is no obvious reason for believing that residents are less subject to panic. The literature on capital flight indeed suggests that on many occasions outflows by residents are at least as important in crisis episodes as those by non-residents.<sup>93</sup>

### **b. Proposals for more fundamental interventions**

Temporary interventions, of the kind supported by the IMF in emerging markets, to manage or control the exchange rate risk created by international capital flow surges seem to be of only marginal relevance to the policy challenges of developed countries, because of their very different financial structure (see Annex C for elaboration of this point). But a case can be made for more permanent interventions in financial markets that would at least indirectly affect international capital flows. The general argument for such interventions rests on the concern, discussed in Section 3, that fluctuations in global liquidity (generated by pro-cyclicality of leverage in financial institutions and reflected in the large fluctuations of gross capital inflows and outflows) contribute to both risk of systemic financial instability and impede the role of financial market prices in responding to underlying economic fundamentals.

While a return to widespread capital controls is unrealistic, there are some more targeted proposals that could address some of the concerns about the negative consequences of unrestricted global capital flows, without losing all the benefits of gains from trade in international financial claims. This subsection considers two of these.

A number of scholars of international relations have considered the case for reintroduction of widespread capital controls (e.g. Helleiner and Pagliari, 2011; Helleiner, 2010; Pinto et al., 2011; Quiggin, 2011; Vestergaard and Wade, 2012). Their focus is on the governance of the global financial system in the aftermath of the global financial crisis. They argue that the response to the crisis has reflected a political preference for continued large scale international capital flows, and serving particular interest groups that benefit the most from continuation of unrestricted international trade in financial claims.

It seems though somewhat naïve to believe that a return to the Bretton Woods arrangements is a realistic policy option, prevented only by lack of political will. As

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<sup>92</sup> De Nicoló et al. (2012) argue similarly that individual macroprudential instruments should be targeted on specific sources of systemic risk, including varying liquidity requirements to address maturity mismatch and also capital requirements to address bank leverage.

<sup>93</sup> There are several studies of capital flight (e.g. Collier et al., 2001; Cumby and Levich, 1989; Dooley, 1988; Lensink et al., 2000; Pastor Jr, 1990), mostly from the 1980s and focused on developing countries.

documented above in Section 3, there are a considerable range of microeconomic benefits from international transactions in financial claims. It is also questionable whether capital controls are enforceable today, given that developments in information and communication technologies were one of the principal reasons why it became increasingly difficult to maintain the Bretton Woods era controls (see Annex A for further discussion).

Some scholars in economics (e.g. Gallagher, 2011; Ocampo, 2012) have also expressed sympathy for reintroduction of capital controls in developed countries, based on similarly strong reservations about the benefits of international capital market flows, and emphasising the shift in thinking about the potential benefits from the management and control of capital flows in emerging markets. But as already argued this emerging market country experience is of only limited relevance to developed countries (see the previous subsection and Annex C).

In any case steps to influence international capital flows in developed countries of the kind recommended for emerging markets by Ostry et al. (2010) would be only an occasional and relatively limited intervention, and so would need to be supplemented by active use of domestically orientated macroprudential policy tools and high levels of capital requirements on financial intermediaries (as recommended by Rey, 2013).

There are though two fairly widely canvassed proposals for more permanent interventions in capital markets: a Tobin tax on financial transactions to limit frequent presumed short term and non-fundamentally based trading; and some form of Pigovian tax on the systemic risk externality created by financing using short term liabilities, so encouraging financing using longer maturity bonds instead of short term deposits and money market instruments. These two proposals – neither of which are capital controls because they do not discriminate between residents and non-residents – are considered in turn.

The original Tobin tax proposal (Tobin 1978) was for a tax on foreign exchange transactions. A motivation for his proposal, echoing the views of Nurkse (1944) on the French franc and floating exchange rates (see Annex A), was the apparent misalignment of exchange rates during the post-Bretton Woods floating, with substantial and sustained departures from estimated fundamental equilibrium.

Eichengreen et al. (1995) review the case for interventions to limit the volatility of exchange rates. They point out a range of reasons why pegged exchange rates are no longer viable (short of full monetary union), including the much greater integration of global capital markets and the increasing political unwillingness to accept domestic costs in terms of higher unemployment or reduced output to defend a fixed exchange rate peg. They also highlight the evident problems with floating exchange rates when policy is oriented towards domestic concerns: the apparent failure of exchange rates to adjust towards long term fundamental equilibrium<sup>94</sup> has the consequence of substantial exchange rate volatility.

There are however strong objections to this argument. First, as Eichengreen, Tobin, and Wyplosz (1995) themselves acknowledge (and current discussion of a similar financial transactions tax in the European Union reminds us) there are considerable practical

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<sup>94</sup> As predicted by standard textbook models such as Dornbusch (1976); see Goodhart (1988) for discussion of why the microeconomics of exchange markets may lead to this departure from theoretical predictions.

problems with implementing such a transaction tax, in particular a tax on foreign exchange transactions would have to be applied globally, and achieving the necessary global consensus is probably unrealistic, regardless of the merits of such a tax. Second, as argued for example by Dooley (1996), while there is evidence that exchange rates and other financial market asset prices can depart, substantially and for sustained periods, from fundamental levels; any policy to intervene and correct this situation must be based on a clear understanding of what causes the departure from fundamentals. It is unclear how a transactions tax would prevent these problems; and such a tax could, by undermining liquidity, lead to greater rather than less exchange rate volatility.

Another proposal for permanent intervention in capital markets, focussed on limiting maturity mismatch, are 'Pigovian taxes'. These are proposed by Perotti and Suarez (2011, 2009a, 2009b) and also by Milne (2013) and recently endorsed by Cochrane (2014). The focus of these proposals is on the liability side of the balance sheets of banks and other financial intermediaries. Perotti and Suarez suggest a tax on short term bank liabilities, with the intention of setting this at a level that internalises the externalities from rapid recourse to short term lending markets<sup>95</sup>. The proposal of Milne (2013) seeks to address some shortcomings of the Perotti and Suarez "Pigovian" tax. Milne (2013) proposes a registration system, so that the tax can be applied to non-bank as well as bank liabilities, and a system of "cap and trade", similar to the successfully employed scheme to limit acid rain emissions in the US. The latter would avoid having to determine the appropriate tax rate to ensure the desired target for maturity mismatch is achieved.

Two final points can be made to complete this subsection. Neither of these proposals – a Tobin tax or a Pigovian tax on maturity mismatch – directly manage or control international capital flows. There is no discrimination between residents or non-residents. A Tobin tax of this kind could be applied specifically to foreign exchange transactions, thus primarily affecting international transactions in financial claims; but it might just as well be applied more widely to a range of security, derivative and foreign exchange markets. The proposed Pigovian taxes are applied to both domestic and international short term financial claims, domestic or international. They impact on international capital flows only indirectly, by restricting trading volumes or leverage of all financial transactions.

While proposals for both financial transaction and Pigovian externality taxes have attracted considerable attention from researchers, policy makers have shown little appetite for such interventions in financial markets on a permanent basis at the global level. Although a form of Tobin tax is being discussed in Europe, this is not being done for all jurisdictions leaving considerable potential for transactions moving outside of the scope of the tax.

### **c. Policy co-ordination in a world of integrated capital markets.**

The third subsection discusses the increased importance of international policy co-ordination in world of globally integrated capital markets. As emphasised by Obstfeld (2012, 1998), this is a central policy consequence of the removal of restrictions on international transactions and the subsequent globalisation of financial markets.

Four aspects of policy co-ordination can be highlighted:

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<sup>95</sup> The nature of these externalities is only hinted at in their papers, but they seem to have in mind the firesale externality in the related formal modelling can be found in the work of Stein (2012).



- International co-ordination of the tax regimes applied to both personal and corporate financial assets.
- International co-ordination of financial regulation.<sup>96</sup>
- Co-ordination of policies for the liberalisation of capital account transactions.
- International co-ordination of monetary and fiscal policy together with the new macroprudential policy function.

Section 3 contains a brief discussion on the first two policy considerations, so the focus here is on these last two issues.

There are two international agreements governing policies on the management and control of capital flows: the OECD code of liberalisation and, for members of the European Union, the Fundamental Freedom of Movement of Capital.<sup>97</sup> Their history and operation is discussed more fully in Annex B below.

The OECD code is flexible. It has been adapted to reflect global shifts in the attitudes of policy makers towards the control and management of capital flows, with the pendulum swinging both in favour of greater liberalisation (especially during the 1980s) and in favour of greater controls (in the late 1940s and again in the later 1960s and early 1970s).<sup>98</sup> This shift in the attitudes of policy makers in favour of greater capital market liberalisation laid the foundations for the subsequent dramatic growth of international investment documented in Section 3a. The OECD code played an important role by providing the only global multilateral framework for discussing and implementing capital account liberalisations (which fall outside the scope of the World Trade Organisation). The code though still offers considerable room for countries to take unilateral actions, provided they justify the measures they are taking.

Turning to the co-ordination of macroeconomic policy, the need for an internationally co-ordinated response to large scale international capital flows is highlighted in many policy commentaries. One prominent example is Brunnermeier et al. (2012), who examine the link between international capital flows and the global financial crisis of 2008-2009. They pay particular attention to the case of the post-crisis adjustment in the Euro area, arguing that many of the European measures, such as the work to create a European system for banking supervision and resolution, are examples of the kind of co-ordination that can underpin the safety and soundness of the financial system.

Despite steps taken in the Euro area, it can still be argued that macroeconomic policy in the major countries remains too focussed on domestic goals, and takes insufficient account of

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<sup>96</sup> Here again there is a large literature (e.g. Alexander et al., 2006; Moshirian, 2011; Tarullo, 2008), discussing the international co-ordination of financial regulation, through both the Financial Stability Board and through the institutions of the European Union. Some contributions, motivated by concerns about the inefficiencies of global financial flows, have gone so far as to call for the creation of a global financial regulator (Eatwell and Taylor 2001); but while such a body might help reduce avoidance of regulations, it is unclear that it can better overcome the political challenges of achieving international agreement on financial regulation between sovereign countries.

<sup>97</sup> Article 63, Treaty on the Functioning of the European Union.

<sup>98</sup> While the discussion provided here focuses on the OECD and the EU, the same general shift in favour of capital account liberalisation is well documented in other global institutions, notably at the International Monetary Fund. See Abdelal (2007) chapter 6.

impacts on other countries resulting from large scale international capital flows. Pringle (2013) expresses some of these concerns: on pgs 7-8 *“Central bankers declared their confidence in their monetary policy regimes. Regulators said that what was needed was, of course, better regulation – and they could be entrusted to deliver it. Bankers said that they accepted the need for new regulation and higher capital .... What these responses had in common was a domestic focus.”*; and on page 10 *“Finance had become too international and too fast-moving for any national central bank to monitor, and central banks were nowhere near reaching agreement on adequate international oversight (such as cross-border bank resolution and bankruptcy regimes), partly reflecting the far-reaching financial and political difficulties in reaching agreements on how to share the burden of rescue operations. In fact, central banks [can] deliver on their new responsibilities for financial stability and macro-prudential oversight only within the structure of a different and much stronger set of international rules.”*

To sum up, a degree of caution is in order about what international co-ordination of monetary and fiscal policy can achieve. Progress can and has been made on the international co-ordination of taxation, financial regulation and the direct management and control of capital flows; but in these cases it is relatively easy for policy makers to make commitments to future actions. In the case of macroeconomic policy (with some exceptions, for example inflation targeting), it is relatively difficult to make an unambiguous commitment to future policy choices. Domestic policy pressures are always likely to undermine these commitments. This is illustrated by the history of failure of international policy co-ordination to successfully defend fixed exchange rate parities (see Annex A for discussion of the interwar years and Bretton Woods).

It seems that policy makers may face a deeper trilemma than the familiar Mundell-Fleming monetary policy trilemma. It may not be possible, at the same time, to have integrated capital markets, policies that ensure global demand matches potential output and to have assured financial stability. This suggests that risk of future episodes of global financial instability cannot be entirely removed. This implies that policy makers need also to do all they can to ensure resilience: taking all possible steps so that these episodes can be dealt with in as orderly a fashion as possible, with bankruptcy and resolution arrangements in place for households, corporations, banks and governments, designed to allocate losses appropriately and have minimum impact on real economy output, employment or trade.

## 5. Some emerging themes

This paper has reviewed the literature on the control and management of international capital flows, with the aim of shedding light on a highly topical question: should more be done than at present to limit the international flow of capital?

It should come as no surprise that a review of such a large literature uncovers few obvious and simple answers to this difficult policy question. Some themes though do emerge.

*Current policy debates have a long history.* While the global financial crisis has focussed attention on the issue of the control and management of international capital flows, this is far from being a new concern, rather it is one of the perennial challenges of macroeconomic policy making. It is also an issue on which what is regarded as normal and acceptable policy has swung back and forth markedly over time. The era of the classical gold standard before World War I was also the first 'golden age' of international capital market integration, supported by an automatic and largely unquestioning acceptance of both gold parities and of laissez-faire in capital markets, allowing savers to invest wherever they perceived an opportunity for return and for borrowers to come wherever they needed to raise funds (which in many cases meant coming to London). In contrast, by the late 1940s, after two world wars, the collapse of the restored gold standard in 1931, the great depression of the 1930s, and the problem of capital flight in Europe in the immediate post-years, there was an automatic and largely unquestioning acceptance of the opposite policy, of the need for tight controls on international capital flows in order to maintain exchange rate stability and ensure that policy makers could focus attention on supporting domestic output and employment. The twenty five years before the global financial crisis of 2008-2009 saw a swing back, to a largely unquestioning acceptance amongst policy makers of laissez-faire in capital markets, at least in advanced countries.

*Technical econometric research is insightful but does not fully answer the policy questions.* A key point that emerges from the literature is the importance of institutions and the institutional environment in determining the economic impact of international capital flows. This – together with the familiar difficulties of data measurement (the measurement of capital account openness can be undertaken in several different ways) and statistical estimation – makes it quite challenging to interpret the econometric results on the impact of capital account liberalisation. This evidence – which is largely based on the experience of emerging markets – offers at best a mixed picture of the impact on economic performance. There is some evidence that liberalisation is - at least in some periods and for some countries - followed by increased growth, but it is unclear whether this is a direct causal link. Econometric evidence for other potential benefits of capital market integration, e.g. risk sharing, is also rather limited.

*There are clear and substantial benefits from international capital flows.* Despite the limitations of much of the econometric research it seems clear that the flow of capital across borders is extremely economically beneficial. The current era of globalisation of capital markets involves a great range of assets and a complex web of short and long term debt, portfolio and direct equity, and derivative and trading exposures between banks, investment institutions, non-financial corporations and governments. It is difficult to argue that such a wide range of different types of transaction could have developed without offering substantial benefits to customers. Further evidence of the benefits of capital

market integration comes both from history and from recent experience of emerging markets. The financing of investment in the countries of new settlement during the classical gold standard period (1870 -1914) illustrates how international capital flows can finance investment. Foreign direct investment has had clear benefits for host countries. Similar benefits come from the international financing of trade. Research focussed on the impact on individual firms reveals much clearer evidence of economic benefits than studies employing aggregate data: it appears that opening up domestic corporate banking and corporate finance markets can help firms overcome financing constraints. Finally integration with global capital markets is associated with greater discipline on domestic policy making.

*Concerns remain that international capital flows contribute to macro instability.* At the same time, there are continuing concerns that international capital flows contribute to the international transmission of asset price appreciation. These concerns are especially strong if periods of low interest rates lead to a 'search for yield' and encourage risk-taking by investors. International capital flows are therefore associated with bubbles in financial and property markets; and with misalignment of exchange rates and other asset prices, which adjust only weakly to underlying fundamentals. This is a key and still not fully resolved question: to what extent are volatile international capital flows a cause, as well as a consequence, of macroeconomic and financial instabilities?

*Intervention in capital flows may sometimes be justified on prudential grounds: in order to contain or cope with systemic financial risk.* There has been an increasing awareness – reflected for example in the recent statement of the IMF's institutional view on capital controls and capital management (IMF, 2012) – that intervention in international capital flows can sometimes be justified as a macroprudential tool to limit the build up of systemic financial risk, in particular imposing charges or limits on short term capital inflows to emerging markets so as to reduce the potential impact of reversal of capital flows. It is also accepted that when a crisis materialises, controls on capital outflows may be justified in order to support the domestic banking system and limit exchange rate depreciation (measures allowed in the derogations of the OECD Code of Capital Account Liberalisation and the European Union Fundamental Freedom of Capital Movement).

*But scepticism about the effectiveness of such intervention is in order.* While there is agreement that some limited intervention in international capital flows can be justified on prudential grounds, such intervention appears to be mainly relevant to emerging markets, where exchange rate risk is a central concern, not to the larger developed countries. There is as yet little clear evidence on the effectiveness of such measures. The limited evidence on the use of capital controls in emerging markets suggests that, while they can have some impact on reducing the maturity mismatch of external liabilities, they have had little impact on the overall volume of capital inflows. A shift in the maturity structure of external liabilities is unlikely in any case to avert a crisis if there are fundamental domestic imbalances; since in this situation capital flight by residents can overwhelm transactions by non-residents.

*There is no prospect of a return to the widespread capital controls of the past.* The high costs of widespread capital controls, such as those in place across Europe in the late 1940s, are widely understood and there is little prospect of their return. But it remains unclear how the potential threats to financial stability associated with both large scale net international

capital flows (reflecting underlying macro-imbalances) or large scale gross international capital flows (apparently driven by shortcomings in the risk management and regulation of financial institutions) are to be dealt with. This is interpreted here as a policy trilemma, congruent with the well known monetary policy rate trilemma applied to fixed exchange rate regimes. It may not be possible, at the same time, to have integrated capital markets, independent macroeconomic policies focused on domestic policy objectives, and assured financial stability. This suggests an important role for international co-ordination of macroeconomic policy, in order to address asset price bubbles and unsustainable international capital flows. Policy makers also need to ensure that bankruptcy and resolutions arrangements are in place in order to cope with episodes of financial instability in as orderly a fashion as possible.

## Annex A. Historical evidence

This annex discusses the evidence provided by the scholarship conducted by economic historians on global capital markets and exchange rate arrangements of the past 150 years. This historical material is referred to at several points in the main text, for the insight it gives into the operation and evolution of the institutional arrangements governing international capital flows.

There are two main topics covered here:

- A comparison between the two eras of global financial integration: the period before World War I when international securities issued in London and other financial centres grew to more than 20% of world GDP; and the modern era since the early 1980s which has seen an even bigger growth of international claims, mostly between advanced countries. While there are some commonalities, the historical situation and institutional arrangements that obtained then were very different from today.
- The relationship between capital controls, capital flows and international exchange rate arrangements, taking into account the lessons of the interwar years and of the Bretton Woods fixed exchange rate regime. A natural starting point is the policy ‘trilemma’, the impossibility of at one and the same time a fixed exchange rate, capital market integration, and a domestically oriented monetary policy. This is used as a framework for reviewing our understanding of past international monetary arrangements. This once again highlights the key role of institutions, in particular how the combination of unrestricted capital flows and failure to internationally coordinate policy making creates both instability and deflationary bias in fixed exchange rate regimes.

It first offers an overview of the magnitude and composition of international capital flows, documenting the time profile in both capital flows and capital controls. This profile is often described as a “U-shaped” (e.g. by Obstfeld and Taylor, 2002), because of the two prominent peaks – the first ‘golden age’ of international capital market integration from the late 19<sup>th</sup> century to the outbreak of World War I, when there were almost no controls on international capital investments, and the second ‘golden age,’ marked by the extraordinarily strong and continuing growth of international capital flows from the early 1980s until today – separated by the long period of subdued international investment during the years in between. It turns out though that there are many substantial differences between these two eras of global capital market integration.

It then looks at the role played in past international exchange rate arrangements by the well known ‘monetary policy trilemma’. This is the classic statement that monetary policy makers are only able to choose two of three policy objectives out of: (i) exchange rate stability; (ii) the use of monetary instruments to pursue domestic policy targets (monetary autonomy); and (iii) the avoidance of controls on capital inflows and outflows (financial integration). In order to provide more insight into this trilemma it summarises the interplay between capital controls and exchange rate arrangements during the Bretton Woods fixed exchange rate regime, and in the subsequent decades of exchange rate floating; and also in the earlier historical periods of the classical gold standard and between the wars.

This interplay is rather more nuanced than this bald statement of the trilemma suggests. While an increased freedom for the cross-border movement of private capital was an important vulnerability that contributed to the breakdown of the Bretton Woods regime, it was not just capital mobility that undermined Bretton Woods and the restored gold standard of the 1920s. It was also a failure to ensure that policy adjusted appropriately in response to imbalances.

#### **a. International capital flows: historically and today**

This subsection compares the two historical episodes of rapid growth in international capital flows: the dramatic increase from the late-19<sup>th</sup> century in the three decades before the First World War and the rapid growth of international capital flows from the early 1980s onward. As we shall see, in relation to the size of national economies, international capital investment was at least as important in the late 19<sup>th</sup> century as it has been in the recent past; but the composition of these flows has been very different. The most notable difference has been the development in the last years of the 20<sup>th</sup> century of highly competitive international money, foreign exchange and debt markets which have provided the liquidity and funding for dramatic increase in household and government debt in many advanced countries.

#### **The golden age of international capital flows: 1870-1914**

Financial markets are today – by many measures, for example the volume of foreign exchange transactions, cross-border holdings of publically traded equities, or international bank lending - more integrated than at any previous time in history. But this is not the first era of financial globalisation. That took place nearly a century and a half ago, between 1870 and 1914, during the classical gold-standard era, when a global marketplace in debt capital developed, underpinned by developments in transport communication (railways, refrigeration, steamships, the telegraph, the laying of the first transatlantic cable in 1866, the radio telephone that provided international voice communication by the end of the 19<sup>th</sup> century) and the commitment of the major countries to fixed exchange rates. London, and to a lesser extent Berlin and Paris, were the key locations for this global capital market.

There are no standard official statistics for that time (such as the data provided for the modern period in the IMF's International Financial Statistics), but scholars have used a variety of sources (for example on securities issuance in London) to assemble estimates of the magnitude and composition of international capital investment. This literature is too large to be fully reviewed here, but a good understanding can be obtained from two recent papers - Bordo (2003) and Schularick (2006) who provide succinct summaries together with some supplementary contributions.

Table 1 of Schularick (2006) reports that the ratio of *gross* international investment to world GDP in 1913 had risen over the previous forty years to 22% (mainly bond issues), compared with a ratio in 2000 of 75% (a much broader mix of financial assets including foreign direct investment, cross-border equity portfolios and international bank claims). Obstfeld and Taylor (1999) provide a breakdown, distinguishing the location where international investment funds were raised. The UK accounts for 50% of international investment funds, France 22%, Germany 17%, US 6.5% and the Netherlands 3%.

1913 was the high-water point. The share of gross international investment in global GDP fell markedly with the economic dislocation and debt repudiations of World War I and its aftermath, and flows remained comparatively subdued throughout the interwar period. They did not reach anything like the same level until the renewed growth of international capital flows in the 1980s and 1990s.

A striking feature of the international capital flows of the classical gold standard era is that a large proportion of the international capital flows, especially from London, went to the faster growing 'emerging' markets of that time. These were the countries of new settlement with unexploited agricultural land and which absorbed substantial flows of immigrants from Europe. The international investment provided the capital for exploitation of these resources of labour and land. Bonds issues in France and Germany were instead primarily used for the financing of governments in Russia, Austria-Hungary and other countries of Eastern Europe. Fishlow (1985) argues that much of this French and German lending was motivated more by the achievement of international diplomatic and political ends than by commercial considerations. To the extent that this lending was used for consumption, rather than investment, it was less able to generate the export revenues that would repay the original lending. Bonds issued by governments in the countries of new settlement, notably Argentina, were however far from risk free (see Eichengreen and Bordo, 2002).

Schularick (2006) Table 2 reports data from Wilkins (1989), indicating that the top twelve recipients of international investment in 1913 were the USA (16% of the total), Russia (8%), Canada (8%), Argentina (7%), Austria-Hungary (6%), Spain (6%), Brazil, Mexico, India and Ceylon, South Africa, Australia and China (all 2%).

This contrasts sharply with recent decades where most international investment has been in advanced not emerging economies. Table 2 of Schularick (2006) reports advanced country shares of inward gross international investment (including direct, portfolio and international bank lending) in 2001. These were USA (27%), UK (9%), Germany (8%), France (6%), Netherlands, Italy, Japan (all 4%), Belgium/Luxembourg, Hong Kong, Canada (all 3%) and Switzerland (2%). These eleven countries thus account for over 70% of global inward gross international investment. Amongst the top fourteen recipients only three are emerging markets: China/Hong Kong (5% of the total), Brazil (2%) and India (1%).

Schularick (2006) summarises this as follows (in discussion of his Table 4, based on slightly different data sources):

*“Unlike its historical predecessor, the current financial globalization is a process that takes place predominantly between developed economies. While the shares of North America, i.e. the US and Canada, and Asia (including Japan) have remained unchanged at 15% and 10%, respectively, the great disintegration from the global financial market place has taken place in three less-developed world regions: Latin America, Africa and Eastern Europe. Those regions accounted for two-fifths of foreign investment stocks before 1913, but for not even 10% today (Table 4). Western Europe has gained market share at their expense. Every second international dollar was invested in Western Europe in 2001, compared to not even 15% on the eve of WW1.”*



An alternative measure of international investment is current account deficits (indicating a recipient of capital) and surpluses (indicating a supplier of capital). Unlike the measures discussed in the previous paragraphs, these are measures of *net* rather than gross flows. In 1870-1913 cross-border investment was largely 'one way traffic': from the UK, Germany and France to recipient countries. As a result the gross investment stocks compare fairly closely with a net measure based on cumulated net current account surpluses and deficits. Today, by contrast, most countries integrated with world capital markets are at one and the same time both recipients and providers of international investment. Consistent with this, and despite gross cross border investment as a ratio of GDP being much higher during the classical gold-standard, average current account surpluses and deficits have been much lower in recent years than recorded before the First World War.

From 1890-1913 the net capital exports of the high income countries exceeded 1% of their GDP, much higher than in 1990-2001 when the net capital exports of high income countries appear to have averaged close to zero.<sup>99</sup> In his Figure 2 (Bordo 2003) reports corresponding ratios for some individual countries: the net capital exports from the UK averaged around 5% of GDP per annum between 1880 and 1914, peaking at close to 9% in 1911-1912. Net capital flows into Canada averaged about 8% of GDP over the same period, peaking at around 13% in 1911. The United States was a capital importer until 1900 and a capital exporter thereafter, but – as a large and relatively closed economy – these capital flows are not so large as a proportion of GDP, capital inflows averaging only around +1% of GDP from 1880-1900 and -1% of GDP from 1900-1914.

It is also noteworthy that the pre-1914 period, like the modern era, was punctuated by several international financial crises. Eichengreen and Bordo (2002) compare crises in the years before World War I with those in the post-Bretton Woods era, identifying 7 (banking or exchange rate) crises in advanced countries (France, Germany, the Netherlands, the UK) and 25 in emerging markets (thirteen other countries including the US) during the years 1883-1913 (Table 6), i.e. crises were fairly frequent.

On average banking crises occurred about as frequently per country under the classical gold standard as during the period 1970-1998, although exchange rate crises occurred less often. In many (but not all) of these crises output and investment returned quickly to pre-crisis trends (see Meissner, 2013). It seems that unquestioned commitment of the core gold standard countries (the UK, France, Germany) to maintaining the gold parity, not only directly avoided currency crises but also, as argued by Goodhart and Delargy (1998), allowed interest rates to fall and capital flows to resume relatively soon after banking crises occurred.

The detailed tabulation of crises (Table 8) in Eichengreen and Bordo (2002) reveals that the crises of that era occurred in three main groups:

- 1889-91 - this included the severe Argentinean crisis which triggered the first failure of Barings Bank in 1890, followed relatively soon by further crises of 1893-94;
- 1897-98 – this period was again followed relatively soon by further crises in 1900-1901; and

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<sup>99</sup> See Schularick (2006) Table 8. His data for capital exports from the high income countries for 1990-2001 vary from -0.4% to +0.5% according to whether measured for the high income countries or the rest of the world (reflecting the substantial discrepancies in global current account statistics).

- 1907-08 - this period was the most severe episode (in terms of the number of crises in different countries).

This global correlation is consistent with a story of booms and bust in the availability of credit from London and is consistent with the views of Goodhart and Delargy (1998), who argue that this credit availability fuelled unsustainable credit and property price booms in this period. The spread of both the 1890 crisis and the 1907 crisis has also been attributed to a contagious loss of confidence (see Meissner, 2013, page 15).

### **The composition of capital flows, then and now**

Bordo (2003) reviews the destinations of international investment in 1870-1914. Studies of the available data (most on London bond issues) by Feis (1930) and subsequent scholars reveal that fully 40% of UK international securities investment in 1914 consisted of railway bonds and 30% of government and municipal bonds. The proportion of railway and government bonds rises as high as 90% for the countries of new settlement. Most of the remaining investment was in mining, agriculture, other transportation and public utilities. This was quite different from the domestic securities in the UK which were at the time mostly issued to finance commerce and manufacturing. As argued by Fishlow (1985) much of the international investment from London was directed to developing the infrastructure (transport and government) that in turn supported the export of the raw materials and agricultural commodities required by the growing manufacturing industries and consumption demand in the UK, the US and Europe.<sup>100</sup>

It appears that before 1914 international bank lending and international equity investment accounted for a relatively minor share of overall international investment; although due to lack of data the picture is not entirely clear. Lipsey (2001, 1999) refers to Bloomfield's (1968) view that "portfolio investment was a far more important component of long-term capital movements before 1914 than direct investment". But foreign direct investment was still important then, albeit often in a rather different form than today. Wilkins (1999), in a review of the history of the 'modern' multinational corporation back to the late nineteenth century describes the period thus: "thousands of companies set up in capital exporting countries that invested globally in railroads, ports, mines, oil wells, plantations, cattle ranches, breweries, jute mills, banking and mortgage lending." Examples of companies set up to exploit specific opportunities abroad include Rio Tinto Zinc (which later evolved into a true multinational) and the Suez Canal Company. Much the same judgement is found in O'Rourke and Williamson (1999) (p.217) in relation to US investments (then largely elsewhere in the Americas). They write that "The stock of US [direct] investment abroad amounted to \$2.65 billion in 1914, or 7 per cent of GNP. In 1966 ... the stock of US direct investments totalled \$54.6 billion, or 7 per cent of GNP." As Wilkins (1970) Table X.3 documents, many well known US multinationals (Coca Cola, Eastman Kodak, Ford, General Electric, Heinz, International Harvester, National Cash Register (later IBM)) first established manufacturing plants overseas before 1914.

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<sup>100</sup> Davis and Gallman (2001) provide insightful and detailed case studies of the role of British capital in financing the development of infrastructure in Argentina, Australia, Canada and the United States; the choice between financing via private companies or via state or national governments depended in part on the specific institutional characteristics of each country.

What has changed, especially since World War II, is the much greater share of foreign direct investment by multinational corporations. A full review of the literature on foreign direct investment lies beyond the scope of this paper, but this became an increasingly important form of capital flow between the wars. Foreign direct investment was a major source of investment funds from the US to Europe, even during the 1950s, when there were strict currency and capital controls still in place in most European countries, and in the 1960s when most forms of capital flow were still controlled. Foreign direct investment has since continued to provide a substantial share of international investment, both amongst advanced countries and from advanced to emerging markets. Bordo (2003) states that “around half of all capital flows to emerging markets is [now]... in the form of direct investment”. Lipsey (1999) finds that the share of foreign direct investments in total investment flows increased between 1970 and 1994 (though then fell back as other portfolio investments increased). While most of this foreign direct investment has been into advanced countries, the Group of Fifteen (2010) highlights both a recent rapid growth of foreign direct investment in the emerging world, for example in Brazil, and the growing trend toward ‘South-South’ foreign direct investment by newer multinational corporations from emerging markets. For further discussion see *inter alia* Feenstra (1999); Hagedoorn and Narula (1995); Lipsey (2001, 1999); and Twomey (2002).

Inadequate data also clouds the historical picture of the role of short term bank and money market instruments in cross-border capital flows before 1914. Bordo (2003) briefly considers the importance of short term capital flows, citing the work of Bloomfield (1963) This suggests that in the pre-1914 , short term cross border capital flows, while responding substantially to interest differentials and thus playing a key role in the operation of the gold standard, were in aggregate relatively small relative to long term gross investment. But given the limitations of available data it is difficult to be entirely confident about the magnitude of these flows.

A fuller picture emerges from the contribution of business historians (Battilossi, 2002; Cameron and Bovykin, 1992; Curry et al., 2003; and Jones, 2012), focussing on institutional arrangements and the emergence of multinational and international banking, rather than on measurement of the volume of bank exposures. The development of international banking was a critical part of the first financial globalisation, for two distinct reasons. First internationally active banks provided the essential liquidity to maintain the gold parities. Most of the transactions in gold and short term monetary instruments responding to changes of interest rates<sup>101</sup> were conducted by private banks responding to perceived profit opportunities. Second London, as the main exporter of capital during the classical gold standard era, was the home of the British overseas banks, providing commercial banking services and trade finance in the British colonies and in many of the countries of new settlement, and so financing the growth of international trade of raw materials, agricultural products and manufactured goods. French institutions such as Societe Generale were similarly engaged in international banking (although unlike their British counterparts these French banks combined domestic and international banking).

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<sup>101</sup> Both those set by the Bank of England at the centre and in the money markets of other countries that joined the gold standard.

Battilossi (2002) describes how the international banking arrangements in the early 20<sup>th</sup> century evolved along with changes in technologies, drawing comparisons with the second expansion of international banking that began in the early 1960s. The dominant international instruments at the end of the 19<sup>th</sup> century was the sterling 'bill on London', with the large volumes generated by the financing of international trade replacing and overshadowing domestic bills. With increasing interbank transactions, a further instrument was developed, the 'finance bill' that was not linked to international trade but was a pure liquidity instrument issued by the borrowing bank.

In the early years of the 20<sup>th</sup> century, improved communication technologies, with the telegraph replacing mail communication, supported the development of correspondent banking and a switch to the practice of maintaining overdraft facilities in the main financial centres rather than discounting of bills as the principal source of international trade finance. This switch to correspondent banking in turn facilitated the development in the 1920s of bank foreign exchange services, based on use of telephones to quote competitive foreign exchange rates, and the development of foreign exchange derivatives contracts such as forwards, increasingly used for both hedging of foreign exchange risk and as a trading instrument.

The widespread restrictions on foreign exchange transactions and capital controls introduced following the exchange rate crisis of 1931 and reinforced to cope with the dislocation of the Second World War, suppressed almost all international banking activity. This eventually re-emerged with the growth of the offshore Eurodollar markets, eventually dominated by London, as concerns about capital flows led other European financial centres, including Switzerland, to impose capital controls in defence of their Bretton Woods parities. This was a response to a combination of demand, especially from US multinationals but also international governments, for dollar banking services that avoided the restrictive US regulations, notably the 'Regulation Q' which until 1963 limited dollar deposit interest rates to less than 1% on 30 day deposits and 2½% on 90 day deposits; and to the favourable environment provided by the UK which offered considerable freedom in international currency business, despite continuing tight restrictions on domestic sterling loans and deposits. (Schenk 1998) traces back the origins of the Eurodollar market to as early as 1955 when the UK achieved de facto sterling convertibility, offering Midland bank the opportunity pioneer the use of forward exchange contracts to arbitrage the difference between sterling and US interest rates.

By 1959 the market for US dollar deposits in London was poised for takeoff. Fuelled by active participation of US banks, it expanded rapidly through the 1960s, and this expansion continued further in the 1970s, as noted by Battilossi (2002), taking advantage both of technology (information systems provided by Reuters and Telerate) and arrangements amongst the US and other participating banks to clear and settle payments using their reserve balances at the Federal Reserve Bank of New York. The early 1960s also saw the first Eurobond issues in London, dollar denominated bonds issued first by governments and then later by private corporations (another regulatory driven innovation, responding to the interest rate equalisation tax that pushed international borrowers out of the US "Yankee" bond market and measures to discourage US multinationals from raising domestic capital for international expansion); and then in the 1970s the market for international syndicated lending, adopting techniques pioneered by US banks in their domestic markets.

This was a fundamental change in the global financial system, driven by the internationalisation of capital markets. Both Eurobond and international syndicated loan markets expanded rapidly in tandem with that for Eurodollar deposits and lending; although not without creating systemic risk, as Battilossi (2002) page 165 notes. In 1982, on the eve of the international bank lending crisis triggered by the recycling of OPEC surpluses, some three quarters of international syndicated lending was to just four countries (Argentina, Brazil, Mexico and South Korea). But this was only a temporary set-back, the widespread financial global financial deregulation of the 1970s (discussed in the next sub-section), together with the depth and liquidity of these new international banks allowed banks around the world to adopt liability-management business models, in which the international money markets became the residual source of funding, that could be tapped as much as desired to fund credit expansions.<sup>102</sup>

To summarise: modern international capital flows are very much more varied now than they were in the early years of the 20<sup>th</sup> century. International capital flows today are no longer simply about issuing bonds to finance the infrastructural development of unexploited regions of the world. Foreign direct investment, undertaken by multinational companies operating in several jurisdictions, now accounts for a major share of cross border investment and plays a key role in the international transmission of technical knowledge. Cross border portfolio investment, including equity investments in emerging market stock markets, has grown substantially in recent decades, as investment has become increasingly institutionalised; and investors placing funds and borrowers raising funds are looking to both achieve small margins of additional return and also to be able to re-allocate their portfolios.

Perhaps the biggest difference of all from the early years of the 20<sup>th</sup> century, has been the dramatic rise of international banking, debt and foreign exchange markets. While international money and foreign exchange markets had already developed in nascent form in the years preceding and following the First World War, the developments since the early 1960s have been qualitatively different, with a dramatic explosion in deposit taking and lending in short term money markets, in the trading of foreign exchange and interest rate risk, and in issuance in medium and long term international syndicate lending and bond markets. The international money markets have provided the ready supply of liquidity and funding that has supported the global expansion of debt and credit of the past forty years.

### **b. The 'trilemma', capital controls and exchange rate regimes**

One potential justification for the management or control of capital flows is the well known monetary policy 'trilemma': the statement that it is impossible to operate at the same time with a fixed exchange rate, with open capital markets and with an independent monetary policy orientated towards domestic policy goals. Only two of these three can be chosen.

In practice, as discussed below in connection with post-war exchange rates regimes and in Section 3 in the context of the relationship between financial and economic development, the choice to impose capital controls has never been made simply in order to achieve a greater degree monetary independence. Rather such controls have been adopted *either* in order to cope with fundamental structural economic challenges, most notably in the post-

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<sup>102</sup> See Allen et al. (2012) for a discussion of how the new Basel III rules are impacting on bank business models and the practice of liability management.

Second World War reconstruction of Europe and in many low income underdevelopment economies; *or* (as in the 1930s and most recently in Iceland and in Cyprus) in the face of an overwhelming financial crisis.

Still the 'trilemma' – and more general issues of interaction between monetary policy, exchange rate regime and capital market integration – are fundamental policy concerns and need to be properly considered in the historical context of past fixed exchange rate arrangements. This subsection therefore looks at the theory and evidence on the 'trilemma' and on the constraints it has placed on economic management.

### **The monetary policy 'trilemma': theory and evidence**

The trilemma is implied by the standard models of the macroeconomic determinants of the exchange rate, such as the Mundell-Fleming model (Fleming, 1962; Mundell, 1963) which extends the Keynesian ISLM model to the open economy or simple monetary exchange rate models. The domestic interest rate of a small economy, with domestic capital markets fully integrated into the global economy, must equal the global world interest rate minus the anticipated appreciation (or less the anticipated depreciation) of the exchange rate. In other words, 'uncovered interest parity' holds (if it does not then there is a profit opportunity for traders). This implies that under a credible fixed exchange rate regime, i.e. one which is expected to remain in place, the domestic interest rate equals the world interest rate and so there is no possibility for independent monetary policy.

In this textbook form, the trilemma is something of an oversimplification. Short interest rates are not the only available monetary policy instrument. It is possible to use central bank asset purchases and sales, to influence long term interest rates, while maintaining very short term (overnight) interest rates consistent with a fixed exchange rate (just as the Federal Reserve and Bank of England have turned to 'quantitative easing' as a post-crisis tool of monetary policy). Using the central bank balance sheet in this way offers somewhat more scope under a fixed exchange rate regime for tightening domestic monetary policy than for loosening: any capital inflows resulting from a tightening of policy can be sterilised on the central bank balance sheet through sale of domestic bonds (if necessary the central bank can create bonds for this purpose); the opposite policy of sterilizing capital outflows created by a loosening of monetary policy through purchase of government bonds is more limited, it can no longer be pursued once foreign exchange reserves are exhausted. Arguably (this is discussed further below in the context of the Bretton Woods experience), the fundamental weakness with fixed exchange regimes is not so much the trilemma, but the lack of any obligation on surplus countries to give stability of the system priority over their domestic policy goals.

While there is some scope for using the central bank balance sheet to pursue domestic policy goals under a fixed exchange rate regime, this scope will be relatively smaller in economies with well developed financial markets. As domestic capital markets develop and become more closely integrated at global level, for both short term and medium term transactions, so developments in domestic credit and money markets will depend relatively more on international money and credit markets and less on the actions of the domestic central bank. With globally integrated capital markets, whose development is described in Section 2a, larger financial and non-financial institutions expect to raise funds wherever in the world it is cheapest to do so, and use foreign exchange and currency swaps to use these

funds into other currencies; and will be relatively little affected by adjustments of domestic central bank balance sheet.

A few research papers examine the empirical evidence on interrelationship between monetary policy, exchange rate and capital market policy. While these confirm the general presumption that the trilemma is a constraint on policy, the results are not totally clear cut, because of the considerable challenges in measuring both monetary independence and financial integration.

Obstfeld et al. (2005) explore the implications of the trilemma for the integration of short term money markets in different countries. Their key test is the extent to which changes in domestic interest rates follow changes in the core country of the system (the UK during the gold standard, US under Bretton Woods and post-Bretton Woods). They use monthly data on short term interest rates (the maturities vary from country to country, not clearly stated in their paper but mostly likely these are one month and three month interest rates) during the classical gold standard (1870-1914), the Bretton Woods regime (due to data limitations this is restricted to 1959-1970), and a post-Bretton Woods era (1973-2000). They also distinguish pegged and non-pegged countries and include a measure of capital controls.<sup>103</sup>

Their key finding (Table 1) is a strong statistical association between interest rate changes in the core countries and other pegged currency countries under the gold standard and post-BW; but *not* under Bretton Woods. Their exploration of the post-BW regime also reveals association between the core country interest rate and the domestic interest rate of non-pegged countries (but not under the gold standard) which they interpret as evidence that the trilemma also constrains domestic policy for countries with floating rates, a response to interest rates in the core country (the US) perhaps being necessary because the exchange rate is still one of the targets of domestic policy setting.

Aizenman et al. (2008) focus on the post-Bretton Woods era of floating rates, examining the relationship between the trilemma and the dramatic accumulation of foreign exchange reserves, especially by Asian economies since the early 1990s (they report that the reserve to GDP ratios of Asian economies including China rises from 5% in 1980 to 37% in 2006, and to 32% excluding China). They use correlation of domestic interest rates with US interest rates as a measure of monetary integration/monetary independence and use principal component analysis of the *de jure* data in the *IMF Annual Report on Exchange Arrangements and Exchange Restrictions* to obtain a single metric of capital account integration (the KAOPEN index used in Chinn and Ito (2006) and in several other studies).

Their key findings are about the changing choices over time of four key policy metrics – monetary integration, capital account openness, exchange rate stability and reserve accumulation – for different groups of countries. They report these visually in their Figure 3 for the years 1971-2006 (with a further regional breakdown in Figure 4):

- For industrial countries in Europe the main change has been a substantial increase in both capital market integration and exchange rate stability, especially between 1990

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<sup>103</sup> This assumes that no country has capital controls during the gold standard, that all have capital controls under Bretton Woods, and they measure capital controls during the 1973-2000 period using *de jure* measures based on the *IMF Annual Report on Exchange Arrangements and Exchange Restrictions*.

and 2000, with a correspondingly substantial decrease in monetary independence (Figure 3).

- For industrial countries outside of Europe there has been a similar (on average somewhat smaller) increase in capital market integration; but no increase in exchange rate stability and a correspondingly smaller decrease in monetary independence (Figure 3).
- For emerging markets in Asia there has been a substantial accumulation of foreign reserves, but relatively little change in capital market integration, monetary independence, or exchange rate stability (Figure 4). For emerging markets in Latin America there has instead been a substantial increase in capital market integration and relatively little foreign exchange accumulation, with in addition some decrease in exchange rate monetary independence between 2000 and 2006 (figure 4).
- Lower income countries show relatively little change in these policy metrics, with relatively low levels of capital market integration and international reserves throughout the period (Figure 4; the only exception a further decrease in capital integration in lower income Latin America in the 1980s, subsequently reversed).

### **Exchange rate instability and capital controls in the interwar years.**

A deeper understanding of the 'trilemma' and the interaction of capital market integration, monetary policy and exchange rate arrangements can be obtained from examining the evolution of exchange rate arrangements. This subsection therefore looks at the experience of the interwar years and the break up of the restored gold standard; while the following subsection examines the experience of Bretton Woods.

The story of the gold standard, both in the years before the First World War and during the interwar years remains relevant today, both for the light it sheds on the relationship between the trilemma and exchange rate arrangements and for the implications about policy to control and manage capital flows. There is of course extensive scholarship, Eichengreen (2008) is a short, elegant and insightful overview; Eichengreen (1992), James (2009), and Temin (1976) provide more detailed discussion.

A central question is: why was the gold standard so durable before the First World War, and yet the restored gold standard of the interwar period so fragile? The earlier gold standard lasted 30 years, from the early 1870s (when most European countries joined Germany and the UK in making their currencies convertible to gold and demonetizing silver) until it was finally destroyed by global military conflict. The later restored gold standard lasted only 5 years, from when France joined in 1926, before being overwhelmed by an international financial crisis.

The trilemma on its own is not a sufficient explanation of the instability of the restored gold standard: capital controls were almost entirely absent before the First World War. It is true that the world financial system was hit by a major systematic shock, with downturn in output and expenditure in the world's largest economy, the United States, beginning in 1929 (*before* the stock market crash in the autumn of that year) that worsened through 1930. But the global economy had survived quite sharp downturns in economic activity



during the classical gold standard, notably in 1893-1895; and though this forced some periphery countries such as Argentina to suspend convertibility, it did not undermine foreign exchange arrangements.

There were underlying technical and institutional weaknesses in the restored gold standard not present in the pre-First World War arrangements. One was the fuller development of international banking markets (described above in section 2b) that created the potential of a greater volume of private sector flows in the event of doubts about the commitment to convertibility. This also created greater threat of financial instability amongst the core countries that had not arisen to the same extent in the earlier classical gold standard, because banks (for example in Austria and Germany) were taking advantage of the commitment to a fixed exchange rate to raise short term funding from these international banking markets. When bank runs occurred in first Austria (on Credit Anstalt in May of 1931) and then in Germany (with the failure of Nordwalle and the Danat Bank in July) the authorities chose to protect their banking systems by introducing capital controls, rather than letting further banks fail in order to demonstrate their commitment to the gold parity.

Another factor was that the restored gold standard was not (to the same extent as before the First World War) a pure gold standard.<sup>104</sup> Gold was in short supply. Gold coin was no longer in widespread circulation so the standard was no longer based on a commitment to mint gold coin at a prescribed rate of exchange. Instead it was a *gold-exchange* standard in which the entire world's gold was kept within the vaults of central banks and supplemented by foreign exchange assets, mainly US dollars.

As Eichengreen (2008) explains, this created a fundamental and unaddressed asymmetry: in order to avoid a bias towards deflation there should have been co-operation between central banks, with arrangements to ensure that those with relatively large reserves of gold pursued more expansionary policies and generated overall deficits (on both current and capital account) that would in turn generate gold exports. Instead one of the surplus countries, France, was a major gold importer, sterilising all foreign exchange inflows to prevent domestic inflation eroding its competitiveness. France's share of global gold reserves rose from 7.7% at the end of 1926, when it restored gold convertibility, to 19.2% at the end of 1930 (Eichengreen, 2008, Table 3.1) - the beginning of the year which saw Austria, Germany and the UK forced off gold. The Banque de France, under Governor Moreau, actively sought to exchange its foreign exchange reserves for gold, on one occasion presenting a large balance held at the Bank of England for conversion (he was persuaded to reduce his demand).

Over the same period the gold reserves of the UK, Germany and also Argentina fell substantially. While the United States share of global gold reserves fell modestly during the restored gold standard, it held nearly half of the world's gold supply and could have done much more to supply gold externally. Instead, policy was focussed internally, over the period 1926-1929 increasing domestic interest rates in order to dampen the domestic credit

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<sup>104</sup> This is not to say that gold was the only reserve asset under the classical gold standard. Gold was the dominant reserve asset for the major economies but other arrangements, for example the holding of sterling as a reserve asset, were more common in the periphery. For illustration of the variety of country experience, and their efforts to maintain monetary autonomy, see the various papers in Ögren and Øksendal (2011).

expansion and asset price bubble that culminated in the stock market crash of 1929, but thereby encouraging inflow rather than outflow of gold.

In addition to these asymmetries, the restored gold standard had to cope with the very much more pronounced divergences between deficit and surplus countries than was the case before 1914. Germany was struggling under the weight of the reparations imposed at the Treaty of Versailles; even after its obligations had been reduced by the Dawes plan of 1924. The UK, choosing to restore its pre-war gold parity, had rejoined at a very uncompetitive exchange rate. This meant that sterling was substantially overvalued against other currencies, notably the French Franc and the US dollar, and as a result the UK ran substantial current account deficits in the late 1920s and was the world's largest international borrower, with some £2 billion of short-term deposits held by international depositors in London (this was not all lending to UK borrowers; these deposits also financed loans to international borrowers who came to the London markets to raise finance, but much of this short-term money financed UK borrowing). The US, by now the world's pre-eminent economic power, ran a substantial current account surplus, as did France because of its restoration of convertibility at an undervalued exchange rate.

A yet further factor, explaining the difference between the classical gold standard and the restored gold-exchange standard, which certainly helps explain the inability of the UK to maintain a credible commitment to gold, were the underlying political and social changes that had taken place during and after World War I. In the classical gold standard era there was little organisation of labour and a greater share of employment was casual and not employed in the bureaucracy of corporations. As a result wages and prices were relatively flexible, and the shortage of gold in a growing economy (which was also a problem during the years 1870-1914) was reflected in falling wages and prices, rather than economic stagnation. In addition central banks were more isolated from domestic political pressure and could more easily raise interest rates, without having to take too much account of the impact on real wages and employment. As Eichengreen (1992) emphasises this gave the classical gold standard much greater credibility than its predecessor, international investors believed that the commitment to gold convertibility was indeed an overriding policy priority. This was not at all the case in the interwar years, and it was no co-incidence that it was a labour dispute (at a Scottish naval base, Invergordon) that triggered the final capital flight that forced Sterling off gold.

There is broad agreement amongst economic historians that the combination of these structural divergences and asymmetries in policy response created a massive bias towards deflation in the global economy, thus fatally amplifying the initial negative demand shock created by the end of the US boom of the 1920s and severely amplifying worldwide depression. This interpretation is supported by the work of Bernanke and James (1991); Bernanke (1995); and Eichengreen and Sachs (1985) who show that economic performance during the years following 1931 was much stronger for those countries that went off gold, than for those who did not, and that their recoveries started only after devaluation.

A related issue is why – given this challenge of coping with such fundamental imbalances – the restoration of the gold standard was seen as such a policy priority at the time; and why in the post-World War II reconstruction period the Bretton Woods system of fixed exchange rates was created when the restored gold standard had proved so unstable. Eichengreen

(2008) pp. 49-55 recounts one of the key intellectual debates, with many echoes today, between Ragnar Nurkse's case for fixed exchange rates based on his account of the instability of the French Franc in 1924-1926 (Nurkse 1944) and Milton Friedman's critique of his views (Friedman 1953).

Nurkse, in an interpretation that resembles the views of some modern critics of the global financial system for generating misalignment of exchange rates and overvaluation of equity markets, blamed destabilising speculation for the large depreciation in the exchange rate of the French Franc. The French authorities were at that time taking active measures to bridge a large public spending deficit. According to Nurkse the depreciation induced by speculation in turn created substantial inflation and thus reinforced the initial speculative instability and undermined the efforts of the authorities to restore fiscal discipline. Friedman, while accepting that the French Franc exchange rate was indeed highly unstable during this period, argues that the exchange rate fluctuations were fundamentally justified, because the commitments of the French authorities to raising taxes and dealing with their fiscal deficit were not credible.

### **Capital flows and the break up of Bretton Woods**

This subsection, drawing heavily on the extended discussion of Bordo (1993), provides an account of the breakdown of the Bretton Woods fixed exchange rate regime. This broke down for a variety of reasons, including greater integration of global capital markets making exchange increasing vulnerable, the increasing reliance on official holdings of dollar liabilities rather than gold as the international reserve asset, unwillingness of both surplus and deficit countries to make the necessary policy adjustments to maintain exchange rate parities, all exacerbated by what has been described as the 'confidence' problem (or in more modern jargon the absence of credibility) i.e. the possibility that short term capital inflows that could quickly reverse when confidence in the exchange rate peg evaporated.

As Bordo (1993) makes clear, it is necessary to distinguish two periods of the Bretton Woods fixed exchange rate system: the first the pre-convertibility period of 1946-1958 during which the currencies of Europe and Japan remained subject to controls on current account transactions; the second the period 1959-1971 when currency convertibility was restored.

The pre-convertibility period 1946-1958 was characterised by pervasive controls on both exchange and trade, including the use of licenses and quotas to ration scarce resources (agricultural products, oil etc.) as well as foreign exchange. Transactions were financed bilaterally, supported by the European Payments Union as a clearing house. The Organisation for European Economic Co-operation (OEEC) was created to help overcome the fragmentation of trade and to oversee progress towards current convertibility. The dollar was the reserve currency for international payments, both in private and official transactions. As the Marshall plan was wound down in early 1950s a "dollar shortage" emerged since the US was providing much of the goods and services needed by Europe and also Japan but they lacked dollars to purchase them. The dollar shortage though largely disappeared by the mid 1950s, as large scale capital outflows from the US (mostly foreign direct investment by US companies seeking to take advantage of their competitive advantage by establishing in overseas markets) generated substantial overseas dollar claims.

Capital controls were in fact substantially strengthened in many countries in 1947, in response to the flight of capital from Europe to the US that was triggered and amplified by the first financial and economic crisis of the Bretton Woods system (see Helleiner, 1996, pages 52-58 for description and discussion).

The post-convertibility Bretton Woods of 1959-1973 did not work in the symmetric fashion envisaged by its architects. It was an exchange system not a pure commodity standard, initially a gold exchange system similar to the restored gold standard of the inter-war years and later evolving into a dollar exchange system. Individual countries pegged to the dollar, US authorities bought and sold gold (mostly selling) to maintain parities. Once again, the growth of world gold stock was insufficient to finance real output and trade, reinforcing the shift to the dollar as the reserve asset. It was also an unbalanced system. There were few adjustments of exchange rate pegs (adjustments were envisaged under the Bretton Wood agreement). Adjustments were often delayed (UK “stop go” policies), or did not take place at all. The US as the issuer of the reserve currency did not have to adjust, despite substantial capital outflows that continued through the 1960s<sup>105</sup>; and could equally ignore the rising inflation and loss of competitiveness at the very end of the decade caused by the diversion of resources to fighting the Vietnam War. Surplus countries, such as Germany with its focus on strict monetary discipline, also chose not to adjust.

As some commentators, notably Triffin (1960), were warning this shift to short term dollar liabilities imposed increasing strain and ultimately undermined the system. The immediate threat was of a jump in the gold price. As Eichengreen (2004) notes, the election of Democratic president John F. Kennedy created the first crisis of confidence in the post-convertibility Bretton Woods system, with fears that the new president might follow the example of his Democrat predecessor Franklin D. Roosevelt and devalue the US dollar against gold. This particular episode was addressed by the creation of the ‘gold pool’ (see (Garber 1993) for a description of its operation) through which national central banks provided a stock of gold (50% from the US) from which sales and purchases could be made to stabilise the world gold price, a system that was effective but only until 1968 when the US gold reserves were near exhausted.

In order to address these strains, the US began introducing measures to discourage capital outflows, introducing both taxes on the foreign earnings of US corporations and banks and the interest equalisation tax, which taxed the earnings of foreign securities and later bank loans. These were accompanied by rules on development aid, defence and non-defence procurement, and export credit financing designed to increase the (already positive) US balance of trade; and also ‘operation twist’ a combination of fiscal expansion with efforts to raise short rates relative to long and so encourage capital inflows.

A further factor weakening the Bretton Woods arrangements was the growth of the offshore Eurocurrency markets (described above in Section 2a), boosted by the restrictive ‘Regulation Q’ limits on interest rates paid on US domestic deposits and the attempts of the US to control capital flows. The growth of offshore foreign exchange trading in London, which accelerated from 1961 onwards, greatly increased the potential for private capital speculation against the Bretton Woods.

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<sup>105</sup> Throughout most of the Bretton Woods period the US had a current account surplus but as the issuer of reserve currency could freely create dollars in order to finance these capital outflows.

Ultimate breakdown was inevitable and was triggered by a combination of the continued rise in short term dollar liabilities in the absence of any constraint on the US to control this growing maturity mismatch, weak global gold production and rising inflationary pressures. This is not however how it seemed to everyone at the time. In a striking precursor of modern policy discussion, Despres et al. (1966) argued that the large scale acquisition of short term dollar liabilities was a sustainable development, because of the comparative advantage of the US in financial intermediation. Much the same argument was made in the years preceding the global financial crisis of 2008-2009, by Dooley et al. (2004), and in more formal guise, by Caballero et al. (2008). Hindsight is of course 20:20, but these contributions by very distinguished authors demonstrate how difficult it is to anticipate a financial crisis before it occurs.

## Annex B. OECD and EU Treaty Obligations

This annex describes the history and operation of the OECD code of liberalisation and of the ‘fundamental freedom of free movement of capital’ in EU treaties. These international obligations limit the policy actions available to the UK and other advanced countries to manage or control international capital flows.

### a. The OECD Code of Liberalisation

As described in sub-section 2c, the achievement of current account convertibility at the end of 1958 marked a key change in the post-war Bretton Woods exchange rate arrangements. With that step the multilateral liberalisation of capital flows became a focus of policy discussions. From its creation in 1961 (as successor to the OEEC, see Annex A), the OECD has played a central role in co-ordinating and supporting the removal of controls on international capital flows between advanced countries. The framework is provided by the OECD Code of Liberalisation (the current version is OECD (2013a). A summary of the OECD’s position on capital controls can be found on their web pages OECD (2014)).

OECD (2002) provides an informative review of history and operation of the code during its first forty years. The objective when the code was first created in 1961 was to provide a multilateral framework for the dismantling of the capital controls, that were introduced by most advanced countries before, during and after the second world war. Today the code remains important as the only multilateral global arrangement for dealing with capital account controls and capital flow management (capital flows fall outside the scope of the World Trade Organisation which is limited to trade in goods, services and also the establishment and enforcement of intellectual property rights).

As described by OECD (2002), the code works through “a dynamic process of consultation and co-operation”. It commits members to liberalisation, on a multilateral basis without discrimination between other OECD members, and at the same time offers considerable flexibility in how liberalisation is introduced and maintained. Members simply need to explain their particular approach. The code offers members both ‘reservations’ i.e. the right to maintain existing elements of capital control on a medium- to long-term transitional basis because of structural or other economic challenges; and also temporary ‘derogations’ i.e. members may also choose in the short term to re-introduce or maintain controls in order to deal with severe economic or financial disturbances. These derogations have been widely used for example allowing quite widespread reintroduction of capital controls during the exchange rate turbulence of the early 1970s.

The flexibility of the code has allowed the interpretation, the pace and the extent of resulting liberalisation, to vary substantially over time, in tandem with the evolution of attitudes towards international monetary arrangements.<sup>106</sup> In 1961, under the Bretton Woods system of fixed exchange rates, permanent controls especially on short term capital

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<sup>106</sup> See Abdelal (2006) pp. 98-106 for a more detailed account.

flows were regarded as a normal and acceptable policy, an essential support to Keynesian policies of using monetary policy to exploit the perceived trade-off between output and inflation. The emphasis then in OECD discussion was on multilateral dismantling of controls on foreign direct investment, or other long term capital flows, but there was no expectation of removal of controls on short term capital (on what was often referred to at the time as so called 'hot money').

Until the early 1980s, restrictions on short term capital remained entirely the prerogative of individual countries. The approach to control of short term capital flows varied substantially from one country to another. By 1961 when the OECD was established the United States, Germany, Switzerland and Canada allowed fairly complete freedom of movement of capital (although as discussed in Annex A the pressures on the Bretton Woods parities led the United States to introduce tax and other measures intended to discourage capital outflows during the 1960s; and this also resulted in Germany and Switzerland introducing restrictions on capital inflows during the 1960s). Other countries still retained controls on short term capital flows, often relaxing these in the early to mid 1960s but then subsequently re-imposing controls towards the end of the Bretton Woods period.

As noted in Annex A, a critical factor in the development of London as the main location for the offshore markets in Eurodollars and other Eurocurrencies was the flexible attitude of the UK authorities towards foreign currency inflows: their focus was on restricting sterling transactions, they were content to allow much greater *laissez-faire* with regard to foreign currency transactions in London, an approach not shared elsewhere in Europe. Concern about this development, and the 'hot money' flows it made possible, militated against any general move towards liberalisation of short term capital flows.

These attitudes against short term capital movements hardened when the dollar went off gold in 1971 and during the switch to generalised floating in 1973 (see OECD, 2002, pp. 5-26), with a number of countries instituting much stronger restrictions on capital controls, in an attempt to limit their exposure to global financial markets and to provide them with greater freedom to pursue domestic policy goals, for example through reduction of domestic interest rates to support output.

An example is France, which as documented in OECD (2002), relaxed its 'devises titres' market (a form of dual exchange rate system, preventing French residents from engaging in offshore securities transactions) in 1961; abolished all controls on short term capital flows in 1966; but then reversed course, reintroducing dual exchange rates in 1969. France then kept controls on short term capital movements in place until the late-1980s, with a system of restrictions on capital outflows described as follows by OECD (2002) page 155 "the large administrative control apparatus operating through a strictly regulated and compliant banking system allowed few loopholes, as long as the French franc was not extensively circulating offshore." Only with the 1983 economic crisis and the subsequent sharp policy shift towards economic liberalisation, was commitment to capital controls abandoned and even then they were only fully phased out by the end of the decade.

The shift in attitudes in France was perhaps the single most significant development in a general shift in the views of policy makers around the world in favour of international financial liberalisation. The United States, as the issuer of the global reserve currency, had refrained from applying direct controls on capital movements and already dismantled the

tax and other distortions introduced in the 1960s to discourage capital flows. The Reagan administration in the US and the Thatcher administration in the UK were both strongly committed to economic liberalisation and reduction in the role of the state. Their commitment to applying these doctrines in the field of international finance was dramatically illustrated by the UK's abolition of capital controls in 1979. This, and the subsequent 1986 'big bang' deregulation that opened up London's domestic financial markets to international competition, underpinned the growth of London as the preeminent international financial centre.

Other countries followed suit in the course of the next decade, abolishing all or most of their capital controls (again see Abdelal, 2007; Helleiner, 1996). Japan initiated a gradual programme of internal and external financial liberalisation in 1984. New Zealand, Australia and the countries of Scandinavia – which had put in place some of the tightest capital control regimes in the world, all shifted to capital account liberalisation in the mid to late 1980s.

The fundamental shift in French attitudes towards capital controls was also a key impetus, both towards the strengthening of the European Union Fundamental Freedom of Movement of Capital in the Maastricht Treaty (as described below) and the major accompanying change in the OECD code of liberalization, described in Abdelal (2007, 2006).

The OECD website (OECD, 2014) states their current position on the control and management of capital flows: *“The OECD’s long-standing view is that temporary capital controls can play a role as last-resort measures when adjustments to macroeconomic and exchange rate policies and prudential safeguards are insufficient to deal with serious balance-of-payments difficulties or financial disturbance. But controls should be designed and implemented in a way that minimises distortions on long-term investments and ordinary business activities.... Today, no OECD countries maintain capital controls, with the exception of Iceland which introduced controls in November 2008 during the financial crisis. Iceland is now phasing these controls out. None of the five countries currently in process of accession to the OECD maintain capital controls.”*

The OECD has had unparalleled experience with capital account liberalization. The lessons they draw from this experience are consistent with the findings of the present literature review. Writing more than a decade ago (in a review stressing the importance of adequate domestic institutions, both for financial regulation and corporate governance, as prerequisites for successful liberalisation), they find that:

*“The OECD Codes based approach favours full freedom of direct investment flows and equity-related portfolio investment as a priority, followed by other long-term flows related to operations in debt securities. Most member countries have tended to relax controls on non-trade related financial credits and deposit operations last, as well as maintaining controls on derivative operations by non-bank entities to guard against “speculation”. This was also the case of the recent members of the OECD, albeit with some variations. In some, excessive reliance on intermediation of foreign funds by poorly supervised and governed domestic banks, rather than direct foreign borrowing by the corporate sector, led to inadequate risk identification and allocation, and created large balance-sheet vulnerabilities.”* (OECD, 2002, pp. 16-17)



## **b. Free Movement of Capital in the European Union**

The Treaty of Rome, which established the European Economic Community in 1957, alongside removing tariffs within a European customs union, required member states to respect the four 'fundamental freedoms' of the common European market: the free movement of goods, the free movement of services, the free movement of persons (including the freedom of establishment) and the free movement of capital. Moens and Trone (2010) and Usher (2007) provide convenient summaries of European law on the free movement of capital. European Commission (2013a) offers both an economic and legal discussion of the freedom.

In its original formulation in the Treaty of Rome the free movement of capital was not defined in a way that could be legally enforced as easily as the other freedoms. It was only with the Single European Act of 1986 that the free movement of capital began to be enforced in the same way as the other fundamental freedoms. This led to the adoption of Council Directive 88/361/EEC on 24 June 1988, which provided for the abolition of most restrictions on capital movements and payments by 1 July 1990. This directive in turn paved the way for the adoption of the relevant provisions in the Treaty of Maastricht. Article 63(1) prohibits restrictions on the free movement of capital amongst EU states and (with more exceptions) also prevents member states from placing restrictions on movements of capital to and from countries outside of the EU.

Although the Maastricht treaty does not provide an explicit definition of free movement of capital, it is supported by a list of examples of what constitutes free movement of capital, divided into several headings and effectively covering all forms of cross-border investment.<sup>107</sup> The European Court of Justice has also established a number of specific violations of the freedom of movement of capital.<sup>108</sup> The freedom of movement of capital is also supported by a number of other pieces of European legislation, for example on the single market in banking services, with freedom of branching and legal obligations with regard to credit transfers (the latter going back to the 1997 directive); the 2007 directive on

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<sup>107</sup> The Court of Justice of the EU recognises the nomenclature in the earlier Council Directive (Directive 88/361) as having indicative value. Annex I of this Directive lists the following categories of capital movements: direct investments; investments in real estate; operations in securities normally dealt in on the capital market; operations in units of collective investment undertakings; operations in securities and other instruments normally dealt in on the money market; operations in current and deposit accounts with financial institutions, credits related to commercial transactions or to the provision of services in which a resident is participating; financial loans and credits; sureties, other guarantees and right of pledge; transfers in performance of insurance contracts; personal capital movements; physical import and export of financial assets; other capital movements.

<sup>108</sup> See Moens and Trone (2010). These include: national restrictions that are liable to deter investments by non-residents; measures that are "liable to prevent or limit the acquisition of shares in the undertakings concerned or to deter investors of other Member States from investing in their capital"; less favourable treatment of foreign source dividends than those from a domestic source; legislation providing that a bank must be established within a Member State for borrowers within its territory to qualify for an interest rate subsidy offered by the national government; a less favourable rate of taxation for foreign source revenue compared to that for revenue from domestic sources; a tax credit that is available only for dividends paid by domestic companies; measures that have the effect of reducing "the value of the inheritance of a resident of a State other than the Member State in which the assets concerned are situated and which taxes the inheritance"; legislation requiring prior authorization of foreign direct investment or the sale of agricultural land; or the acquisition of plots of building land; and legislation providing that the purchase of a particular type of land would be invalid unless a written declaration regarding the sale was submitted before a deadline.

deposit guarantees; the 2009 directive on electronic money institutions; directives supporting the freedom for establishing and pursuing insurance business; and also the various directives under the 1998 Lisbon plan for harmonisation of securities regulations (including investment advice, market manipulation, investor compensation, admissions and listings and prospectus information, transparency about issuers, collective investments).<sup>109</sup>

The free movement of capital is not without exception. Member States are permitted to restrict capital flows on the grounds of a limited set of concerns (prudential concerns; tax differentiation; public policy, public security, national security and defence; collection of information; and financial sanctions.). Without claiming to provide a complete guide to European law, the way in which these concerns have been recognised by the European Court of Justice can be summarised as follows:

- *Prudential concerns.* The European Commission now accepts (European Commission 2013a) that the development of prudential policies in response to the global financial crisis and banking problems in the Eurozone may on occasion justify the introduction of some restrictions on capital flows. These must though be balanced against the need to support the single market. The European Commission (2013a) notes that the Commission has requested information about supervisory practices because of concerns that actions taken to preserve financial stability (e.g. effective ring fencing of national bank assets in order to preserve stability of national financial markets) may fragment the single market in banking services.
- *Tax differentiation.* This is a complex legal issue. As noted by Article 65(1)(a), the Maastricht Treaty allows Member States to "...distinguish between taxpayers who are not in the same situation with regard to their place of residence or with regard to the place their capital is invested". National sovereignty over tax measures is, in principle, a well recognised feature of the European Union.
- *Public policy, public security, national security and defence.* Subject to the requirement of proportionality member states can use the public interest as a justification for restricting the free movement of capital. In practice the European Court of Justice has interpreted this exception fairly strictly. Moens and Trone (2010) provide examples. The European Court of Justice ruled against a German desire to appoint four (two federal, two state) members of the supervisory board of Volkswagen (intended as a protection of workers; but acknowledged that such limitation might be justified in principle for reasons of public interest or provision of strategic services). Measures that apply equally to both to domestic and foreign investors can still be a violation of freedom of movement of capital, an example being Portuguese legislation on golden shares which prevented control passing to domestic as well as investors. Other recent examples noted by (European Commission 2013a) include C-271-09 CJEU rejecting Polish authorities claim that domestic pension funds are exempt from free movement of capital to support the national social security system; and C-244/11 CJEU outlawing Greek control

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<sup>109</sup> A further aspect of enforcement of the freedom of movement of capital is discussed by the European Commission (2013a) concerning inherited investment treaties. On page 11 they write "...the Single Market for capital continues to be fragmented by existing Bilateral Investment Treaties (BITs) between certain Member States." Currently negotiations are taking place between the Commission and member states on phasing out these treaties.

mechanisms with regard to investment in strategic companies and ex-post requirements on company decisions. The European Commission (2013a) notes the practice of national screening of proposed investments in “strategic companies or sectors”, but these are subject to oversight by the Commission e.g. three Member States adopted new screening mechanisms in 2012.

- *Response to financial crisis as a public policy exception.* The imposition of temporary capital controls to deal with a financial crisis, most notably in Cyprus (see European Commission, 2013b), are recognised as being justified on public policy grounds.
- *Collection of information.* Mandatory declarations of capital movements for the purposes of administrative or statistical information are allowed.
- *Financial sanctions.* These include the imposition of restrictions for reason of combating money laundering (which can justify limits on movements of cash or opening of anonymous accounts).

## Annex C. Capital flows in emerging markets

This appendix discusses the extensive literature on capital flows and macroeconomic policy in emerging market countries. This large body of work is motivated by understanding the instability – surges and then sudden stops - in private sector capital inflows to emerging market economies, most notably the widespread reversal of capital flows during the Asian crisis of 1997-1998 but also many other episodes affecting individual countries.

The relationship between capital flows and macroeconomic stability in emerging markets remains highly topical. The policy of quantitative easing - purchase of bonds by the Federal Reserve, the Bank of England and more recently the Bank of Japan and the resulting reduction in long term yields in developed countries – have been associated with outward investment flows to a number of emerging markets. The Federal Reserve announcement in May 2013 that it anticipated ‘tapering’ its quantitative easing program led to concerns about the ending of these outflows and triggered substantial volatility in many emerging market countries exchange rates and stock market prices.<sup>110</sup>

Although the relationship between international capital flows and currency crises continue to be an active research topic, this work is of only indirect relevance to most developed countries today. Sudden reversals of external capital inflows have *not* been a concern for developed countries to the same extent as in emerging markets. This can be attributed to institutional differences: deep and liquid foreign exchange markets making it possible to adopt a relatively freely floating exchange rate without engendering large scale capital inflows or unacceptable exchange rate instability; and the relatively greater importance of private sector domestic institutional investors (insurance funds, pension funds) than in emerging markets mean that stock market and other asset prices are not so much affected by shifts in the portfolio preferences and required returns of external investors.

This appendix follows the same structure as the main paper, first discussing the theory of capital flows and exchange rate instabilities in emerging markets; then reviewing empirical research and concluding with a brief discussion of policy issues.

### a. Theory of capital flows in emerging markets

The bulk of the theoretical literature discussed in Section 2 applies to emerging market countries just as much as it does to developed countries (the institutions of law and investor protection and the development of the financial sector are of particular relevance). The theory discussed here addresses episodes of financial stability in countries which rely on investment from global capital markets to finance public or private sector borrowing, especially under a fixed exchange rate regime.

A substantial theoretical literature studies foreign exchange crises in emerging markets, especially the breakdown of a fixed exchange rate peg triggered by a reversal or ‘sudden

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<sup>110</sup> Two recent studies (Aizenman et al. 2014; Eichengreen and Gupta 2014) examine the impact of the Fed tapering, showing that the emerging markets most affected were those with the most developed domestic financial markets and the largest capital inflows.

stop' in international capital flows.<sup>111</sup> A characteristic of these models is the interplay between the domestic authorities and external capital market investors. The so called 'first-generation' models, initiated by Krugman (1979), focus on the financing of a government deficit, assuming that under a fixed exchange rate peg this relies on depletion of a fixed stock of foreign exchange reserves. Expectations of market participants, anticipating the breaking of the peg when reserves are exhausted, then trigger a speculative attack forcing the abandonment of the exchange rate peg even when some reserves remain.

A 'second-generation' models of exchange rate crises – beginning with Obstfeld (1986) – broaden the analysis by considering the trade-offs between competing domestic macroeconomic policy goals of the government: the possibility of a speculative attack then depends on how the government is expected to react to adverse developments in the domestic economy. This parallels the discussion in the main text above about the interaction of international capital flows and the credibility of fiscal and monetary policy.

Later analysis, motivated by the Asian crisis of 1997-1998, introduces financial regulation and financial intermediation into the theory of currency crises. These contributions are sometimes characterised as 'third generation' models, although these contributions are much more varied than either the first or second generations.<sup>112</sup> The 'second' and 'third' generations of this literature reinforce the message that institutions matter to policy on international capital flows. If there are weaknesses in either macroeconomic policy making or financial regulation and the governance and control of financial institutions then capital account liberalisation can increase risks of exchange rate and domestic financial sector instability.

The emerging market literature cannot be simply read across to the situation of developed countries. This work on the instability of fixed currency pegs in emerging markets is of course relevant to understanding, for example, the breakdown of the fixed exchange rate mechanisms of European exchange rate mechanism in 1992. But, as Buitier, Corsetti, and Pesenti (2001) emphasise, lack of effective co-ordination of monetary policy amongst ERM members played a crucial role in the ERM crisis, a factor not relevant to episodes of capital reversal in emerging market countries.

Other work (for example, Aghion et al., 2004, 2001; Calvo, 1998; Mendoza, 2010) considers government and corporate balance sheets, for example through collateral or net worth constraints that limit the access of firms to external finance. In contrast to the models of the breakdown of exchange rate pegs, this can introduce cycles and constraints on access to international capital even when the exchange rate is floating. An underlying issue though (see Caballero and Krishnamurthy, 2004) is the lack of financial development relative to developed countries, where households and firms in emerging markets do not develop financial contracts that protect against the substantial economic and financial risks of a sudden stop in international capital flows..

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<sup>111</sup> There are several reviews of this literature including Breuer (2004); Burnside et al. (2007); Glick and Hutchinson (2011).

<sup>112</sup> A feature of many of these models is introducing banking sector instabilities, similar to those in the Diamond and Dybvig (1983) model of bank runs, for example Chang and Velasco (2001), a mechanism emphasised by Radelet and Sachs (1998). Other papers (Dooley 2000; Burnside et al. 2004) consider the role of government guarantees on bank liabilities.

Another branch of literature on emerging markets addresses the determination of inflation rates when a major contribution to fiscal revenue comes from seigniorage on central bank money creation (a reliance on seigniorage arising both because of limitations in tax capacity and the relative underdevelopment of the banking sector and consequently high ratios of outside money to GDP). This perspective is highlighted in the analysis of fiscal policy in emerging markets.<sup>113</sup> Again however this is less relevant to the situation of developed countries.

## **b. Empirical evidence and policy responses**

With this theoretical work as a backdrop, we can consider empirical evidence, beginning with reviews of the statistics on the composition of external assets and liabilities in emerging markets.

The external assets of emerging market countries are dominated by officially held external reserves.<sup>114</sup> As Prasad (2013) (pp. 74-75 and Appendix Table A.2) notes, reserve assets amount to 60% of emerging market 2011 GDP (the average is closer to 45% when excluding China), with most of the rest consisting of short term claims held by banks and households, and almost no external portfolio investment. This contrasts with the situation of developed countries, where a substantial share of the gross external capital assets held by developed countries are equity holdings, either foreign direct investment and portfolio investment by institutional investors.

Prasad's Figure 5-1 (page 74) illustrates the rapid growth of reserve assets in emerging market countries since 1999. Excluding China, these rose from less than \$1 trillion in 1999 to more than \$5 trillion in 2012. Over the same period China's foreign exchange reserves rose from around \$0.1 trillion to \$3 trillion. The usual interpretation of this build up of foreign exchange reserves, is as a precautionary saving response, reducing exposure to a withdrawal of external capital in reaction to the Asian crisis of 1997 (Aizenman and Lee 2007). However, as Rodrik (2006) points out, this is something of a puzzle given that a first best response, with less social cost, might be a shift from short term to long term portfolio debt. In some cases a mercantilist motive – a policy of promoting export growth through maintaining a highly competitive exchange rate and an export surplus – may have also played a role (Aizenman and Lee 2007).

Over the same period, as reserves have accumulated there has been a considerable change in the composition of gross financial liabilities of emerging markets. As documented by Prasad (2013) (pg 57 Fig 4.2 and Appendix Table A.1) debt (bank borrowing and bonds) fell from 85% to 40% of total gross financial liabilities over the period 1985-2011), while portfolio equity increased from virtually zero to around 10%, and with an even bigger increase in foreign direct investment from 15% to 45% of the total.<sup>115</sup>

A considerable body of work examines both prediction of emerging market currency crises (Kaminsky et al. 1998; Berg and Pattillo 1999) and banking crises (Demirgüç-Kunt and

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<sup>113</sup> An overview is provided by Burnside (2005). For related work see Edwards and Tabellini (1991); Gavin and Perotti (1997); Mankiw (1987).

<sup>114</sup> Emerging market countries are often defined statistically according to per-capita income – eg \$1,000-\$16,000 per year (see Prasad, 2013, pg34 for a list of countries distinguished on this basis).

<sup>115</sup> As noted by Prasad equity liabilities (FDI and portfolio equity) are a particularly large share of gross external liabilities in the "BRICS" Brazil, Russia, India, China and South Africa.)

Detragiache 1998; Hardy and Pazarbasioglu 1999; Davis and Karim 2008). As Kaminsky and Reinhart (1999) and Reinhart and Rogoff (2009) emphasise, banking and currency crises often occur simultaneously, often also alongside a fiscal crisis.

Are capital flows a cause of these problems? One approach is to look for an association between capital flows and the severity of any subsequent crisis. Gupta et al. (2001) find that large scale capital inflows are a predictor of output losses, in their study of 195 crisis episodes in about 90 countries over the period 1970-2000. Calvo et al. (2004) investigate the relationship between exchange rates, banking liabilities and sudden stops. They find that real exchange rate fluctuations coupled with domestic liability dollarization are key determinants of the probability of experiencing sudden stops in emerging markets.

Eichengreen (Eichengreen, 2001; Arteta, Eichengreen and Wyplosz, 2001b; Eichengreen and Leblang, 2003) offers balanced discussion of the risks to financial stability resulting from capital flows, suggesting that some forms of capital control can help limit instability and relatively little cost (though this recommendation seems a little at variance with the experience of capital controls reviewed below).

A puzzle is why emerging markets, despite the problems of financial crises associated with unsustainable currency pegs, have not generally moved to regimes of relatively free floating (the 'fear of floating' documented by Calvo and Reinhart (2002)). It appears that for most emerging markets, perhaps because of the difficulty of making credible policy commitments or simply the relatively lack of development of financial markets, a freely floating exchange rates can be highly volatile, imposing substantial costs of adjustment on the domestic economy. Such costs can be especially high in the face of substantial capital inflows.

This preference for managing exchange rates in the face of sometimes substantial international capital inflows explains why a number of emerging markets experimented with various tools of capital flow management in the 1990s and 2000s. A number of research papers have examined this experience. Much of this research adopts a case study approach, looking closely at one or a small number of countries, documenting the measures taken and assessing the impact on capital flows and sometimes supplementing with a simple vector auto regression (VAR) model to try to quantify the effect of the controls. A smaller number of studies estimate econometric models for a cross-section of countries.

Magud, Reinhart, and Rogoff (2011) provide an overview of a number of research studies of capital inflow controls in Brazil, Chile (the encaje or unremunerated reserve requirements imposed in the 1990s), Colombia, the Czech Republic, Malaysia and Thailand; and capital outflow controls in Malaysia (in 1998 as a response to the Asian crisis), Spain and Thailand. They conclude (see Table 6) that controls on capital inflows were effective in shifting the composition of flows from short to longer maturities, and reducing the overall volume of inflows, in Malaysia (when applied in both 1989 and 1994), Czech Republic and Thailand; in contrast the application of capital controls on inflows in Chile (the most often studied country), while also shifting the composition of inflows, led to no clear reduction in the overall volume of inflows. Controls on outflows seem to have been successful in limiting exchange rate depreciation (and hence providing some autonomy to monetary policy) in Thailand, but their impact elsewhere is unclear. A problem though is the lack of a clear counterfactual can be made: what would have happened had controls not been place, but the setting of other monetary and fiscal policy instruments been unchanged?

A lot of attention has been devoted to the case of Chile. A thorough description of the Chilean experience is in Appendix I by Bernard Laurens to Ariyoshi et al. (2000). The Chilean case is quite complex. He notes no less than 15 changes to the encaje between its introduction in June 1991 and its abolition in Sept 1998, as the authorities made efforts to prevent avoidance. He also summarises no less than six research studies of the Chilean experience, which find that the encaje did help the authorities maintain domestic interest rates higher than they would otherwise have been, but finds no impact on capital inflows or the exchange rate and only a modest impact on the composition of inflows. (Gallego, Hernandez, and Schmidt-Hebbel 2002) find that the unremunerated reserve requirements did alter the composition of capital inflows towards longer term debt but this impact tended to reduce over time. They do not find any impact on either the exchange rate or domestic interest rates.

Cowan and De Gregorio (2007) also report that the unremunerated reserve requirement introduced by Chile in the early 1990s was successful in shifting the maturity of capital inflows from short to long term. While there was a subsequent capital outflow this was a much milder episode than experienced by Chile the previous decade. Edwards and Rigobon (2009) find that the Chilean capital controls of the 1990s did limit real exchange appreciation.

This summary though reveals the problem of this kind of analysis: once again the comparison is with the past not with the counterfactual of no controls but policy otherwise unchanged. It is quite possible that if interest rates had been kept at levels that were higher than desired domestically, then without the controls then there would have been a higher level of capital inflow and exchange rate than in fact was experienced.

Studies on other individual countries yield similarly mixed results. Concha et al. (2011) build an econometric model of capital controls for Colombia, examining its impacts over the period 1998-2008. They find little impact on the exchange rate, the volume of capital flows or on the composition of capital flows. Clements and Kamil (2009) also investigate the case of Colombia, reporting some success in reducing capital inflows, but little impact on monetary independence (interest rate spreads) or the exchange rate and also associated with greater exchange rate volatility. Similar results are reported for Brazil by Carvalho and Garcia (2008) and Chamon and Garcia (2013), with little evidence of impact on the volume of flows or the exchange rate. Similarly Jinjark et al. (2013), in a recent study of the temporary application of capital controls in Brazil since 2008, find little impact on the magnitude of capital flows (but they find that removal of controls was interpreted as an important signal by the market of Brazil's wish to avoid permanent restrictions on financial flows).

Turning to the econometric studies of several countries, results consistent with many of these individual country studies are reported by Binici et al. (2010), reporting some impact of capital inflow restrictions on the maturity of debt, but otherwise rather limited impacts on total volumes of capital flow. They go on to build a disaggregated data set for 74 countries, disaggregating capital flows by type (portfolio debt, portfolio equity, FDI) again finding that aggregate volumes are little affected by controls on inflow (their data does not distinguish maturity); but they do find that capital controls are effective in limiting quantities of outflow of all types of capital.



A similarly cautious review of the macroeconomic effectiveness of capital controls is reported by Cardarelli et al. (2010), who consider the economic consequences of large scale capital inflows using a data set of 52 emerging market and smaller advanced countries over the period 1987-2007. Capital inflows to emerging markets are highly cyclical, according to IMF data rising to 3% of GDP in the mid-1990s before the onset of the Asian crisis, and after falling rising again to 5% of GDP by 2007 (Figure 1.) They find that there are indeed negative macroeconomic consequences, with exchange rate appreciation and temporary acceleration of GDP growth. One third of the cases they identify ends in a “sudden stop” of capital inflows or a currency crisis, associated with sharp slowdown and sometimes reversal of GDP growth. Most of the capital inflow is associated with non-FDI flows (Figure 6). They also consider policy responses, finding that fiscal discipline during these expansionary episodes is successful at limiting exchange rate appreciation, but that neither sterilized intervention nor the imposition of capital controls is associated with better outcomes.

Edwards (2007) finds in a large multi-country data (58 countries for the years 1970-2004) set a statistically significant but rather small impact of imposing capital controls (measured *de jure*) on subsequent capital flow reversal. Klein (2012) also reports somewhat negative results on the efficacy of capital controls (as measured using the *de jure* indices of Quinn) on the real exchange rate, the level of capital inflows or GDP growth (using data for 44 countries over the period 1995-2010).

Some further evidence casting doubt on the effectiveness of capital management in emerging markets can be found in Carvalho and Garcia (2008) and Clements and Kamil (2009), not in their statistical modelling (which as in many other studies is ambiguous) but in their discussion of the potential for sidestepping controls. Carvalho and Garcia (2008) report interviews with financial market professionals, suggesting that use of derivatives and offshoring of business led to large scale avoidance. Similarly Clements and Kamil (2009) report that Colombia in the 2000s had to accompany controls by restrictions on use of offshore derivative contracts by domestic pension funds, indicating at least the attempt to get around the controls. Even middle income countries nowadays have quite sophisticated financial sectors. Low costs of communication make it very difficult to control financial flows into the domestic currency since these can easily reappear offshore.

There are a number of other examples of individuals and companies take steps to avoid the impact of capital controls. Tikhomirov (1997) discusses the evasion of restrictions on capital outflows by Russian residents in the post-Soviet era, and associated increase in corruption. Forbes (2007) reports the example is the avoidance of controls in Argentina through conversions of stocks into ADRs worth a \$1bn or more in just four months in 2001.

At a more microeconomic level, Gallego and Hernández (2003) investigate the impact of the Chilean controls on the financing decision of 75 companies of various sizes and operating in various sectors. They find quite varied responses, with larger firms, subsidiaries of international companies and those able to issue directly in overseas capital markets substituting equity for debt; while smaller firms increased their reliance on retained earnings. Overall the impact on the composition and cost of funding were relatively small.

In interpreting this work it is important to bear in mind the context in which these controls were applied: many of these countries in the early 1990s were struggling to deal with a surge of net capital inflows putting upward pressure on their exchange rate or (if their

exchange rate was pegged) threatening excessive domestic monetary expansion. Capital controls were therefore employed as a supplementary tool of exchange rate and monetary policy. This is confirmed by the work of Fratzscher (2012), who explores the characteristics of countries that impose capital controls and the rationale for their introduction, finding that the main reason for their introduction is to limit exchange rate appreciation, especially in countries using a competitive exchange rate to promote export growth, and to support the autonomous use of monetary policy to tighten policy without triggering exchange rate appreciation. These controls are primarily used in countries with less developed financial systems and less independent central banks. Financial stability and the avoidance of capital flow reversals has *not* been the usual motive for introducing capital controls.

The range of controls applied has been quite varied, including restrictions on both inflows and on outflows, and the use of both quantity restrictions and taxes. Typically the control regime was varied frequently during the periods when the authorities attempted to influence exchange rates. As exchange rate pressures subsided then so does the incentive to employ capital controls. It is also worth emphasising that these were not regimes of permanent control on capital. Nor were they attempts at using controls as a macroprudential instrument to limit the risks of an exchange rate or banking crisis, although any such impact was not unwelcome and they are now sometimes interpreted after the event in this light.

A balanced overall summary is provided by Xafa (2008) (an IMF board member), who provides a similarly sceptical review of the employment of capital controls in emerging markets, arguing from his own review of literature that capital controls have been largely ineffective, especially over the medium to long term, in influencing the magnitude of capital flows. He argues that the tradeoffs are shifting towards liberalization because of the greater importance of FDI in capital flows and hence great opportunity for technological transfer; and the stronger institutional environment within emerging markets. Most importantly capital controls are *not* a substitute for sound macroeconomic policies.

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