

# ECN320 SRP for session 4. Interest and Exchange Rates and Capital Markets

## THE INTERNATIONAL CAPITAL MARKET

### INTRODUCTION

In sessions 2 and 3, the relationship between the exchange rate and prices (of tradable goods and services) and general prices (CPI) was established through the PPP concept. However, the exchange rate is the mechanism that brings all international transactions into balance, i.e., trade as well as capital flows. That means the relationship between the interest rate and the exchange rate is also important. As PPP implies, the equilibrium exchange rate ensures that goods are valued the same across all markets when converted into the same currency, interest-rate parity implies that assets are also valued the same across all markets when converted into the same currency.

Money markets, i.e., money supply and demand, determine the market interest rate, but the central bank through monetary policy plays a big role in setting policy rates and/or by influencing money and capital markets, through actions or words, i.e., signals that are transmitted to the market. The short-term (benchmark) policy rate is set by the central bank to influence key macroeconomic indicators (e.g., the inflation rate, exchange rate, credit expansion, etc.). The policy rate correlates with the market interest rate because it is the price at which private banks borrow or lend money to/from the central bank.

The economic behavior of various actors is involved in determining the market interest rate, e.g., household consumption-saving decisions, investment-saving decisions of households or firms, the practices of banks' lending and credit and asset management firms, government spending-taxation policy, and the central bank's monopoly over money. A central bank lowers or raises short-term rates to encourage/discourage borrowing by households and businesses, promoting growth through low interest rates while trying to avoid inflation.

Different countries use different policy rates. These include the overnight lending rate (lending/borrowing rate among commercial banks), the central bank discount rate (rate on loans extended by the central bank to commercial banks), the repurchase rate (or repo rate at which central bank lends short-term money to banks against securities – equities or debt) of different maturities, and the rate that central banks pay on banks' reserves. When any of these policy rates increase, the cost of borrowing becomes more expensive for commercial banks.

Longer-term interest rates are determined by the market, primarily through the bond market. When the bond market suspects that the (short term) policy rate is too low, investors begin to expect that the inflation rate will rise in the future and long-term interest rates must go up to compensate for the expected loss of purchasing power of future cash flow. If the bond market thinks that the policy rate is too high, investors begin to expect interest rates will go down in the future. In the last 40 years, there have been substantial changes that have affected money markets, capital and asset markets, banking and the financial system, the degree of capital mobility, exchange rate regimes, etc. These changes pose serious challenges to macroeconomic theory and the framework that underpins the operations of central bankers' monetary policy and the relative importance of fiscal policy by policymakers.

### Global capital market integration and international finance

The globalization of banking and financial markets, i.e., money and capital (including stocks and bond trading) markets, was the result of several factors that occurred during the 1970s-90s, including the:

- Lifting of capital controls following the end of the Bretton Woods system of fixed exchange rate regime in the 1970s;

- Deregulation of national banking and financial systems in developed economies in the 1980s, dismantling the separation of commercial and investment banking (banks could begin trading stocks for customers and investment banks taking loans and deposits);
- Lowering of restrictions on international financial transactions and the increased use of inexpensive international contracts through financial intermediaries;
- EC-12's push to unify financial services market through common regulations and increased foreign competition in the 1990s;
- Move toward a global standard for banking through common capital adequacy targets under the auspices of the Bank for International Settlements (1992); and the
- Revolutionary effect of communication and information technologies on international finance.

The rapid rise in international financial flows in the 1990s led many to believe that capital markets had gone global and that these increased flows were making financial markets less stable. The claim that capital markets are global might be exaggerated and the blame for the instability may be undeserved.

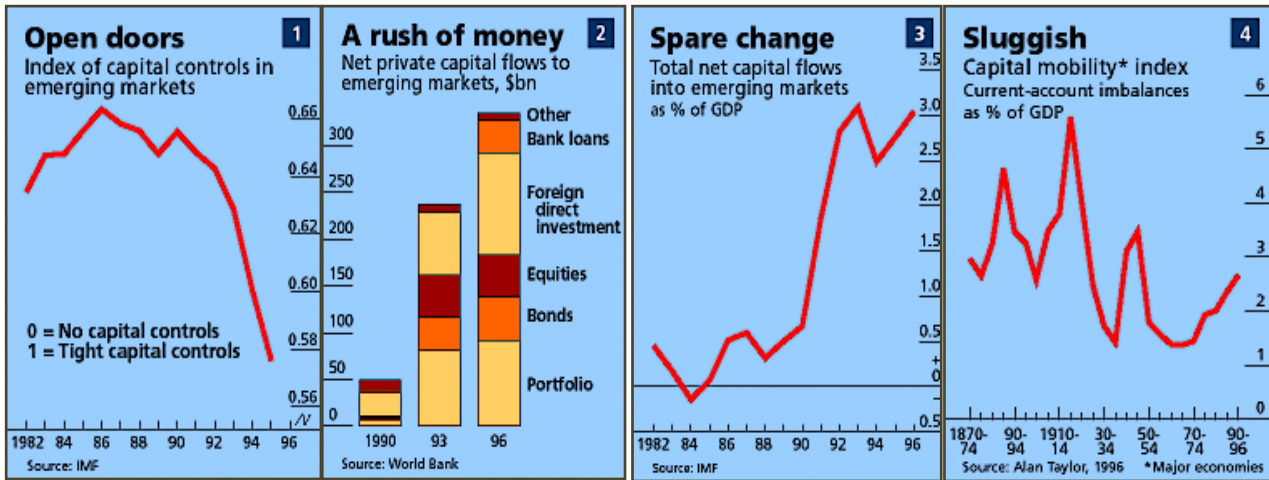
In theory, greater international capital flows should bring important benefits. Savings and investment are allocated more efficiently. Poor countries, with large investment needs, are no longer hamstrung by a lack of capital. Savers are not confined to their home market but can seek investment opportunities that offer the highest returns around the world. Risk is diversified as investors can spread their portfolios more widely [1].

Under the Bretton Woods system of fixed exchange rates, set up after the Second World War and lasting until the early 1970s, the international flow of capital was severely controlled. A UK investor, for instance, could not easily buy US stocks or bonds. Mainstream economic opinion felt that capital mobility was unnecessary, and undesirable [1].

Even in the early 1960s markets found ways to get around some of these controls through the growth of "Euromarkets", where banks located in one country could take deposits and make loans in the currencies of other countries. [Eurodollars, dollar accounts outside the US often without a reserve requirement in the banking system, created quasi-money and loans based on these accounts.] When the fixed exchange rate system broke down, the rich economies dismantled capital controls. In the late 1980s and early 1990s, developing countries, too, began to open and liberalise capital markets. Chart 1 shows an IMF index of capital controls in emerging markets demonstrating that as capital restrictions fell there in the mid-1980s, capital inflows increased overall and as a % of GDP (see charts 2 and 3) [1].

The rationale behind the financial deregulation was that freer markets produced a superior outcome. Unencumbered capital flows to its most productive use, boosting economic growth and improving welfare. Innovations that spread risk more widely would reduce the cost of capital, allow more people access to credit and make the system more resilient to shocks [2].

The logic of financial globalization, before the global financial crisis (GFC) of 2007-09, seemed impeccable. Businesses were increasingly operating across borders and needed banks that could travel with them. The US and UK, which excelled at finance, were anxious to market their expertise abroad. A more integrated global economy needed a financial system to funnel capital from countries with a surplus of savings to those with a surplus of investment opportunities. Banks had long played that role within countries, taking in deposits in one market and deploying them in another. It made sense to do the same thing across borders [3].



Recipients of such flows benefit in other ways, too. More efficient foreign banks could force local ones to raise their game. That was why China, for example, listed its state-owned banks on stock exchanges and permitted foreigners to hold minority stakes. In Europe the logic was especially powerful. The benefits of a single currency strongly suggested that there should be a single banking market as well, so that the interest rates which businesses and households paid were determined by the European Central Bank (ECB), not the relative health of their local banks [3].

To sceptics, the integration of financial markets is dangerous and destabilising. Bond traders and currency speculators supposedly supplant political leaders in determining macroeconomic policy. Financial markets become more volatile as money moves across borders (and destabilises commodity and other asset markets) [1].

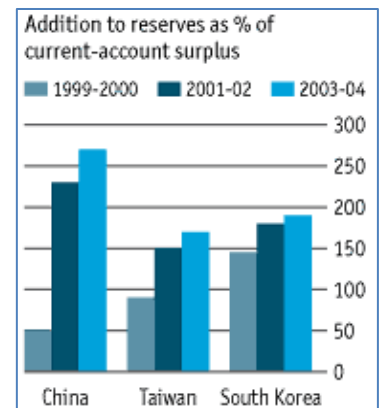
Regardless of one's perspective of the goodness/badness of liberal capital markets, the extremes of optimism and pessimism may both be misplaced. Despite all the hyperbole, a global capital market does not really exist. To gauge the extent to which capital markets have historically been integrated, Alan Taylor, an economic historian at Northwestern University, calculated a "capital-mobility index" (chart 4). This measures the average of several countries' CA imbalances relative to GDP. Although the index rose since the 1970s, it had yet to reach the peaks of the early 20<sup>th</sup> century [1]. To further illustrate the historical trends in global capital, it must be noted that it was not until the mid-1990s that foreign investment as a % of GDP reached the levels prior to the first world war (see chart, global foreign investment [4]). While capital mobility has certainly taken up it does not imply capital market integration.

The measure of a country's net capital inflow/outflow is its CA. If the capital market were truly global, a country with high investment needs would be expected to have a CA deficit; another with large savings would be expected to have a CA surplus. This did not occur. Rich country CA imbalances averaged 2-3% of GDP in the 1990s. Japan and Germany's CA surpluses reached 4-5% of GDP in the late 1980s [1]. China and other Asian exporters and oil exporting nations managed to hit peak surpluses that exceeded 10% of GDP, but these surpluses were often offset by reserve accumulation rather than capital flows

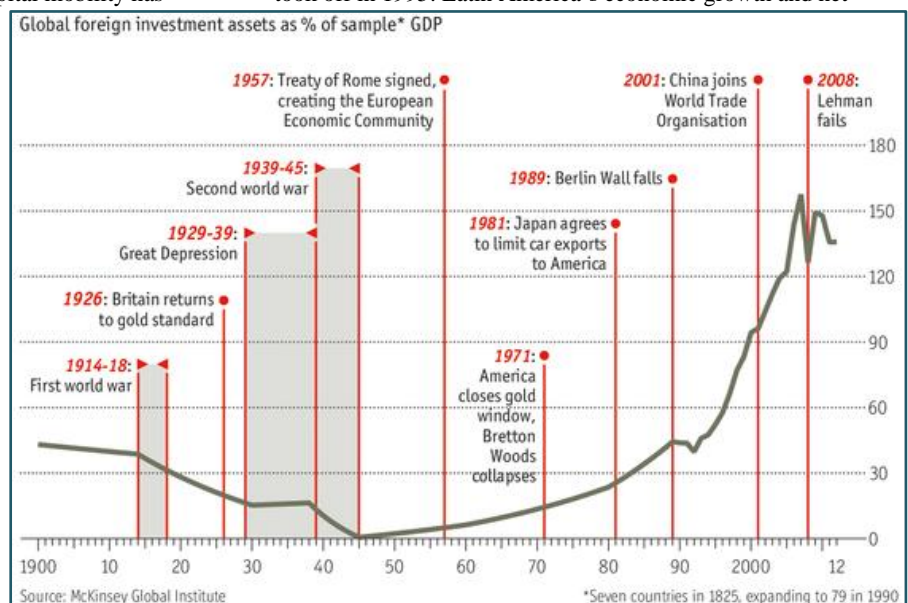
(see chart, addition to reserves as % of CA surplus) [5].

The direction of capital flows also suggests that capital markets are not integrated globally. Economic theory predicts that capital should be invested in countries with the highest capital productivity and economic growth (i.e., where returns to capital should be greatest).

Thus, financial capital should flow from richer to poorer countries, from where capital is abundant to where it is scarce. Lucas (1990)<sup>1</sup> pointed out that capital flows from North to South were modest and inconsistent with theoretical expectations. In fact, since 2000 capital has increasingly flowed from poor to rich countries. The US and China's CA imbalances go a long way to explaining this part of the paradox.



The theoretical inconsistency between the correlation between capital flows and growth is most striking. A good example is the contrast between capital inflows into Latin America and East Asia during 1950-90. East Asia experienced a sustained period of substantial economic growth, and its net exports as a % of GDP took off in 1995. Latin America's economic growth and net

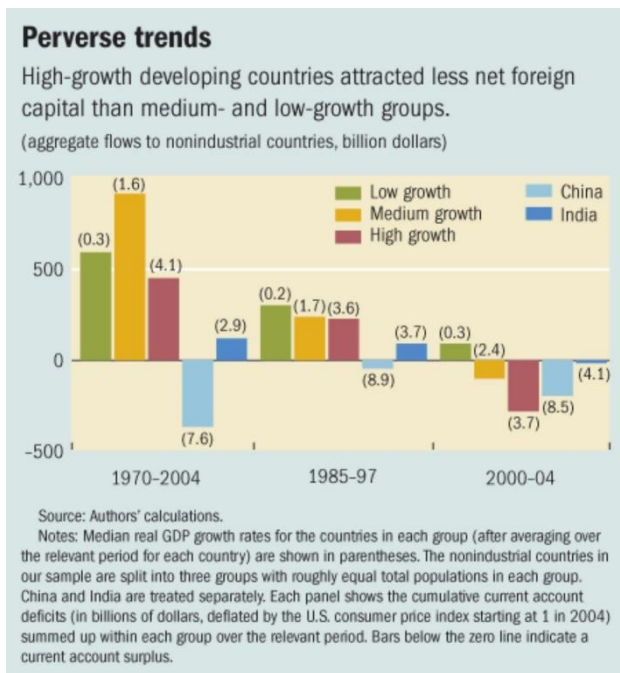


<sup>1</sup> Lucas, R. 1990. "Why doesn't capital flow from rich to poor countries?", *American Economic Review*, Vol. 80(May): pp. 92-6.

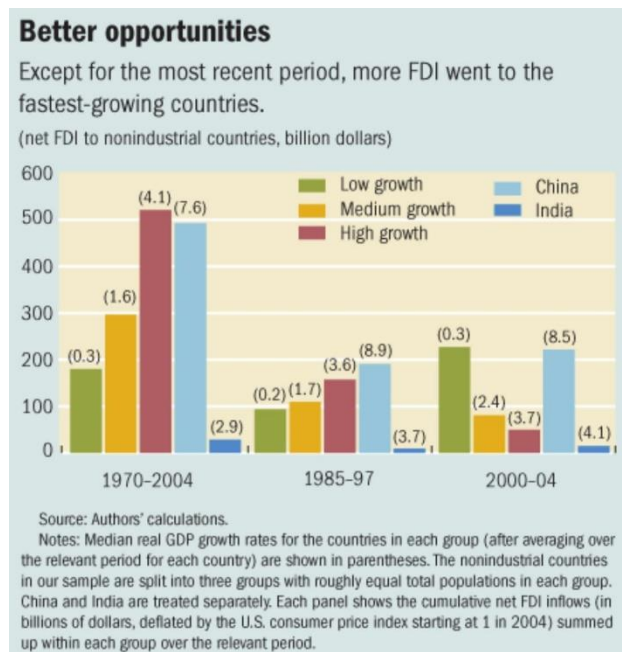


exports was slower and more uneven. Nevertheless, very little investment flowed into East Asia (especially between 1950 and 1980), even though the region's economic growth and capital productivity were very high. In contrast, considerable capital flowed into Latin America during this period, even though neither its capital productivity nor its economic growth was high. In fact, Latin American economic growth substantially lagged the economic growth of virtually all other countries in all regions bar Africa [6].

Prasad, Rajan, and Subramanian (2007)<sup>2</sup> substantiate Lucas's paradox on capital flows. In the chart (perverse trends), high-growth developing countries attracted less net foreign capital than medium- and low-growth groups. The perverse pattern is most apparent during 2000-04, when China, India, and the high- and medium-growth countries all exporting capital.

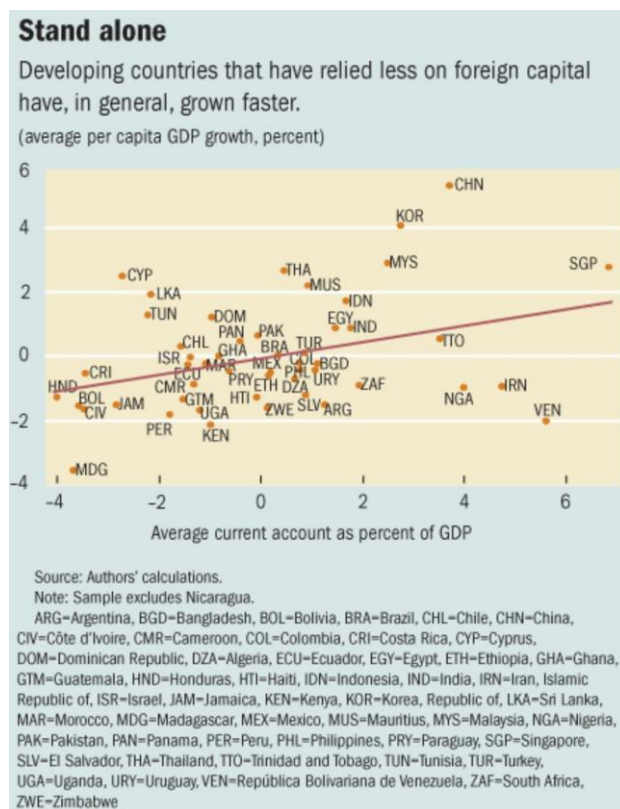


The puzzle deepens with an examination of net foreign direct investment (FDI) flows (see chart, better opportunities). During the whole of 1970-2004, net FDI goes to the fastest growing developing countries, with China receiving substantial amounts.



However, during 2000-04, net FDI flows do not follow growth. This suggests that fast-growing countries do have better investment opportunities, and they attract more FDI. But they do not use more foreign capital and, in the case of China, exported capital on net (more outflows than inflows).

Why does more foreign capital not flow to non-industrial countries that are growing more rapidly and where, by extension, the revealed marginal productivity of capital (and creditworthiness) is indeed high? To address this, Prasad et al. examine the long-run relationships between CA balances and growth. In the sample of 51 non-industrial countries, the correlation between growth and CAs is positive (see chart, stand alone). In other words, developing countries that have relied less on foreign capital grew faster in the long run. Countries that borrow more from abroad should be able to invest more (because they are less constrained by domestic saving) and, therefore should grow faster.



According to Ohanian, Echavarría and Wright, from the Federal Reserve Bank and National Bureau of Economic Research, there are two very different interpretations of the pattern of international capital flows. One is that international capital market imperfections, including capital controls and other impediments to international transactions have prevented capital from flowing into high-growth regions. This hypothesis implies that much more capital would have flowed to East Asia and other high-growth regions had capital markets had been more open and liberal. This view has been popular among economists who have studied Asia, as this region adopted severe regulations and controls on international capital flows since the 1950s [6].

A very different interpretation is that domestic imperfections, market distortions but not just in capital markets, are key to understanding international capital flows. For example, East Asian domestic capital markets have been affected by credit controls, interest controls, slow moves to privatization of banks, entry barriers to banking, and bank reserves and related requirements, among others, which have kept international capital from flowing into East Asia [6].

<sup>2</sup> Prasad, E., R. Rajan and A. Subramanian, "The paradox of capital", Finance and Development, IMF, March 2007, vol. 44, no. 1. <https://www.imf.org/external/pubs/ft/fandd/2007/03/prasad.htm>

However, in follow-up research by the same authors<sup>3</sup> they find that distortions in domestic labor markets caused by labor taxes, labor market regulations, and trade unions, among others, reduced the incentive to invest by reducing the equilibrium supply of labor. In the case of Asia, low labor hours worked per capita were relatively low in 1950. High and declining labor market distortions help explain both why Asia initially grew so fast as well as why growth levelled off after 1995 (though at sustained high rates), while the initially high level of distortions explain why so little capital flowed into the region.

Relatively little is known about the comparative quantitative importance of international versus domestic market imperfections on international capital flows, because of the inherent difficulty in measuring them. Researchers do not fully understand how large these imperfections have been, how they have changed over time, or how they have influenced global economic activity. International capital market distortions remain important, despite many countries having liberalized their domestic markets to international capital [6].

However, much of the paradox, it is argued, is explained by risk and uncertainty in financial markets as well as governance structures (stability) and institutions (quality of the bureaucracy, degree of corruption and law and order), but it is another thing entirely that capital moves from poor to rich countries even where investment opportunities are good.

#### Is foreign capital a luxury a poor country can do without

Dani Rodrik of Harvard University and Arvind Subramanian of the Peterson Institute, in Washington, DC, reappraised financial globalisation after the GFC.<sup>4</sup> They argue that it is not obvious that developing countries benefitted much from opening to global capital. In principle, the free flow of capital across borders makes funds available more cheaply to poor countries and, by lifting investment, boosts GDP and raises living standards. The trouble is economics research has yet to establish a strong link between freer capital flows and faster economic growth. Perhaps the effect is not picked up in studies because capital flows are hard to measure accurately. The authors are unconvinced: measurement error bedevils many studies, but research has established that policies to improve education or trade are good for growth.

Perhaps foreign capital helps indirectly—by disciplining policymakers or by promoting reforms that improve the financial system. The authors say it is possible to make the opposite argument and find indirect costs. Plausibly, lifting restrictions on capital flows could undermine the domestic financial system because spendthrift governments can tap a larger pool of funds abroad. Also, the well-off have less incentive to lobby for reforms at home if they are free to store their wealth overseas.

Perhaps the gains from globalised finance are latent and get unleashed once catalysing reforms are in place? Maybe, but there are many complementary measures to consider. Economies might benefit from foreign capital more fully if property rights were stronger, contracts enforceable, and if there were less corruption and financial cronyism. But as the authors point out, if poor countries could carry out such ambitious reforms “they would no longer be poor” and financial globalisation (i.e., liberalising capital flows) would not be a policy priority as there is so much else to do first.

Foreign capital ought to be good for countries that have profitable ventures that lack funding because of low savings

at home. But Rodrik and Subramanian argue that for many countries, it is not low savings but a shortage of good investments that is the binding constraint. Weak property rights, poorly enforced contracts, and the fear that profits will be siphoned away make it seem as if ventures cannot generate a reliable return. When investment opportunities are scarce, capital inflows simply displace domestic savings and encourage consumption.

Whatever their misgivings about foreign capital, the authors do not deny that deeper financial markets in general help to foster prosperity. Even in economies short of good investment projects, a sturdier channel connecting domestic savers and borrowers will help growth. The more domestic savings can be put to work, the less need is there for foreign capital, and using local funds helps keep the exchange rate down and promotes export growth. By contrast, encouraging foreign capital to flood in can put upward pressure on the exchange rate, making exports less competitive. In some circumstances, capital controls may be justified if they keep the currency cheap and promote growth.

Why do the authors make such a strong case for export-led growth for development in poor countries, even if it is at the expense of more open capital markets? First, exports are a force for institutional reform. A firm making clothes to sell abroad demands consistent state regulation, reliable transport links and enforceable contracts with suppliers to a degree that a barbershop serving the domestic market does not. Second, exporters foster skills, technology and expertise that can spill over to other enterprises.

China's experience suggests that keeping the currency weak in support of export-led growth becomes harder to sustain over time. Nor is keeping foreign capital out easy. Capital controls can be evaded by adjusting trade invoices: exporters can bring funds in secretly by over-invoicing for foreign sales. The authorities can use sterilised intervention to stop inflows pushing the exchange rate up, but this imposes its own costs on the economy—in terms of higher interest rates or a distorted allocation of credit.

"Economics focus: Policing the frontiers of finance", *Economist*, 12 Apr 2008, p. 83.

So, while capital is more mobile, its direction and relation to the balance of trade is not as expected. In the late 1980s, about \$190 billion passed through the hands of currency traders in New York, London and Tokyo every day. By 1995 daily turnover reached almost \$1.2trn. In 1990, \$50bn of private capital flowed into emerging markets; in 1996 that figure was \$336bn. These figures confirmed what financiers were saying: that the world's capital markets had been transformed. Ever larger sums of money move across borders, and ever more countries have access to international finance [1].

In 2013, around \$5 trillion was traded on the foreign exchange markets every single day. That compared with global trade in goods and services of \$18.3 trillion a year, or about \$50 billion a day. In other words, currency markets are not solely devoted to helping German carmakers turn their export earnings back into euros. Even excluding deals made between banks, financial institutions account for a much larger chunk of foreign-exchange transactions than other businesses. More capital shifts around the world than the value of goods [7].

The relationship between national saving and investment also challenges the notion of an integrated global capital market. In a

<sup>3</sup> Ohanian, L.E, P. Restrepo-Echavarria, and M.L.J. Wright, “Bad investments and missed opportunities?: Postwar capital flows to Asia and Latin America”, *American Economic Review*, 2018, 108(12):3541-3582. <https://pubs.aeaweb.org/doi/pdfplus/10.1257/aer.20151510>.

<sup>4</sup> Rodrik, Dani and Arvind Subramanian, “Why Did Financial Globalization disappoint?”, *Peterson Institute for International Economics*, Mar 2008 [IMF Staff Papers, vol. 56, no. 1, 2009].

world of perfectly mobile capital there should be little relationship between the domestic savings and its investment as capital is free to seek the highest potential return [1]. Martin Feldstein and Charles Horioka<sup>5</sup> documented highly correlated rates of savings and investment in rich countries, suggesting that national borders somehow impeded the free flow of capital [1][2]. The Feldstein-Horioka puzzle held for countries most in a position to benefit from fully integrated capital markets where savings were mobile, yet most investment was financed domestically. In the 1990s, only 10% of investment in emerging economies was financed from abroad [1]. In the 2000s the link weakened as the correlation diminished sharply, particularly within Europe, but with the financial crisis of 2008 it returned (see chart, correlation between saving and investment) [3]. This, again, suggests that capital markets have not fully transcended national boundaries [1].



Examining the prices of financial assets leads to the same conclusion. If world capital markets were perfectly integrated, then identical assets would command the same price everywhere. The returns paid on comparable financial instruments would equalise, so that the rate of interest on a safe dollar-denominated bond of a given maturity would be the same as on a similar sterling-denominated bond, after allowing for the cost of "cover" against the exchange-rate risk. If this were not the case, then arbitrageurs could make money risklessly [1].

Consider a simple example. A US investor has \$1,000 to invest. US interest rates are 6% and UK rates are 8%. By keeping money in the US, the investor would receive \$1,060 after a year. Alternatively, converting the \$1,000 at the prevailing exchange rate, say \$1.60 per pound, would yield £625, which in one year's time will pay £675 (at the 8% interest rate). To eliminate any risk in the transaction, the investor would arrange to sell the £675 at a fixed price a year from now. If the forward exchange rate is \$1.57, the investor would have \$1,060 in a year's time, the same return on a dollar deposit. If the forward exchange rate were the same as the spot rate (\$1.60) then the investor would receive \$1,080 in a year's time, making more money, without risk. Competing investors would push down the forward exchange rate until it hit \$1.57, where both investments have the same return [1].

As industrial countries removed their capital controls, this is exactly what began happening. The divergences from "covered interest-rate parity" fell significantly. Among rich countries, at least, capital markets have integrated to where riskless arbitrage opportunities have vanished. However, non-existence of arbitrage opportunities is not the same as a global capital market. Full integration would equalise the expected rates of return on countries' bonds when measured in a single currency. If investors see UK and US bonds as perfect substitutes, then the expected movements of their currencies against one another should equalise the differential between their interest rates.

Even amongst rich economies this condition does not hold, largely because investors still worry about the risk of unforeseen exchange-rate depreciation [1].

The violation of the covered interest parity rule was perhaps becoming a bigger challenge to the theory in the late 2000s, a rule that was held so firmly that it verged on "a physical law in international finance" as the Bank for International Settlement put it. The interest-rate differential between two currencies in the cash money markets should equal the differential between the forward and spot exchange rates. Or, that relative exchange and interest rates should move in lockstep [8].

By the mid to late 2010s, this was no longer the case. In 2019 the gap between the five-year dollar-euro cross-currency swap was around 40 basis points and 70 basis points for a dollar-yen swap. This is a violation of covered interest parity [8].

Why do investors in the currency markets favour one currency over another? The most consistent factor since the mid-1990s has been the "carry trade". This involves a trader borrowing in a country with low interest rates and investing the proceeds of the loan in a country with higher rates and pocketing the difference. It is odd in theory that the carry trade works. The most likely reason for one country to have higher nominal interest rates than another is because it has persistently higher inflation. Over time one would expect currency depreciation in the high-inflation nation [7].

In the forward markets, which set prices for specified future dates, this rule is rigidly observed. A country with a higher interest rate will see its currency trade at a discount to that of the other nation in the forward market. That discount will exactly offset the rate differential. If euro-zone interest rates were 2% points higher than those in the US, the euro will trade at a 2% discount to the dollar in the 12-month forward market. If it did not do so, traders could earn risk-free profits [7].

The forward market is a naive "forecast" of future currency movements. However, an analysis by Record Currency Management of 33 years of data on five big currencies shows that the currency in the country with the higher interest rate outperforms the forward exchange rate slightly more often than not. This translates into a small monthly gain for investors. Why is this the case? Neil Record, the founder of the currency-management firm, finds that, with the exception of the US (which has the privilege of issuing the world's reserve currency), countries with persistent CA deficits tend to have higher real interest rates than surplus countries. In other words, countries with an addiction to imports have to pay a risk premium to investors to hold their currency [7].

Figures from the Royal Bank of Canada (RBC) show a strategy of being long in the currency with the highest yields (i.e., betting on a price increase) and short the currency with the lowest yields. The most profitable approach since the mid-1990s was the carry trade, exploiting nominal-rate differences, not focusing on real-rate differences (see chart, G10 foreign exchange basket) [7].

One explanation is that nominal rates are a lot easier to target than real ones. Some governments issue inflation-linked bonds, which pay real rates, but these securities are not that liquid. For other bonds the true real rate can only be known in retrospect. Elsa Lignos, a currency strategist at RBC, calculated the returns

<sup>5</sup> Feldstein, M. and C. Horioka, "Domestic Savings and International Capital Flows", *Economic Journal*, vol 90, issue 358, no. 1, Jun 1980, p.

314-29, or National Bureau of Economic Research, NBER working paper, no. 0310, Jan 1979, <https://www.nber.org/papers/w0310>.

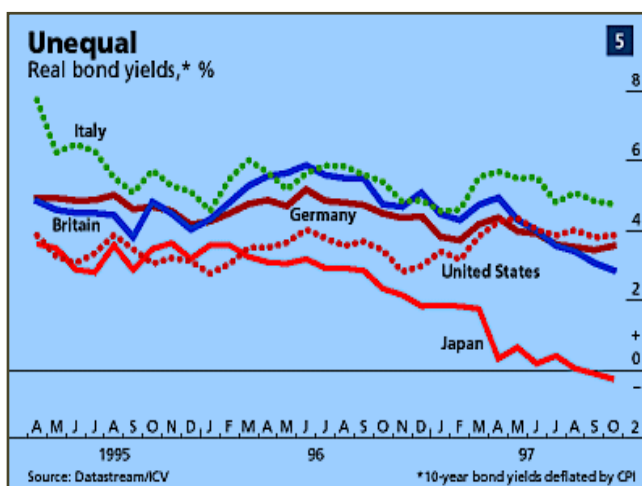


investors would have received had they possessed foresight of the rate differentials between currencies. Even on this basis, knowledge of nominal-rate changes was more important than shifts in real rates [7].



One reason might be that currencies move in line with relative inflation rates (i.e., PPP) only over the very long run. In the short term they can depart a long way from PPP levels. Currency traders are more concerned about the next few weeks than about long-term exchange-rate movements. Traders looking at nominal-rate differentials know exactly what they are and need not worry about complexities such as whether countries use compatible inflation measures. The carry trade may be simple, but it works [7].

A stricter test of capital-market integration, and the one on which the flows of saving and investment really depend, is that real (ie, inflation-adjusted) interest rates should be equal across countries. This requires several tough conditions to hold. Investors must regard assets in different countries as perfect substitutes, and the expected changes in exchange rates must equal the expected inflation differential between two countries. These conditions do not hold. Investors do not regard assets in different currencies as perfect substitutes, nor do exchange rates always reflect inflation differentials. Chart 5 shows that real interest rates differ substantially among rich countries. The differential between rich and poor are even larger. There is no “world” interest rate or a single global capital market [1].

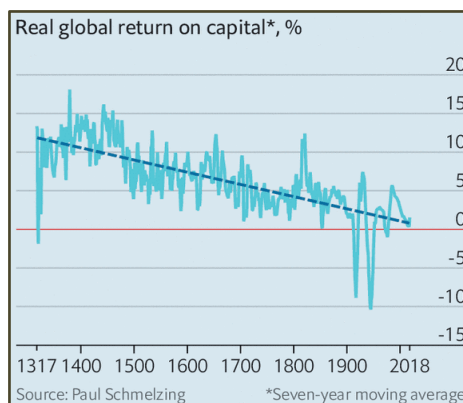


The long-term trends in interest rates have also been a subject of much discussion among macroeconomists. How low can interest rates go? Since the GFC (but before post-covid years) rates had been pushed down to unprecedented levels (near or below zero) by central banks trying to prop up growth. When former US Treasury secretary Lawrence Summers delivered his famous address on the return of secular stagnation at the IMF in 2013, he revived interest in a Keynesian construct that had fallen into disuse since the 1940s [9].

He argued that a chronic excess of savings, relative to capital investment, may be developing in the global economy, forcing long-term interest rates down and threatening persistent shortage of demand. Since 2013, there have been brief periods of strong output growth in the large economies, suggesting that the risks of secular stagnation were abating. But these cyclical upswings proved temporary and the trend decline in global long-term rates towards zero had not ended [9].

Furthermore, the Covid-19 lockdowns caused a seismic shock in all the big economies. Mr. Summers argued that this would trigger structural responses from households and businesses that would strengthen the forces of stagnation. These changes in behavior would include risk aversion in the private sector which would increase permanently, leading to more precautionary savings by households and less investment by businesses. As Summers put it, “just in case will replace just in time”, with private sector wanting to hold greater financial reserves in case of further shocks to globalized markets [9].

Paul Schmelzing of the Yale School of Management gathered information on real interest rates covering 78% of advanced-economy GDP going back to the early 14<sup>th</sup> century, when capitalism and free markets began to emerge.<sup>6</sup> He found that real rates have declined by 0.006-0.016 percentage points a year since the late Middle Ages (see chart, real global return on capital). That may not seem much, but it means real interest rates have fallen from an average of around 10% in the 15<sup>th</sup> century to just 0.4% in 2018 [10].



Over the broad sweep of history, returns have tended to fall as societies become wealthier. Take the following thought experiment. In subsistence societies, almost all the harvest is needed to stay alive. Setting aside capital for seed or housing is desirable. But the surplus is scarce so the rewards for doing without today for the sake of tomorrow – the cost of capital – are high. As economies grow richer, they generate more surplus capital. People are more patient. If you are well-fed, you can afford to wait. Bread tomorrow is almost as good a loaf today. The discount rate is lower [11].

That conclusion undermines the claim that “secular stagnation” is a recent economic malaise. Mr Schmelzing’s data instead suggest that secular stagnation, insofar as it means falling interest rates, has been a feature of capitalism since its birth. Rates falling since the early 1980s may be less the result of acute problems, such as an ageing population, than markets simply snapping back to a centuries-old trend [10].

The data also challenge some of the arguments of Thomas Piketty’s “Capital in the Twenty-First Century”, one of the best-selling economics books of all time. These rely on the claim that the return on capital has stayed constant and been consistently

<sup>6</sup> Schmelzing, P. “Eight centuries of global real interest rates, R-G, and the ‘suprasecular’ decline, 1311-2018”, Bank of England Staff Working Paper, No. 845, Jan 2020.

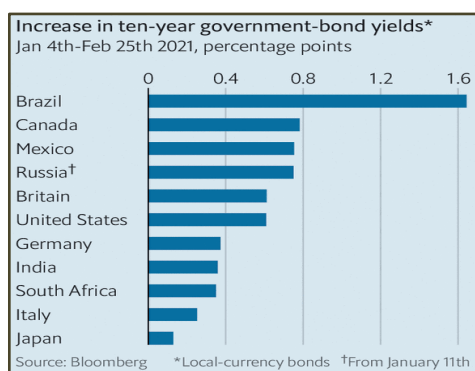
higher than economic growth. Under such conditions, capitalism produces ever-greater income inequality, Mr. Piketty claims, since there are no forces acting against the steady concentration of wealth. If real interest rates—and hence, returns on capital—have been falling for centuries, however, there may well be such a force [10].

Mr. Schmelzing’s conclusions pose an even starker challenge to central bankers. If the historical trend continues, by the late 2020s global short-term real rates will have reached permanently negative territory. By the late 21st century, long-term rates will have joined them. Even unconventional monetary policies, which rely on driving down long-term rates, would then lose traction. Any hopes for nominal rates of 2% or more, in the long term, may prove to be a pipe dream [10].

Relatively recently, other weird things have been happening in the US bond market (which is closely related to the US interest rates and related to foreign rates through interest parity). The first point is that there are short-, medium- and long-term interest rates to consider. While interest rates are correlated, they do not always move together. Interest rates are normally higher for long- rather than short-term borrowing reflecting greater risk over longer periods. Thus, bonds with a longer maturity (e.g., five, ten or 30 years) should have a higher yield than shorter maturities (e.g., one or six months). This should be reflected in a positive yield curve, i.e., a plot of yields on a bond against the length of the maturity. The yield from a 1-month bill to a 30-year bond should be upward sloping. If the spread or gap is narrow, say because the 10-year note offers only a modestly higher yield than a 3-year note, then the yield curve would appear flat. Yield inversion occurs when shorter dated yields are higher than longer-dated yields such as when 6-month bond yields were higher than two and five-year bonds in 2018-19.

A normal yield curve suggests yields on longer-term bonds are expected to increase. Periods of rising rates correspond with periods of economic growth. Rates are lower in the short-term, encouraging borrowing and investment. By contrast, an inverted yield curve signals that yields on longer-term bonds are expected to fall, corresponding with economic recession. When rates in the future are expected to fall, investors are tempted to buy longer-maturity bonds to lock into the higher yields before they fall. High short-term rates delay borrowing and investment decisions.

The 10-year Treasury is a global benchmark bond serving as a barometer of risk appetite in markets and of economic confidence more broadly. The sharp rise in Treasury yields in 2021 was matched by yields on bonds in other places (see chart, increase in 10-year bond yields). Bond prices move in opposite direction to confidence; bond yields go in the same direction as confidence. When the outlook for an economy is bleak, yields fall sharply as investors rush to the safety of bonds [12].



The Treasury yield curve is an indicator of changes in the business cycle, and the inverted yield curve one of the most reliable leading indicators of an impending recession.

Historically, in the US the Treasury yield curve has inverted before recessions – only once has it inverted without preceding a recession. Claudio Borio, chief economist of the BIS observed that this violation was just one of several “anomalies” haunting global finance. There is much about the post-GFC world that regulators are struggling to understand. Perhaps a decade of quantitative easing has created a legacy of half-hidden distortions and unforeseen consequences [8].

Between the GFC and the pandemic, policy rates in major economies were at or below the zero lower bound and traditional monetary policy became redundant. A state in which the equilibrium nominal interest rate throughout the developed world is at or below the central bank policy rate is worrying. One worry is that the world could be stuck at zero and fiscal policy battling against a continuous rise in government debt ratios. Another is that there could be permanent fiscal stimulus with rising debt. With rates so low, government could increase public investment and their budget deficits as a percent of GDP [9].

The low interest rates have implications for asset valuations. In the US the shares of the five biggest tech firms rose by 52% from 2019 to 2020, increasing their combined value of almost \$2trn, roughly equivalent to Germany’s entire stock market valuation. The surge in tech giants’ share prices raised two worries. Whether there was a speculative bubble. The five firms, worth \$5.6trn, made up almost a fifth of the value of the S&P500 index of US shares. The last time the market was so concentrated was 20 years earlier, before a crash that triggered a widespread downturn. The other, opposite concern was that investors may be right. The big tech firms’ supersized valuations suggest their profits would double or so in the next decade, causing far greater economic tremors in rich countries and alarming concentration of economic and political power [13].

The question of a bubble is a reasonable one. Tech cycles are an integral part of the modern economy. The 1980s saw a semiconductor boom. Then, in the 1990s, came PCs and the internet. Each cycle faded or ended in a bust [13]. Adherers to the efficient market hypothesis argue that the mispricing of assets above their true value, i.e. bubbles, is at odds with the sharing of information among market participants who rapidly incorporate it into accurately priced assets. It is unlikely for investors to systematically identify stocks that trade at a price other than their true value to outperform the market in returns. This contrasts with what others refer to as non-rational behavior such as herd behavior when market participants react to information in the same manner or situations where investors might limit the sources of information they receive, ignoring warnings or other market signals.

The late 1900s is seen as a silly era. Investors and market participants joined a gold rush in Silicon Valley throwing good money at sketchy business ideas. The talk of new-era economics was feverish, but there was a genuine surge in productivity in the US. Twenty years later and there is less optimism of this sort. Real long-term interest rates – a rough shorthand for GDP-growth prospects – have rarely if ever been lower. Productivity growth has been dismal [11].

There commonality between the late 1990s and 2020 is steep share prices. The cyclically adjusted price-to-earnings (CAPE) ratio, compiled by Robert Shiller of Yale University, stands a shade above 30. That is a little higher than its level before the 1929 crash, although lower than its peak of 2000. The 1990s optimism on growth was part of the justification for pricey shares. In 2020, there was pessimism and high prices [11].

Bernstein (2013) pointed out that periods of technological change have not been terribly good for stockholders.<sup>7</sup> The booms of the 1920s and 1990s ended badly. The 2<sup>nd</sup> quarter of the 19<sup>th</sup> century – the era of the steam engine, the railways and the telegraph – was no better. Returns on securities were less than spectacular. Historians of Britain’s “railway mania” of the 1840s find that the social and economic benefits of railways were huge, but investors did not do well [11].

The value of a share is in discounted cashflows. If you focus on the “cash-flows” part of this equation, the 1990s narrative had some logic. Productivity picked up. The speed limit of the US economy was raised. More growth means more profits. But as Mr. Bernstein points out, **faster growth does not reliably translate into better returns**. In periods of rapid growth, shares are issued at an even faster rate than the growth in earnings and dividends. Each share has a diminished claim on the larger economy. Such dilution is attributable to technological obsolescence. The existing stock of plant and machinery has to be junked more frequently in a fast-growing economy – and fresh assets have to be financed by issuing new capital [11].

Just as **the extent of capital market integration is often exaggerated**, so is the extent to which capital mobility has **actually changed the environment in which governments work**. Two charges are often made: that financial markets are much more volatile now than they used to be, and that governments’ macroeconomic policies are less effective [1].

The first charge is simply false. **Flexible exchange rates have, almost by definition, brought greater volatility in currency markets, but it is not clear that the prices of other types of assets are more volatile**. Statistical studies show that share prices fluctuated no more in the 1990s than they did when capital flows were limited. Bond markets had been, on average, no more volatile during the 1980s than in the 1970s. **The claim that governments’ macroeconomic policies have become less effective is more complicated. Governments retain their basic tools of fiscal and monetary policy just as much as before. The difference lies in the impact each tool has [1].**

**In an economy where capital cannot flow easily across borders, two basic economic truths hold: (1) greater government borrowing will eventually push up interest rates; and (2) excessive monetary growth will eventually result in higher inflation. These basic constraints are not magically removed with capital mobility [1].**

The big change comes in the relative power of fiscal and monetary policy. **In a closed economy, greater government spending and monetary expansion may increase output in the short term, but in the long term one results in higher interest rates and the other in higher inflation. In an economy open to capital flows, the impact of these levers depends on the exchange rate. If the exchange rate is fixed, then fiscal policy is very effective while monetary policy is muted. If the exchange rate floats, then monetary policy is very effective while fiscal policy is muted [1].**

**Only in one area has capital-market mobility truly limited governments’ choices: exchange rates. When capital was not mobile, governments, at least in the short run, were able to have the stability of a fixed exchange rate while still being able to use monetary policy to expand the economy. This is no longer possible. In a world of more mobile capital, if governments want to fix their exchange rates, then monetary policy must be devoted solely to that goal [1].**

This means that if investors begin to pull out of a country and sell its currency, interest rates must be raised enough to stem the

flow or else the exchange-rate peg will be broken. If the banking system is weak, such an increase in interest rates may cause widespread bank failures. **Pegging the exchange rate to some foreign currency does not automatically make an economy more stable. If domestic economic policies are inconsistent with the rate that has been chosen, a fixed rate can lead instead to greater domestic macroeconomic instability [1].**

It is also true that **countries with relatively small and unsophisticated financial markets face greater risks from opening up to foreign capital** than more advanced countries do. Capital could suddenly flee if, as occurred in Mexico in 1994 and in Thailand in 1997, investors lose confidence in a country’s economic policies. Investors can lose confidence in one country because neighbouring countries are in trouble, i.e., contagion [1].

There are many tools to deal with these risks. Following sensible macroeconomic policies is one. **Making sure that banks are well regulated and well capitalised is another.** A more controversial defence is to be cautious about how quickly to liberalise capital flows. **Some countries, notably Chile, have retained controls on short-term capital inflows, to minimise their vulnerability to currency speculators.** Economists disagree about how effective such controls are in the long term. But it is certainly sensible for countries with underdeveloped financial markets and weak banks to open their financial sectors more gradually [1].

#### **Budget deficits and interest rates**

In line with the **alarming number of large economic and financial imbalances**, was the argument that the price signals that are supposed to bring the world economy back into balance were becoming distorted. The US’s CA deficit widened as Germany, Japan and China set record CA surpluses. Total government debt in rich economies rose to new highs as a percentage of GDP, and in many countries, households were sliding ever further into debt. Many economists tried to explain these trends in terms of underlying structural factors, such as differences in demographic trends or productivity growth. [14].

The rapidly rising US CA deficit, as theory would have it, should cause investors to demand higher interest rates to compensate them for the increased risk of currency depreciation. **Dearer money then helps to dampen domestic spending and thus trim the external deficit.** This is what happened when the US’s CA deficit exploded in the first half of the 1980s. Real bond yields rose, cooling domestic demand. Along with a cheaper dollar, this helped reduce the deficit [14].

In the **mid-2000s**, however, the adjustment mechanism jammed: **real US bond yields fell rather than rose, partly because Asian central banks were eager to buy US Treasury bonds to prevent their currencies’ values from rising.** So long as low yields continued to support the US’s housing bubble and hence strong consumer spending, they blocked any significant reduction in the country’s CA deficit [14].

Patrick Artus, chief economist at IXIS, a French investment bank, pointed to the disappearance of another equilibrating force that would normally help to correct financial imbalances. In the past, a **rapid rise in consumer borrowing and spending would cause a central bank to push up interest rates to curb inflation.** In the 2000s, however, **inflation was held down by cheap goods from China and other low-wage economies,** and inflationary expectations were well anchored thanks to the credibility of central banks. As a result, **central banks were able to hold interest rates below the growth in nominal GDP** (the income from which debts must be serviced) for a prolonged period. This, in effect, lifted any constraint on credit growth, **allowing a bigger build-up of private-sector debt [14].**

<sup>7</sup> Bernstein, W.J., “The Paradox of Wealth”, *Financial Analysts Journal*, 2013.



A third broken circuit in the mid-2000s was that between interest rates and growth. Sluggish economies with low inflation require lower real interest rates than economic sprinters. This speeds up the tortoises and holds back the hares. Yet despite its faster growth, US's real bond yields were lower than Japan's and about the same as in the euro area. Yields were arguably too low for the US, but too high for Germany and Japan, causing the growth gap to persist.

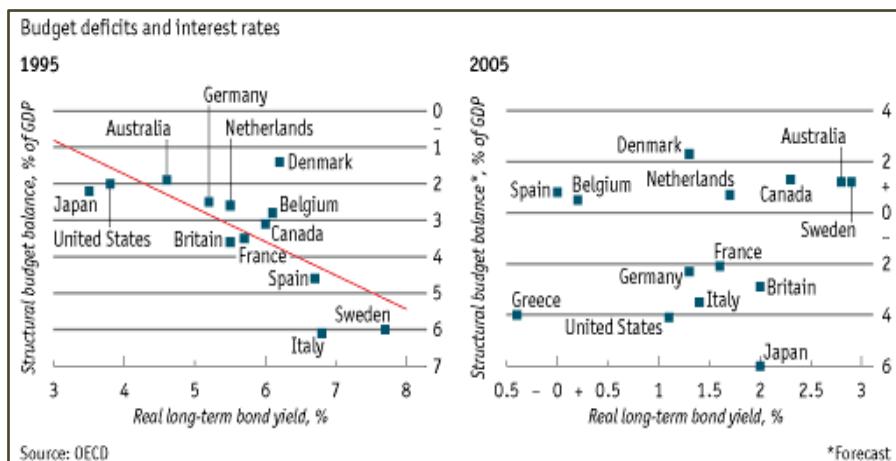
Europe's single monetary policy also severed the link between short-term interest rates and economic performance within the euro area, said Mr Artus. Because all member states share the same nominal interest rate, slow-growing economies with lower inflation, such as Germany and Italy, have higher real interest rates than fast growers, such as Spain and Greece. This was the exact opposite of what was needed, exacerbating the divergence in growth rates [14].

Euro-area interest rates were giving the wrong signals to governments as well as to consumers. Yields on government bonds barely differed, despite differences in countries' fiscal health. In the early 1990s, yields on ten-year government bonds were 450 basis points higher in Italy than in Germany. In 2005, Italy paid a penalty of only around 20 basis points, even though its ratio of public debt to GDP was almost twice Germany's. Such thin interest-rate spreads gave governments little incentive to trim their deficits. The convergence in yields reflected mainly the removal of exchange-rate risk since the creation of the single currency, but that still leaves default risk. The Maastricht Treaty explicitly forbids the European Central Bank to bail out any member country, but the markets clearly reckon that there is little chance that a government would be allowed to go bust. Interest rates and bond yields are the traffic lights of the global economy; they tell economies when to go and when to stop. When traffic lights break down in the ways discussed above, there is a risk that the global economy can get snarled up or even crash [14].

The liberalisation of international capital flows has undoubtedly increased the power of global capital markets. Combined with new technology and financial innovation, this should have made markets more efficient at disciplining economic performance. The market would punish economies where governments or households borrow recklessly with higher bond yields, prompting them to tighten their belts. Prudent economies would be rewarded with lower real rates. So what has gone wrong? [14]

The chart with budget deficits and interest rates shows that in 1995, countries with big budget deficits did generally pay a penalty in higher real long-term interest rates (i.e., lower real bond yields from higher risk). By 2005, as the right-hand panel shows, there is no correlation at all between borrowing and real interest rates. An OECD study in 1995 found that countries with big CA deficits over the previous decade tended to have higher real bond yields. An update of that analysis by *The Economist* showed that this relationship had broken down, too. Financial markets seemed to work poorly as economic watchdogs: in particular, the US's profligacy was being subsidised rather than punished [14].

Some convergence in real bond yields is a natural consequence of a global capital market. In a closed economy, if a government increases its budget deficit it must pay higher interest rates to persuade domestic investors to hold more bonds. But if it can tap global savings, it can borrow more cheaply because a smaller rise in rates is needed to attract the required funds. Even



so, a more efficient international capital market is supposed to ensure that capital is allocated to the most productive use. Yet much of the inflow of foreign money into the US was not financing productive investment, but a housing bubble and a consumer binge [14].

#### Interest-rate caps: a remarkably common bad idea

In some countries, high inflation can help explain high interest rates, albeit less so than in the past. Interest rates also price in risk. Assessing borrowers is hard when they often lack credit histories. Chasing up bad loans is a struggle. Creditors can only expect to recover one shilling in every five they have lent to a business that goes insolvent in Tanzania, according to the World Bank. In Niger, the resolution process takes five years, on average [15].

Many bankers save themselves the hassle by lending to the state instead. The double-digit interest rates that the government pays set "a floor" on the rates paid by everyone else, says Adam Mugume of Uganda's central bank. In the average African country, according to the European Investment Bank, lenders' holding of public debt increased from 14% of their assets in 2008 to 19% by 2017 [15].

Banks abuse their market power to rip off customers. The World Bank estimates that the banking system in the typical African country is no more concentrated than in Europe or Latin America but the fact that banks can sustain high profits could suggest that they have some market power. In some smaller countries, the market is even more concentrated. Competition for small business loans is weaker than for corporate deals [15].

Governments have tried and failed to bring rates down. In 2016, the Kenyan government wanted to address this problem. Its banks would not lend cheaply to the private sector. Tired of asking nicely, the government took putting a cap on commercial banks' interest rates: charging borrowers more than four percentage points above the central bank's base rate, which stood at 10.5%, was illegal. Under the same law, banks had to pay depositors at least 70% of the central-bank rate. Shares of the largest Kenyan banks plummeted by 10% in response to news of the cap [16].

In Nigeria the central bank penalises banks that do not meet lending targets. But it also pushes up interest rates through tight monetary policy, intended to keep the naira strong. Banks must hold lots of liquid assets, such as cash and treasury bills, and keep on hand at least 27.5% of their deposits, one of the highest ratios in the world [15].

Kenya's cap was scrapped in 2019 [15]. However, the World Bank in 2014 found then that at least 76 countries imposed a limit on interest rates. Half the countries in sub-Saharan Africa had such caps. Rich countries were also fond of them. In the US, 35 states have ceilings on payday-loan rates. Lending at a rate of more than 17% in Arkansas, for

example, is forbidden; any higher, and the borrower can claim back double the illegal interest paid [16].

The financial crisis of 2007-08 seems to have made governments more willing to intervene in this way. From Japan to El Salvador, lawmakers have either tightened their existing caps or slapped on fresh ones. British financial regulators limited interest rates on payday loans in 2015 [16].

Policymakers usually mean well: by controlling the cost of credit, they may hope to improve access to finance. But rate caps often have precisely the opposite effect. The most expensive loans are pricey because they go to the riskiest borrowers: younger firms without collateral, poorer consumers without credit histories. If lenders cannot charge interest rates that reflect these risks, they may not lend at all. Hence, one consequence of inter-rate caps is that credit flows to safer borrowers rather than to needy but risky businesses [16].

When microfinance loans in West Africa became subject to interest-rate limits, small loans to the poorest borrowers in the most remote areas were the first to be axed. In Nicaragua an interest ceiling introduced in 2001 reduced lending growth from 30% a year to just 2%, according to a local microfinance body. After Ecuador introduced rate caps in 2007, the average size of bank microloans jumped, indicating that smaller loans had become less viable. A cap on payday-loan interest rates in Oregon, which became binding in 2007, increased the share of people reporting difficulties in getting short-term credit by 17-21 percentage points: many resorted to paying bills late instead. With fewer options to choose from, some borrowers may instead turn to loan sharks. One study suggests that illegal lending was at the time more widespread in Germany and France than in Britain because of their penchant for price caps [16].

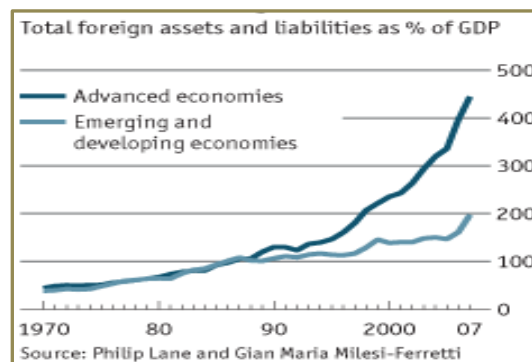
Sometimes conventional lenders keep extending credit but recoup their costs in other ways. A study of car loans in the US between 2011 and 2013 found that dealer-lenders jacked up the price of cars, and thus the amount of credit they were extending, in response to interest-rate limits. Borrowers ended up no better off. In Nicaragua and South Africa lenders introduced so many extra fees and commissions in response to interest-rate caps that loans became more expensive overall. An interest-rate ceiling introduced in 2005 in Poland prompted lenders there to add a convenience fee that handily fell outside the definition of administrative fees and charges, also capped at 5%. A review by the European Commission found that rate limits were unlikely to cut the level of over-indebtedness [16].

No one doubts that price-gouging happens. Some people should not be borrowing in the first place. But rate caps target a symptom of a malfunctioning credit market, not the underlying problem. Exorbitant interest rates usually stem from weak competition or from insufficient information about borrowers and lenders. Transparency about fees, more sources of funding and credit scoring all tackle market failures much more directly than price caps. In Kenya's case, a fiscal splurge has pushed up interest rates on government debt so much that banks make healthy returns by lending to the government and have scant incentive to make the effort to lend to the private sector. Ham-fisted price manipulation might make for good politics, but imposing rate caps is shoddy economics [16].

### Did global financial integration go into reverse in 2008?

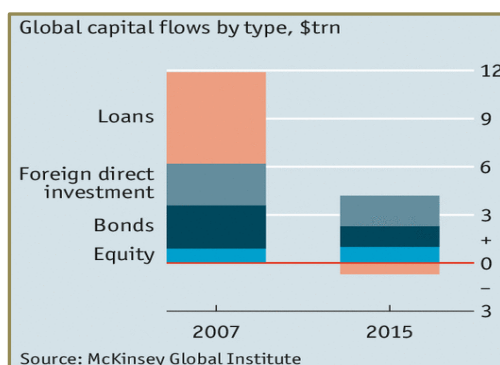
Finance was the sector that globalised the most in the years leading up to the GFC, particularly in the rich world [3]. Figures compiled by an IMF economist show that the stock of foreign

assets and liabilities held by rich countries rose fivefold relative to GDP in 30 years and doubled in the 10 years to 2007 (see chart, foreign assets and liabilities). The financial integration of emerging economies was more modest, but also increased considerably since 1995—though with a peculiar twist. Emerging economies, in net terms, exported capital to the rich world as their central banks built up vast quantities of foreign-exchange reserves [2].



Since then, this particular aspect of globalisation has stalled, and even partly retreated. The reversal is illustrated by the triennial survey of foreign-exchange markets, conducted by the Bank for International Settlements (BIS) [17]. While global cross-border bank flows increased about tenfold between 1990 and 2007, by 2012, the figure was less than a third of that. The decline extended across all regions, though Europe suffered most [3]. Global daily turnover in April 2016 was \$5.1trn, down from \$5.4trn in April 2013. Spot (or instant) currency trading fell by 19% in three years. Cross-border banking claims peaked in the 1<sup>st</sup> quarter of 2008 at \$34.6trn. In the 2<sup>nd</sup> quarter of 2010, they had dropped to \$27.9trn, and by 2016 they had not recovered their pre-crisis levels. In the 2<sup>nd</sup> quarter of 2016, claims were only \$28.3trn. [17].

These are signs that markets have been a little less frenetic. Part of this may be a consequence of events in the euro zone, where the sovereign-debt crisis caused banks to cut back their lending to weaker economies. Add up all financial flows, including direct investment, and in 2015 cross-border volumes were only half 2007's level, according to McKinsey, a consultancy (see chart, global capital flows) [17].



This is not necessarily bad news. After all, as Asian countries found out in the 1990s, too much "hot money" flowing into an economy can be destabilising. It can drive exchange rates out of line with economic fundamentals, making a country's exporters less competitive. A rising currency may also tempt domestic companies to borrow abroad. Then, when the hot money flows out and the exchange rate collapses, those borrowers struggle to repay their debts. The result can be a financial crisis [17].

The implications of deglobalisation depend on why the slowdown is happening. There could be a link to economic fundamentals. World trade volumes grew regularly at an annual rate of 5-10% in the run-up to the crisis; in the eight years after, they managed only 2% or so. In 2015 exports were a smaller

proportion of global GDP than they were in 2008. With trade growing less rapidly, so did the demand for credit to finance it. However, as the BIS data points out, trade accounts for only a small proportion of capital flows. Thus, the downturn is mainly because of events within the financial sector itself [17].

Before the GFC, cross-border banking activity was closely correlated with measures of risk appetites. When the economic outlook was good, banks were happy to lend abroad; in the face of shocks, they retreated back to their home base. Research by the Bank of England shows that the picture changed after the crisis; there was simply a more general retreat by the banking sector from foreign commitments. Part of this may reflect a lack of demand for loans from companies and individuals that had overstretched during the boom years, but the biggest reason was probably the weakness of the banking sector. It was deprived of some sources of funding (money-market mutual funds, for example) and was forced by the regulators to rebuild its balance-sheet [17].

The reversal happened for two reasons: (1) the banks' own efforts to deleverage, either to shed money-losing operations and assets or to meet stiffer capital requirements; and (2) the realisation that cross-border banks were an important channel for transmitting the US mortgage crisis and the sovereign-debt crisis in peripheral Europe to other countries. To limit such spillovers and save taxpayers having to bail banks out of their foreign misadventures, regulators around the world sought to ring-fence their banking systems [3].

First, some background. The new finance, whose heart was on Wall Street and London, was the highly leveraged, lightly regulated, market-based system of allocating capital dominated by Wall Street. It was the successor to "traditional banking", in which regulated commercial banks lent money to trusted clients and held the debt on their books. The new system evolved from the 1970s and saw explosive growth since 2000 thanks to three simultaneous but distinct developments: deregulation, technological innovation, and the growing international mobility of capital [2].

Its hallmark was securitisation. Banks that once made loans and held them on their books now pool and sell the repackaged assets, from mortgages to car loans. In 2001 the value of pooled securities in the US overtook the value of outstanding bank loans. Thereafter, the scale and complexity of this repackaging (particularly of mortgage-backed assets) hugely increased as investment banks created an alphabet soup of new debt products. They pooled asset-backed securities, divided the pools into risk tranches, added a dose of leverage, and then repeated the process several times over [2].

Meanwhile, increasing computer wizardry made it possible to create an array of derivative instruments, allowing borrowers and savers to unpack and trade all manner of financial risks. The derivatives markets grew at a stunning pace. According to the Bank for International Settlements, the notional value of all outstanding global contracts at the end of 2007 reached \$600 trillion, some 11 times world output. A decade earlier it had been "only" \$75 trillion, a mere 2.5 times global GDP. In a few years the fastest-growing corner of these markets was credit-default swaps, which allowed people to insure against the failure of the new-fangled credit products [2].

The innovations of modern finance generated great profits, but were these innovations the root cause of post-2008 mess? That depends, in part, on whether you begin from the premise that financial markets are efficient, or that they are inherently prone to irrational behaviour and speculative excess [2].

In retrospect, much of the rise in cross-border lending was foolish. It made both European and US banks more vulnerable to a sudden drop in asset prices and increased the risk of a credit

crunch. McKinsey's work shows that cross-border bank lending is far more volatile than other capital flows such as bonds, equities and direct investment. Research by the Bank of England showed that since 2000 lending by foreign banks was far more cyclical than by domestic bank lending [3].

Less financial globalisation should also reduce the risk that contagion from one country's banking problems will cause economic damage elsewhere. That is the lesson of the Asian banking crisis of 1997-98. In many countries loans in 1997 exceeded deposits by 20%, says Mr van Steenis, with the gap made up by wholesale funding, often from abroad. When that funding disappeared, many banks were on the verge of collapse, prompting the authorities in the countries concerned to put a cap on the use of such funding. This had the positive effect that Asian banks suffered very little contagion from either the US mortgage crisis or the European sovereign-debt crisis [3].

However, reduced cross-border links come at a price. If a country suffers a domestic shock, it must bear more of the consequences itself. Although regulators fret over shocks to a bank's foreign parent or withdrawal of that parent's support, Peter Sands, head of Standard Chartered, a UK bank, observed that "there are lots of examples of shocks in the market when the support of the parent is needed." International banks provided vital funding to South Korea during its crisis in 1997 and to Dubai in 2009 when a state-owned developer almost defaulted. "International flows of funds in the banking system can be a source of contagion but also of resilience," said Mr Sands [3].

Financial fragmentation also challenges one of the great promises of globalisation: that savings-poor countries will be able to find the wherewithal to finance essential investment by borrowing abroad. The return to national borders impeding the free flow of capital was starkest in Europe, where Spanish and Italian businesses were obliged to pay 80-160 basis points more than German ones to borrow. This is because of the higher rates on sovereign debt in those countries and fewer deposits from healthier countries. A less integrated financial market makes it less likely that German savers will finance dodgy Spanish loans. However, it also makes it more likely that they will finance low-yielding German loans, sending high-yielding Spanish businesses away empty-handed [3].

In addition, financial fragmentation means less competition for often cosseted domestic banks from nimbler foreign rivals. Studies of foreign banks entering Australia, Indonesia, the Philippines and Colombia found that they reduced interest-rate spreads and made domestic banks more efficient (although sometimes also more likely to make bad loans) [3].

The Financial Stability Board, an international body which tries to ensure uniform implementation of new capital and liquidity standards across most countries, pushed for a European banking union. Unfortunately this process exposed divisions. The biggest US banks, for instance, maintain a higher leverage ratio (a type of capital requirement) than stipulated by Basel 3 (a global regulatory framework on bank capital adequacy). And although a single European supervisor replaced national regulators for the euro zone's biggest banks in 2014, prospects for a common deposit insurance and resolution regime remain uncertain, for much the same reason that made the entire crisis so intractable in Europe: creditor nations such as Germany, Finland and the Netherlands are deeply reluctant to make their taxpayers foot the bill for bank failures in debtor countries [3].

A market less in thrall to speculators might seem like an unalloyed boon. But the retreat of banks from currency trading (and from market-making in other instruments such as corporate bonds) may not be quite such good news. In a crisis, the banks may not be around to trade with investors seeking to offload their positions; the BIS notes signs of "volatility outbursts and



flash events". Lots of investors and companies want to hedge their currency exposure. They need an institution to take the other side of the trade [17].

### A case against integration or a case for regulation?

The alternative view that financial markets are inherently unstable [2] and hopelessly prone to wild cycles [18] suggest there are periods of stability which always lead to excess and eventual crisis [2]. When an economy is purring, profits go up, as do asset values. Rising asset prices flatter borrowers' creditworthiness. When credit is easier to obtain, spending goes up and the boom intensifies. Eventually perceptions of risk shift, and tales of a "new normal" gain credence: new technologies mean profits can grow forever, or financial innovation makes credit risk a thing of the past. When the mood turns, the feedback loop reverses direction. As asset prices fall, banks grow stingier with their loans. Firms feel the pinch from falling sales, get behind on their debts and sack workers, who get behind on theirs. The desperate sell what they can, so asset prices tumble, worsening the crash. Mania turns to panic [18].

Thus, freer financial markets only lead to greater damage. This view was famously expounded by Hyman Minsky, a 20<sup>th</sup>-century US economist. Minsky argued that economic stability encouraged ever greater leverage and ambitious debt structures. Stable finance was an illusion [2].

The trouble is that financial innovation does not occur in a vacuum but in response to incentives created by governments. Many of the new-fangled instruments became popular because they got around financial regulations, such as rules on banks' capital adequacy. Banks created off-balance-sheet vehicles because that allowed them to carry less capital. The market for credit-default swaps enabled them to convert risky assets, which demand a lot of capital, into supposedly safe ones, which do not [2].

Politicians also played a big part. The US housing market—the source of the greatest excesses—has the government's fingerprints all over it. Long before they were formally taken over, the two mortgage giants, Fannie Mae and Freddie Mac, had an implicit government guarantee. Charles Calomiris of Columbia University and Peter Wallison of the American Enterprise Institute pointed out that the market for subprime mortgages exploded after 2004 because these institutions began buying swathes of subprime mortgages because of a political edict to expand the financing of "affordable housing" [2].

History also shows that financial booms tend to occur when money is cheap. Money, particularly in the US, had been extremely cheap. That was partly because a long period of low inflation and economic stability reduced investors' perception of risk. Also, because the US central bank kept interest rates too low for too long, and a flood of capital entered Western financial instruments from high-saving emerging economies [2].

So, modern finance should not be indicted in isolation. Its costs and benefits are, at least in part, the result of the incentives to which the money men were responding [2]. Hence, financial globalisation did just what it was meant to, perhaps a little too well. Cross-border bank flows expanded enormously between 2000 and 2007, with 80% of the increase coming from Europe, according to McKinsey, a consultancy. Those flows enabled debtor countries such as the US, Spain and Greece to finance housing booms and government deficits without paying punitive interest rates. However, a large part of those flows reflected banks' own leverage as they both borrowed and lent heavily abroad [3].

Tellingly, the event that touched off the crisis in the summer of 2007 was an announcement by France's BNP Paribas that it was suspending redemptions to an investment fund heavily invested in US mortgage securities. Eventually a number of banks across

Europe needed government bailouts because of losses sustained on mortgages in the US and elsewhere [3].

The cost of bailing domestic banks out of foreign misadventures exposed one risk of financial globalisation; the losses sustained by domestic creditors and savers when foreign banks went bust showed up in another. In 2008, when Landsbanki, an Icelandic bank, went bust, UK and Dutch depositors had to be bailed out by their own governments because Iceland would guarantee only Icelandic deposits. Sir Mervyn King, the former governor of the Bank of England, famously commented that "global banks are international in life but national in death" [3].

A financial system that ends up with a government taking over some of its biggest institutions and which required the promise of \$700 billion in public money to stave off catastrophe is not an A-grade system. Paul Volcker, former chairman of the US Fed, gave financiers a D grade along with a devastating critique. "For all its talented participants, for all its rich rewards," he said, the "bright new financial system . . . failed the test of the marketplace". The disappearance of all five big US investment banks—through bankruptcy or rebirth as commercial banks—is powerful evidence that Wall Street . . . failed [that] test" [2].

Why exactly? The fashionable answer was an indictment of speculators, greedy Wall Street executives and free-market ideologues. A more serious analysis, however, needs to distinguish between three separate questions. First, what is Mr Volcker's "bright new financial system"? Second, how far was the mess created by instabilities that are inseparable from modern finance, and how far was it fuelled by other errors and distortions? Third, to the extent that modern finance does bear the blame, what is the balance between its costs and its benefits, and how can it be improved? [2]

Some popular suggestions would not yield much. Much was made, for instance, of reforming credit-rating agencies, which encouraged the creation of mortgage securities by publishing misleading assessments of their quality. The problem with credit-rating agencies lies in the tension between their business model and their use as a regulatory tool. The markets and regulators use ratings to determine the riskiness of an asset. Yet credit-rating agencies are paid by the issuers of securities and so have an inbuilt incentive to tailor their ratings to their clients' needs [2].

Another suggestion was to change the incentive structures within financial institutions to discourage reckless and short-term behaviour. The US government's bail-out put curbs on the pay of the bosses of rescued banks. Governments are ill placed to micromanage the incentive structure within banks. Besides, even firms with compensation systems that encouraged their managers to lend carefully got into trouble. In both Bear Stearns and Lehman Brothers employees owned a large part of the firms' shares. Could tighter government oversight produce better results? No one doubts that the US's complicated, decentralised and overlapping system of federal and state financial supervisors could be improved. (AIG, for instance, is technically supervised by New York.) The enormous new markets, such as the \$55 trillion global market in credit-default swaps, need more oversight. Better disclosure and transparency are necessary in the newest financial instruments, but it would be unwise to expect too much. An entire government agency was devoted to overseeing the housing-finance giants, Fannie Mae and Freddie Mac, but that did not stop them behaving recklessly. A striking feature of the crisis was that hedge funds, the least regulated part of the finance industry, have proved more stable than more heavily supervised institutions [2].

Similarly, re-regulation should proceed cautiously and with an eye to unintended consequences. Just as innovations of modern finance, such as credit-default swaps, have been used to avoid the strictures of today's bank regulation, so tomorrow's

innovations will be designed to arbitrage tomorrow's rules. The rule-makers are fated to be one step behind. Nonetheless, improvements are possible. The most promising avenue of reform is to go directly after the chief villain: excessive and excessively pro-cyclical leverage. That is why regulators are had to rethink the rules on banks' capital ratios to encourage greater prudence during booms and cushion deleveraging during a bust. It also makes sense for financial supervisors to look to the stability of the financial system as a whole—and not just at the national level [2].

The market itself asked for dramatic changes—away from highly geared investment banks towards the safety of lower leverage and more highly regulated commercial banks. Improvements to the financial infrastructure were made, such as the creation of a clearing house for trading credit-default swaps, so that the collapse of a big force in the market, such as AIG, does not threaten to leave its counter-parties with billions of dollars in worthless contracts [2].

Regulators around the world, working through the Financial Stability Board, an international committee of central bankers, regulators and finance ministers, have tried to reduce the threat of a big bank collapse and the need for a bailout, but many of these efforts have undermined banks' incentive and ability to do business across borders. For example, domestic regulators used to allow foreign banks to rely on the capital, liquidity and regulatory oversight of the foreign parent. Now many of them are pressing units of foreign banks, and foreign units of domestic banks, to maintain sufficient liquidity and capital independent of the parent, sometimes by organising themselves as subsidiaries rather than branches [3].

The US Federal Reserve was to require foreign banks above a certain size to collect all their local units into a single, separately capitalised holding company that met the same capital and liquidity requirements as US banks do. Previously, the Fed relied on foreign regulators to ensure that the parent bank could support its US units. The proposal prompted a flurry of opposition [3].

Nor is it just banks that have to abide by tighter rules. The US Commodity Futures Trading Commission (CFTC) ruled that anyone trading swaps with a US bank's foreign unit must generally go through a central clearing house. Gary Gensler, the CFTC's chairman, rattled off a litany of financial disasters involving offshore affiliates: AIG had run its derivatives out of London; Lehman's London affiliate had 130,000 outstanding swaps contracts, many guaranteed by its US parent; Citigroup had set up many off-balance-sheet vehicles in the Cayman Islands; and JPMorgan Chase suffered huge losses on trades in London. "Risk...comes crashing back to our shores from overseas when a run starts in any part of a modern, global financial institution," says Mr Gensler [3].

The CFTC agreed to exempt foreign swaps customers that operated under similar rules abroad, and the Fed had yet to issue its final foreign banking rule. But US regulators, like their counterparts overseas, stuck to their guns. "We will not let the pursuit of international consistency force us to lower our standards," said Jack Lew, the Treasury Secretary, in July 2013 [3].

Even when regulatory initiatives are not explicitly discriminatory, they make cross-border banking harder. Benoît Coeuré, a member of the ECB's governing board, noted that Basel 3's new set of international capital and liquidity standards for banks was being implemented differently across countries: capital was measured differently under US and international accounting rules, and even within Europe, Britain, France and Germany proposed different bank holding-company structures. "If you have an idiosyncratic local legal environment, then market participants will find it safer just to play on their home

turf because of the legal uncertainty that goes with international activities, and we'll lose the benefit of international financial integration," he says [3].

Such changes have undermined the case for global banks. Huw van Steenis at Morgan Stanley comments that "if I'm a German bank, one of my edges is I have really cheap funding in Germany because I have more deposits than loans. If that advantage goes away, one of their unique selling points goes, too." Morgan Stanley estimates that banks' cross-border claims within the euro zone fell from nearly \$4 trillion in mid-2008 to about half that amount in 2013 [3].

Regulation was only one factor at work. Another was the need to deleverage to shore up capital and meet higher capital requirements. This was most apparent in Europe, where banks shed loans and bonds in troubled peripheral economies. Non-residents went from holding 43% of Spain's and Italy's sovereign debt in 2010 to 35% in 2013. US money-market funds cut their exposure in Europe by 60% since 2010 [3].

In some countries regulators quietly pressed banks to increase domestic lending to boost their economies, at the expense of foreign operations. In others they became more explicit. The UK's Funding for Lending scheme, launched in 2012, offered banks cheap central-bank financing for increasing lending to UK households. The US Volcker rule exempted that country's debt, but not that of other sovereigns, from restrictions on banks' proprietary trading [3].

But leverage can be tackled in other ways too. Governments, for a start, should stop subsidising it. The US, for example, should no longer allow homeowners to deduct mortgage interest payments from their taxable income. Governments should stop giving preferential treatment to corporate borrowing as well. Private-equity firms are encouraged to load companies with debt because tax codes favour debt over equity [2].

The point is that governments should not view financial reform in a vacuum. Modern finance arose in an environment created by regulators and politicians. As Hank Paulson, the treasury secretary, told Congress during hearings about the US government's GFC bail-out plan: "You're angry and I'm angry that taxpayers are on the hook. But guess what: they are already on the hook for the system we all let happen." Whether that system is improved depends on whether politicians recognise their own role in shaping—and distorting—financial markets [2].

### Costs versus benefits of financial integration

Given government intervention and policy distortions, did the new-fangled finance boost economic growth, welfare and stability [2]? Critics answer no on all three counts. Mr Volcker points out that the US economy expanded as briskly in the financially unsophisticated 1950s and 1960s as it has done in the early 2000s. But things other than finance were different in the 1950s, so such a simple comparison is hardly fair. While economists are divided on the theoretical importance of finance for growth, the balance of the evidence suggests that it does matter [2].

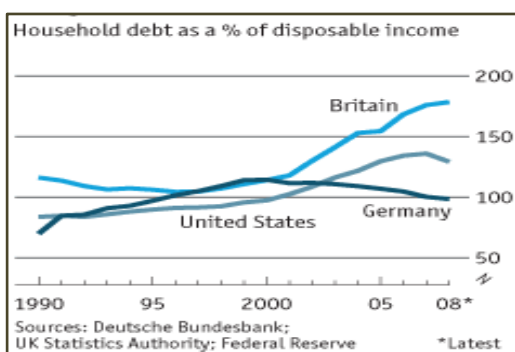
According to Ross Levine, an economist at Brown University, numerous cross-country studies show that countries with deeper financial systems tend to grow faster, particularly if they have liquid stockmarkets and large, privately owned banks. Growth is boosted not because savings rise but because capital is allocated more efficiently, improving productivity. Within the US, states which deregulated their banking systems most in the 1970s grew fastest. In 2006 IMF economists compared deregulated Anglo-Saxon financial systems with more traditional bank-dominated systems, such as Germany's or Japan's, and found that Anglo-Saxon systems were quicker to reallocate resources from declining sectors to new, fast-growing ones [2].

Many economists argue that financial innovation, and the quick reallocation of capital that it promotes, was one reason why US productivity growth accelerated in the mid-1990s. Technology alone cannot explain that advance, because inventions such as the internet and wireless communications were available to any country. What set the US apart was the strong incentives it offered for deploying the new technology. Corporate managers knew that if they adapted fast, the US flexible financial system would reward them with access to cheaper capital [2].

However, not every technological breakthrough improves productivity. The bonanza in mortgage-backed securities helped create a glut of new homes that did little to promote long-term growth. Finance's focus on housing, rather than more productive forms of investment, may have had more to do with the government guarantees inherent in housing than finance itself [2].

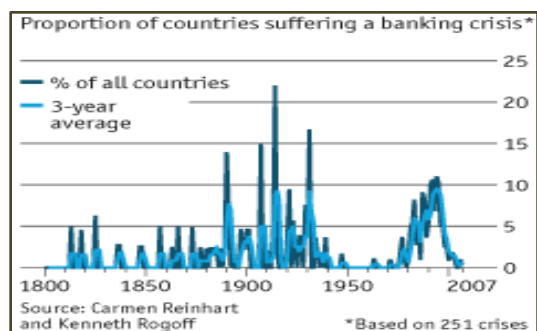
What about people's lives? Even if financial innovation does not boost growth, it can still improve welfare. Modern finance improved people's access to credit. This "democratisation of credit" let more people own homes (and most subprime borrowers do keep up with their payments). It enabled more households to smooth their consumption over time, reducing financial hardship in lean times. Studies show that consumers in Anglo-Saxon economies cut their spending by less when they suffer temporary shocks to their income than those in countries with less sophisticated financial systems. Smoother household consumption often means a smoother economic cycle, too [2].

In light of the 2007-08 bust, the welfare calculus needs revisiting, not least because broader access to credit plainly fuelled the housing bubble. Demand for complex mortgage securities led to a loosening of lending standards, which in turn drove house prices higher. Wall Street's computer models, based on recent price histories, underestimated how much the innovation was pushing up house prices, understated the odds of a national house-price decline in the US and so encouraged an unsustainable explosion of debt (see chart household debt). US household debt rose steadily, from just under 80% of disposable income in 1986 to almost 100% in 2000. By 2007 it was 140%. Once asset prices started to come down and credit conditions tightened, this borrowing binge left households—and the broader economy—extremely vulnerable. Not surprisingly, the "wealth effect" (the extent to which a change in asset prices affects people's spending) is bigger in the indebted Anglo-Saxon economies than elsewhere. If financial innovation fuelled the bubble, so it would exaggerate the bust [2].



That leads to the critics' third point: that far from enhancing economies' resilience, modern finance has added to their instability. Mr Volcker, for instance, points to the absence of financial crises just after the Second World War. At that time finance was tamed by the rules and institutions introduced after the Depression, but the 1950s were unusual. Carmen Reinhart of the University of Maryland and Ken Rogoff of Harvard surveyed financial crises in "This Time is Different: Eight Centuries of Financial Folly". Their numbers suggest that, despite all that financial innovation, recent years have seen a

surprising period of quiet—at least until the current crash (see chart, proportion of countries suffering a banking crisis) [2].



The incidence of crashes is only one measure of risk, however: their severity also matters. In theory, derivatives, securitisation and a choice of financing should spread risk, increase the financial sector's resilience and reduce the economic damage from a shock. Before securitisation, the effect of a crash was intensely concentrated. A property bust in Texas meant mortgages held by Texan banks failed, starving Texan companies of capital. The expectation was that today's decentralised and global system would spread risk and reduce the economic impact of a financial shock. In *The Age of Turbulence*, Alan Greenspan points to the aftermath of the telecoms bust in the late 1990s, when billions of dollars went up in smoke but no bank got into trouble [2].

At first that resilience seemed to be on display during this crisis too. The fact that mortgage defaults in Cleveland or Tampa triggered bank losses in Germany was a sign of the system working, but that resilience proved ephemeral. One reason was that risk was more concentrated than anyone had realised. Many banks originated mortgage-backed securities but then failed to distribute them, holding far too much of the risk on their own balance-sheets. That was a perversion of securitisation, rather than an indictment of it [2].

More troubling to proponents of modern finance was the crippling impact on market liquidity of uncertainty about the scale of risks and who held them. To work efficiently, markets must be liquid. One year after the 2007 crash, showed that uncertainty breeds illiquidity. High leverage ratios and a reliance on short-term wholesale funding rather than retail deposits, two features of the new finance, left the system acutely vulnerable to such a panic. Forced to shrink their balance-sheets faster than traditional banks, the investment banks, hedge funds and other creatures of the new finance may have made the economy less resistant to a financial shock, not more [2].

S Lall, R Cardarelli and S Elekdag published research in the IMF's *World Economic Outlook* arguing that the economic impact of financial shocks may be bigger in countries with more sophisticated financial markets. The study looked at 113 episodes of financial stress in 17 countries over the past three decades and assessed the effect on the broader economy. Financial crises, they found, are as likely to cause downturns in countries with sophisticated financial systems as in those where traditional bank-lending dominates. But such downturns are more severe in countries with the Anglo-Saxon sort of financial system, because their lending is more pro-cyclical. During a boom, highly leveraged investment banks encourage a credit bubble, whereas in a credit bust they have to deleverage faster [2].

Excessive and pro-cyclical leverage is clearly dangerous, but was it caused by new financial instruments and deregulation? Not by itself. Financial excesses often occur in the aftermath of innovation: e.g., the dotcom bubble or the 19th-century boom-bust in the railways. But throughout history, loose monetary conditions have fuelled the cycle: cheap money encourages



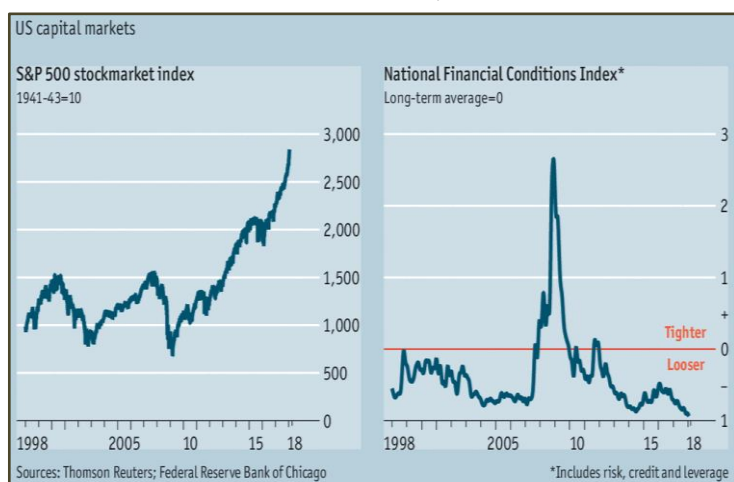
leverage which boosts asset prices, which leads to more leverage. Sophisticated finance spread havoc in a new way [2].

A decade after the most serious financial crisis since the Depression, the world watches soaring markets with a mixture of serenity and glee. Governments, though, deserve heaps of blame for policies that amplify both boom and bust. As regulators begin picking apart reforms only just enacted, it is worth asking why that is so [18].

Carmen Reinhart and Kenneth Rogoff, two economists, point out in *This Time is Different* that eight centuries of financial pratfalls have not persuaded investors to treat financial booms with the requisite caution. You might expect Joe Daytrader to succumb to the lure of financial excess, but the chronically poor response of governments is more perplexing. Regulators could dampen frenzies by asking banks to raise their equity-to-assets ratios or to tighten lending standards. Regulation could be “countercyclical”, in other words, leaning against the natural financial cycle to limit excess, prepare financial institutions for bad times, and leave more room for leniency when the economy is on the ropes. Governments have got better at leaning against turns in the business cycle, so that recessions are less common and less severe than they once were. It seems strange that finance should be different [18].

Indeed, regulation is often “procyclical”: it adds fuel to the fire. Ten years prior to the GFC, the US rolled back Depression-era bank regulations, protected liberal trading rules for derivatives, presided over a wave of banking-industry consolidation and tolerated a dangerous drop in mortgage-lending standards. The ensuing crisis prompted a wave of new financial regulation, but 10 years on and these rules were being weakened, even as exuberance returns. In 2018, the US Congress was expected to tweak the Dodd-Frank Act to limit the application of some rules to the largest banks. While the Republican congress seemed to lack the votes to eliminate the new Consumer Financial Protection Bureau, President Trump’s choice to run it, Mick Mulvaney, long expressed a desire to neuter it. The Federal Reserve drafted plans to reduce bank-capital requirements. (Post-crisis revisions to the Basel bank-capital standards for global banks encouraged regulators to set a countercyclical capital buffer, which should rise with financial excess; the Fed’s is currently set at zero.) Not every element of the deregulatory push is reckless, and the US is tougher on some aspects of capital than others, but the timing seems poor—coming amid historically easy financial conditions and soaring asset prices (see chart, US capital markets) [18].

One reason is that regulators are, like everyone else, too eager to conclude that this time is different. Many proposed post-crisis reforms offered technical solutions to the industry’s problems, such as better measures of financial instability or reforms to



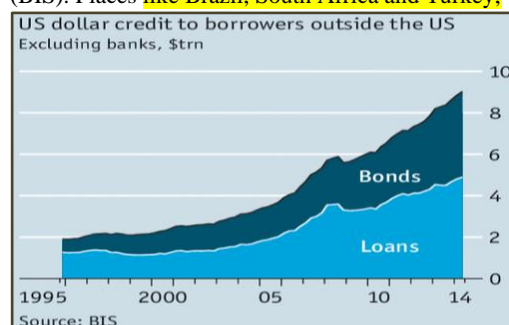
CEO pay to improve bank behaviour (and reduce the need for robust regulation). Yet in finance, as in much of economic policy, problems that look technical are in fact political. As Charles Calomiris and Stephen Haber describe in their book “Fragile by Design”, governments are not neutral observers of the financial system; they also depend on it, for their own financing needs, among other things. This co-dependency means that the evolution of banking regulation is shaped by bargaining between bankers and politicians, not all of which aims to maximise social welfare [18].

An IMF working paper<sup>8</sup> examined the political-economy elements of ten financial crises, beginning with the South Sea Bubble in Britain, and finds they had much in common. Often a financial crisis is preceded by periods in which light-touch regulatory thinking was in the ascendant. Such an approach becomes less tarnished as memories of past crises recede, and opening credit taps often brings short-run political rewards. As deregulation proceeds, politicians’ electoral hopes—and, sometimes, their own financial interests—rely on the burgeoning booms. So they become more sympathetic to financial interests. When Britain’s Parliament voted to protect the value of shares in the South Sea Company, for example, many of its members owned some. Crises are usually followed by a political backlash, which sweeps in new leadership with a mandate to regulate. Warren Buffett’s famous financial axiom—that only when the tide recedes can you see who has been swimming naked—also applies to politics. At times of financial excess, voters cannot easily tell responsible leaders from reckless ones. Negligence becomes obvious only later. That makes recklessness an attractive political strategy [18].

Is there any hope of escaping such cycles? Central-bank independence helped depoliticise business-cycle management. Giving central banks more regulatory responsibility, as many countries did after the crisis, might therefore help (though it might also encourage politicians to meddle more with central banks). Curbing the power of the financial industry might prove more effective, but for now there is little political appetite for bold strategies such as breaking up large banks. If this time is different, it is only because the lessons of history have been discarded so quickly [18].

### Low US interest rates and emerging-market dollar debt

In 2015, the strengthening dollar, the result of the increase in the relative economic strength, led to expectations of an interest-rate “lift-off” by the US Federal Reserve, which would give reason for investors to take their money there [19]. That action by the head of the US central bank, Janet Yellen, influenced more than \$9 trillion in borrowing in dollars by non-financial companies outside the US (see chart, US dollar credit). Dollar borrowing was everywhere, but the biggest growth was in emerging markets. Between 2009 and 2014 the dollar-denominated debts of the developing world, in the form of both bank loans and bonds, more than doubled, from around \$2 trillion to some \$4.5 trillion, according to the Bank for International Settlements (BIS). Places like Brazil, South Africa and Turkey,



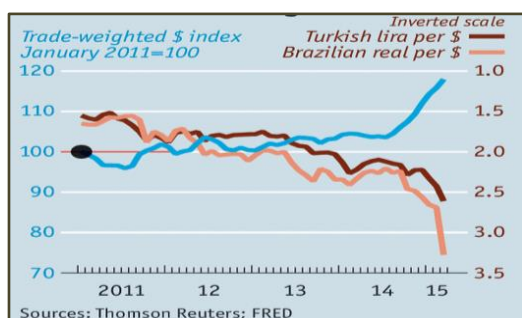
<sup>8</sup> Dagher, J., “Regulatory cycles: Revisiting the political economy of financial crises, IMF working paper no. 18/8, 15 Jan 2018.

<http://www.imf.org/en/Publications/WP/Issues/2018/01/15/Regulatory-Cycles-Revisiting-the-Political-Economy-of-Financial-Crises-45562>

whose exports fell far short of imports, financed their CA gaps by building up debts to foreigners [20].

Even countries without trade gaps borrowed heavily. With interest rates on US assets so meagre—a five-year Treasury bond paid just 1.5%—those with dollars to invest sought out more rewarding opportunities. Firms based in emerging markets seemed to fit the bill. Some were big names: state-owned energy giants like Russia's Gazprom and Brazil's Petrobras were issuing dollar bonds via subsidiaries based in Luxembourg and the Cayman Islands. Others were smaller. The Lodha group, an Indian property developer, Eskom, a South African power generator, and Yasar, a Turkish firm making TV dinners, sold dollar-denominated bonds. By borrowing dollars at several percentage points below the prevailing interest rate in their domestic currency, CEOs pepped up short-term profits [20].

But finance rarely offers a free lunch. The worry was that tumbling energy prices meant firms like Gazprom and Petrobras had lower dollar income than expected when they took on debts. Others, such as Lodha, Eskom and Yasar, had few dollar earnings. Taking on debt just before a shift in exchange rates can be painful. In 2010 a Turkish firm borrowing \$10m via a ten-year bond with a 5% coupon could expect to pay 22.5m lira (\$15m) over the life of the bond. The lira was down 43% against the dollar since then (see chart, trade-weighted \$ index); the payments were over 39m lira in 2015 [20].



Where foreign debts and earnings line up there is little reason to worry. Asian firms' foreign-currency debts tripled from \$700 billion to \$2.1 trillion between 2008 and 2014, going from 7.9% of regional GDP to 12.3%, according to economists at Morgan Stanley, a bank. To see whether the surge was bearable, the economists looked at the accounts of 762 firms across Asia. The findings were reassuring: on average 22% of their debt was dollar-denominated, but so were 21% of the earnings. Although Asian firms were a big part of the emerging-markets' borrowing binge, on the whole they seemed well placed to cope with a rising dollar [20].

Yet there were still two reasons to worry. First, the outlook for China was a puzzle. The country held \$1.2 trillion in Treasury bills, many of which sat in its sovereign-wealth fund. When the dollar rises, the fund gets richer. But even in a dollar-rich country, there can be pockets of pain. China's firms built up a nasty currency mismatch. Almost 25% of corporate debt was dollar-denominated, but only 8.5% of corporate earnings were. Worse, this debt was concentrated, according to Morgan Stanley, with 5% of firms holding 50% of it [20].

Chinese property developers were the most obviously vulnerable. Companies selling offices and houses had earnings mostly in yuan. Banned from borrowing directly from banks, they were active issuers of dollar bonds. They also borrowed from trust companies, according to Fitch, a rating agency. The trusts were themselves highly leveraged and borrowed dollars via subsidiaries in Hong Kong. This arrangement amplified the economic pain of falling property prices in China [20].

The second problem was that whole economies, rather than just the corporate sector, looked short of dollars. In Brazil and

Russia, for instance, bail-outs of firms lacking greenbacks blurred the lines between the state, banks and big companies. The general scramble for dollars contributed to the plunge of the real and the rouble. Others followed this path. Turkey's dollar borrowing grew rapidly since 2009: in addition to the debts Turkish firms took on, the state's external debt grew to almost 50% of GDP, far above the average for middle-income countries (23%). South Africa looked worrying too: its CA deficit was the widest of any big emerging market, and the government's external debt was 40% of GDP [20].

Thus, it was odd to see a procession of emerging-market officials call on the Fed to get on with the interest rate hike, the sooner the better. Central bankers from India, Indonesia, Malaysia, Mexico and Peru were among those professing a desire for US rates to rise [19].

One explanation is that they were a little like patients waiting a procedure, tired of the excruciating wait and just hoping to be done with it, i.e., the painful consequence of capital outflows. Capital had already begun to be diverted away from developing countries towards the US. In 2010-14 non-residents put \$22 billion into emerging-market stocks and bonds every month, on average. In Nov 2015 they moved \$3.5 billion out, the fourth month of such outflows of the past five, according to the Institute of International Finance, a trade association [19].

Further monthly outflows would put more pressure on the beleaguered currencies of many emerging markets. Depreciation made their hefty external debts even more daunting. Dollar credit to non-banks outside the US reached \$9.8 trillion in mid-2015; a bit more than a third of that was owed by borrowers in emerging markets, according to the Bank for International Settlements, a forum for central bankers [19].

To defend their currencies, central banks can raise interest rates in line with the Fed. Peru, Chile and Colombia all did that in anticipation of lift-off, as had Angola, Ghana, Zambia and others. Higher domestic interest rates, though, come at a cost, dampening economic activity. They also make it more expensive for companies to refinance domestically, a problem since the bulk of their new debt in recent years has been in their local currencies [19].

Another explanation for their *sang-froid* in the face of the Fed was that the worst might already be behind them. It was been a brutal year for the assets and currencies of many developing countries. Average real exchange rates for emerging markets, excluding China, were as weak as in late 2002, when investors still had raw memories of the crises of the 1990s [19].

A decade of furious growth had dimmed those memories, but 2015 revived them. The MSCI index of emerging-market equities fell by 15% (see chart, emerging-market indices), badly underperforming developed markets and hitting its lowest level since the height of the financial crisis in 2008 [19].



In 2013, investors dumped emerging-market assets when the US signalled the beginning of the end of its programme of quantitative easing. That episode came to be known as the "taper tantrum". The fear was that a golden era of growth,

fuelled by China's ravenous appetite for commodities, had come to a close, exposing deep cracks in their economic foundations. David Lubin of Citigroup, a bank, talks of a "broken growth model". Governments cannot stimulate their economies because their creditors will not tolerate big deficits. Companies are also unable or unwilling to invest more because they built up big debts. Exports are of little help because many of these economies were now overly reliant on commodities [19].

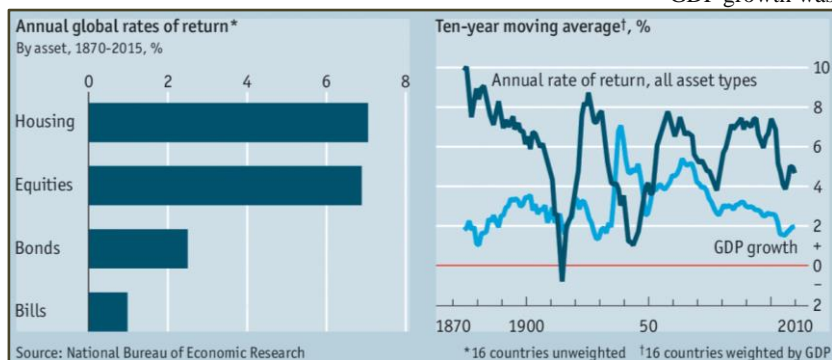
### Asset returns

The key asset price, the one that sets the tone in other markets, is the long-term interest rate. Long-term real interest rates have fallen steadily since the early 1980s, and stood at historic lows in the late 2010s [21].

In 2017 research spelt out the rates of return on important asset classes, for 16 advanced economies, from 1870 to 2015.<sup>9</sup> The work is a source of insight into some of today's great economic debates. Rates of return both influence and are influenced by the way firms and households expect the future to unfold [22].

The authors built a database of historical macroeconomic and financial for many countries over long a period. For each of the 16 economies, they craft long-term series showing annual real rates of return—taking into account both investment income, such as dividends, and capital gains, all net of inflation—for government bonds and short-term bills, equities and housing [22].

The authors establish some new basic economic facts. Over the very long run it is housing, rather than equities, which provides the best return (see chart, rate of returns): both asset types yielded about 7% a year on average over the 145 years, but equity returns are much more volatile. While homeowners might cheer this news, it is not necessarily a reason to leap into the housing market. Rental yields account for about half of the long-run return on housing, and owning a diversified portfolio of rent-yielding property is not the same bet as borrowing to house the family [22].



Besides offering these baseline findings, the authors' work helps to answer several pressing economic questions. One example is the puzzle of declining interest rates. The falling rates of the past few decades distress some economists, who worry they betoken weak growth and complicate central bankers' ability to manage the economy. Yet the long-run data reveal that the high rates of return on government debt seen in the 1980s were an anomaly. The real return on bonds and short-term bills is normally relatively low—and can even be negative for long periods of time—as some other economists (such as Carmen Reinhart of Harvard University and Belen Sbrancia of the IMF) have also found. Recent declines therefore represent a return to more typical conditions [22].

That, in turn, suggests that central bankers who hope to "normalise" interest rates may be in for a rude surprise. But low rates of return also mean that government-debt burdens may prove easier to manage than thought—and perhaps that government borrowing could be used more aggressively in times of economic weakness to make up for central-bank impotence. Nor do low rates of return on government debt imply that the world is entering a period of "secular stagnation", or chronically weak growth. Low rates have in the past been as much a feature of rip-roaring economies—eg, in the 1950s and 1960s—as of the more stagnant ones experienced recently [22].

More bracing still are the data's implications for debates on inequality. Karl Marx once reasoned that as capitalists piled up wealth, their investments would suffer diminishing returns and the pay-off from them would drop towards zero, eventually provoking destructive fights between industrial countries. That seems not to be true; returns on housing and equities remain high even though the stock of assets as a share of GDP has doubled since 1970. Gravity-defying returns might reflect new and productive uses for capital: firms deploying machines instead of people, for instance, or well-capitalised companies with relatively small numbers of employees taking over growing swathes of the economy. High returns on equity capital may therefore be linked to a more tenuous status for workers and to a drop in the share of GDP which is paid out as labour income [22].

Similarly, long-run returns provide support for the grand theory of inequality set out in 2013 by Thomas Piketty, a French economist, who suggested that the rate of return on capital was typically higher than the growth rate of the economy. As a consequence, the stock of wealth should grow over time relative to GDP. If wealth is less evenly distributed than income, then growth should push the economy towards ever-higher levels of inequality. Mr Piketty summed up this up in the expression " $r > g$ ", where " $r$ ", which the authors calculate as the average return across all assets, both safe and risky, is well above " $g$ " or GDP growth, at most times and places. Since 1870, they reckon, the average real return on wealth was about 6% a year whereas real GDP growth was roughly 3% a year, on average (see chart,

right-hand panel). Only during the first and second world wars did rates of return drop much below growth rates. In recent decades, the "great compression" in incomes and wealth that followed the world wars has come undone, as asset returns persistently outstrip the growth of the economy [22].

Consider the post-Great Recession asset price boom. Usually when asset prices boom, people get excited. When US stockmarkets scaled wild peaks in 1929 and 1999 they did so amid feverish enthusiasm.

Search for such euphoria on Wall Street in 2017 and you would come back empty-handed. A study of the numbers make it hard to see why. Over the past 136 years the cyclically adjusted price-earnings ratio (CAPE), a useful measure of how expensive stocks have become, reached its 2017 heights only twice before: during the dotcom bubble; and just before the Crash of '29 [21].

Why does this remarkable surge not spur frantic enthusiasm—or for that matter deep trepidation? One reason is that in most market bubbles you can point to a particular type of asset which is seeing its price rise inexorably: tech stocks in the 1990s; houses in the mid-2000s. In 2017, though, the US and much of the rest of the world were amid a bull market in almost everything: stocks, bonds and property were all strikingly

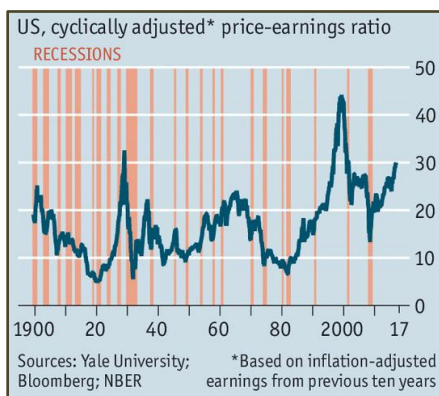
<sup>9</sup> Òscar Jordà, Katharina Knoll, Alan Taylor, Dmitry Kuvshinov and Moritz Schularick, "The rate of return on everything, 1870-2015", NBER Working Paper, 24112, Dec 2017.



expensive compared to long-term averages, and getting more so. When everything goes up, things are less exciting, and perhaps less worrying [21].

The hunger for assets that drove up prices also led investors to take more risks—risks which may not have been fully priced into their investments and which they may not have fully understood, any more than they understood the risks of mortgage-backed securities and other instruments in the run up to the financial crisis of 2007. The underlying driver of this oddly broad bull market, low long-term real interest rates, had conflicting explanations—some benign, others less so [21].

Start with the evidence that stocks are dear. Investors find CAPE a useful measure because the price of stocks reflects the value investors assign to profits. Since 1881, the average CAPE for the S&P index of the 500 biggest stocks listed in the US was 17. In 2017, it rose to 30 (see chart, price-earnings ratio) [21]. The rise in US equities in Oct 2017—the S&P 500 was 13% higher than it was on January 1st—was almost matched by stockmarkets in Europe and Japan, and outpaced by those in emerging markets. When measured against a benchmark similar to CAPE, European and emerging-market stockmarkets were not as strikingly priced as US ones, but they were above their long-run average and could not be regarded as cheap, even if they less expensive-looking than US stocks [21].



Or take property. In countries that were unscathed by the GFC, such as Canada and Australia, house prices were far above their long-run average, relative to the cost of renting. In the US, where house prices plunged in the crisis, they surpassed their peak of 2008 in nominal terms, and were back above their long-run average relative to rents. In the UK, property prices were close to their peak against both average earnings and rents (see chart 2, house price to rents) [21].



In bond markets credit spreads narrowed dramatically. These spreads, which are the gaps between the interest rate offered by safe bonds, such as US Treasuries, and by riskier ones, such as those issued by companies or other countries, are a measure of how much compensation investors require to bear the extra risk. When the price of a risky bond rises relative to the price of a safe benchmark, the credit spread narrows. The high-yield or

junk bonds, those rated below investment grade, the spread narrowed (chart 3, spreads) [21].

At the same time as the supply of savings has risen, the demand for investment has fallen. The trend growth rate of rich-world economies has been dropping. The real cost of plant and machinery has fallen and the value of firms, particularly in the technology industry, has shifted increasingly to intangible assets rather than physical assets; both those things mean the amount of investment needed for a given output has fallen. So the corporate sector ends up swimming in cash, adding yet more to the swollen supply of savings [21].

The third factor is the role of central banks. The reason long-term interest rates are low, the argument goes, is because short-term interest rates were low for a long time. Central banks held them close to zero for almost a decade (longer, in Japan). They pushed down long-term interest rates more directly by buying \$11trn-worth of government bonds and other assets since 2009—in part as an attempt to push investors into riskier assets, thus ginning up the economy. Little wonder long-term interest rates are low [21].

It is not quite as simple as that, comes the response. Central banks are as much shaped by economic trends as shapers of them. The increased desire to save has changed the terms of monetary policymaking. Just as the real rate of interest that balances the demand for long-term saving with supply has fallen, so has the “neutral” rate of interest which keeps inflation stable when the economy is at full capacity. If the central banks were really keeping interest rates and bond yields too low, the economy would overheat and inflation would take off. There was not much evidence of this [21].

In the absence of inflation, it was reasonable to expect low interest rates to persist, and thus unsurprising that the prices of stocks, corporate bonds and property go up. If the yields on risk-free bonds stay depressed, then the expected returns on all other assets—the earnings yields on equities, say, or the rental yield on houses—must fall into line [21].

In some ways, this makes high asset prices less worrying. If the real interest rate is low and looks likely to stay that way, then discount rates will fall, too. That makes future earnings more valuable and goes some way to justifying paying a high price for them. Thus, in a low-interest-rate world those high CAPE numbers make a lot more sense [21].

As logical as all this seems, though, there is nevertheless a nagging sense that something was amiss with such high-priced assets. What if, for instance, inflation is sending a false signal about where real interest rates should be? If that were the case, central banks might indeed be keeping rates lower than they ought to. This is the case made by Claudio Borio at the Bank for International Settlements (BIS), a clearing house for central banks and a font of contrarian thinking [21].

Central banks steer by the inflation rate as mariners steer by their compasses. If it rises, the economy is overheating and the ship must adjust its trim. If it falls, the economy needs a dose of monetary stimulus; the sails must be unfurled. The problem, Mr Borio says, is that the compass no longer reads true [21].

Globalisation, the decline of union power and technological change mean that inflation does not perk up when the jobless rate falls in quite the way it used to; the short-term trade-off between inflation and the unemployment rate, known as the Phillips Curve, has weakened to the point of breakdown.

Inflation has been depressed by real factors, says Mr Borio. By keeping interest rates low in a vain attempt to fine-tune it, central banks are instead amplifying a cycle of boom and bust [21].

This episode suggests that central banks can indeed have a lasting influence on real interest rates. If so, a decade of aggressively loose monetary policy may well have weighed down bond-market rates—and thus, for a while at least, people's idea of the neutral real rate. Indeed higher bond prices may have induced some investors, such as insurance funds, to themselves buy more bonds, driving down interest rates in a self-reinforcing spiral [21].

## STABILIZING THE INTERNATIONAL FINANCIAL SYSTEM

### Banking and bank regulation

There is little argument that banks that started the GFC. Banks are special institutions at the heart of capitalism, providing the link between savers and borrowers: granting loans to those in need of credit and offering a safe place to lock away cash. Yet banks also have a dark side: they exist to manage risk, but often stockpile it too [23].

To see why banks are vital, start with the finances of a typical household or firm. Their debts—mainly mortgages on homes, offices or factories—have fixed terms often with fixed interest rates. There is much certainty in that debt, but the financial assets of firms and households are not bound by such rigid terms. Deposits can be withdrawn with little notice, bonds and equity can be sold quickly if cash is needed or if investment tastes change. This combination of fixed-term debts and flexible assets is a comfortable set-up [23].

However, one party's asset is another's liability, meaning banks cannot adjust their assets (the loans it makes) while their liabilities (customers' deposits) can be called in overnight. If debts are called in more quickly (depositors rush to demand their money back) than assets can be sold (or a rush to sell assets forces cut-price asset sales), then insolvency looms. Managing that risk is what banks do: by banks holding a risky balance-sheet households and firms can have safe ones [23].

Since the maturities of their assets (long-term loans) and liabilities (short-term deposits) do not match up, banks tend to give themselves some margin for error. They build resilience into their finances in two ways. Liquid assets, e.g. cash and government bonds, can be sold quickly at relatively certain prices are a safety valve. If investors suddenly shun a bank's bonds or depositors withdraw large sums, liquid assets can be sold to cushion the hit [23].

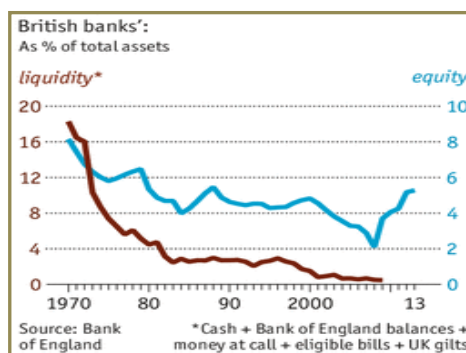
Second, balance-sheets can shrink for other reasons too. The value of a bank's riskier assets—mortgages, bonds, loans to companies—can drop sharply if borrowers run into trouble. The danger is that the value of the bank's assets could fall below its liabilities: owing more than it owns causes a bank to go bust. To forestall such failures, banks maintain equity. This represents the money a bank's owners have invested in it. Equity takes the first hit when asset values drop. Since the bank's owners absorb the loss, its creditors—bondholders and depositors—can rest assured that they will not have to [23].

Holding liquid assets and equity are costly. Some rough rules of thumb show why: the return on cash is zero, a liquid asset such as a government bonds might yield a measly 2-3%. In contrast, mortgages might generate 5% and unsecured lending closer to 10%. Picking safe assets lowers returns. In addition, equity investors might expect a return (via dividends or capital gains on their shareholding) of around 12%, compared with the 4% or so demanded by bondholders [23].

This sets up a tension between stability and profitability which banks' bosses must manage [23]. Capital in a bank does many things. The first job is to absorb losses, acting as a cushion to protect those who have entrusted the bank with their money from the mistakes of those who own and run the bank. The second job is to restrain bankers' instinct for gambling by raising the stakes. Some banks had too little capital before the crisis. Their failure to manage that tension lies at the heart of the crisis [24].

One simple equation explains their dire performance: Return on equity (RoE) = Return on assets (RoA) x Leverage. The idea is straightforward. A bank's equity-holders gain when the return on its assets rises. Maximising RoE means holding fewer safe assets, like cash or government bonds, since these provide low returns. When returns on all asset classes fall, as in the early 2000s, banks have another way to boost RoE: leverage (the ratio of their assets to their equity). Banks can increase their leverage by borrowing more from depositors or debt markets and lending or investing the proceeds. That gives them more income-generating holdings relative to the same pool of equity. In the short run, shareholders gain [23].

Of course, skimping on safety mechanisms makes banks riskier. The UK's biggest banks rewarded their senior staff based on RoE targets. Bosses duly maximised short-term profits, allowing liquid assets and equity to fall to historic lows (see chart, British banks). By the mid-2000s leverage was out of control. Consider the Royal Bank of Scotland (RBS) and Citi, respectively the biggest UK and US banks in 2007 (RBS was also the biggest in the world). Official reports show that these lenders had leverage ratios of around 50 when the crisis hit: they could absorb only \$2 in losses on each \$100 of assets. That helps explain why the US subprime market, although only a small fraction of global finance, caused such trouble [23]. RBS needed a huge bail-out not because its losses were large but because it entered the crisis with a dangerously thin capital cushion of about 3.5% [24].



Thus, at the centre of the debate about bank safety is the question of how much capital banks should be required to hold as a cushion. Having too little capital in the system may leave it crisis-prone and in need of regular bail outs. Too much capital, could result in huge swathes of the banking business becoming unprofitable, resulting in higher borrowing costs and slower economic growth. A more pressing danger is that money and risk flow into more dangerous and unregulated parts of the economy, making the system less stable [24].

In the 2000s this became possible thanks to two sorts of innovation. The first concerned the very rules on banking under the original international capital accord (i.e., minimum capital requirements, supervisory reviews to assess risk, and transparency and market discipline concerning banks). Under the Basel I accord set in 1988, banks were meant to hold capital worth 8% of their assets. Since some assets are safer than others, and some banks are better at lending safely than others, it seemed sensible to allow banks to calculate how much capital they needed, gauged by the probability of their own loans defaulting. Basel II, a revised set of rules in 2004,

explicitly permitted this. Banks with creditworthy clients could hold the least capital; those pursuing riskier business held more. Yet financial models of the riskiness of loans failed badly when put to the test because they were based on data gathered in an unusually benign economic climate [24].

The second set of innovations concerned capital. Before the crisis, bankers and lawyers created new sorts of instruments that were supposed to be as cheap for banks as debt (interest payments in many countries are tax-deductible whereas dividends are not), yet still looked sufficiently equity-like to satisfy regulators. Each new tweak on a capital instrument just pushed the boundaries [24].

The main regulatory response were regulations under Basel III set in 2011. These were more stringent than its predecessors on four basic measures of safety. It requires banks to: (1) hold more equity, (2) hold more liquid assets, (3) leverage themselves less (the maximum asset to equity ratio is now 33), and (4) to rely less on short-term funding [1]. The work of implementing the new rules meant that national regulators had to keep two risks in mind. The first is that differences in rules, both between countries and between different markets, might encourage risk to migrate to darker corners of the financial system. Second, having come this far, rule makers needed to address bank resolution. The real test of regulation is whether a big bank can fail without hurting taxpayers [25].

In countries where banks required bail outs or where the financial sector's liabilities were much bigger than the economy (making bail-outs ruinous), regulators were determined to go further. The most radical option considered was to carve up lenders deemed "too big to fail". Splitting them into smaller and simpler banks would make oversight easier and prevent a bankruptcy from upending the local economy or the government's finances. But unravelling and reappportioning assets and liabilities could be impossibly tricky [23].

Another alternative was to ban banks from the riskiest activities. In the US, a rule proposed by Paul Volcker, a former head of the Federal Reserve, prevented deposit-taking banks from engaging in "proprietary trading" (in essence, investing in stocks, bonds and derivatives using its customers' money). In theory, the "Volcker rule" shielded deposits from traders' losses. In practice, it is difficult to distinguish between trading conducted with a view to serving customers and that done solely for the bank's benefit [23].

Regulators in Europe took a different tack. In both UK and the euro zone, they proposed "ring-fences" to separate customer deposits from banks' other liabilities. Against them, banks would only be allowed to hold assets like cash, government bonds and loans to individuals and firms. Activities deemed riskier, such as trading in shares and derivatives and underwriting companies' bond issuance, would sit outside the ring-fence, backed by a separate stash of capital [23].

However, even with the new ring-fences in place, banks would still grant mortgages, which can be a risky business. Take UK commercial-property lending (loans on offices and shopping centres). It is a large part of the mortgage market, over 20% of GDP at its peak. It is also volatile: commercial-property prices fell by almost 45% between 2007 and 2009. In the US the share of even the best "prime" mortgages in arrears topped 7% in early 2010. None of this risk would be outside the ring-fence or blocked by the Volcker rule [23].

A third alternative is getting banks to hold an additional cushion of convertible capital and bail-in debt. Convertible capital instruments, usually known as Cocos, are the simpler of the two. These are bonds that turn into equity if the bank's capital ratio falls too low. Swiss regulators were the most enthusiastic initially. They asked their two biggest banks to hold Cocos

worth up to 9% of their risk-weighted assets (out of total capital of 19%) in 2011. As they saw it, Cocos were not just a way for the banks to increase their capital reserves on the cheap but might also make them a bit more cautious, knowing that their shareholders would suffer big losses from dilution if the Cocos ever convert. There were some worries about whether investors would buy the billions of dollars of Cocos that would have to be issued, but they lifted somewhat when Credit Suisse raised \$8 billion in February 2011 [24].

Bail-in debt involves the banks converting some of their long-term debt into equity. This is similar to Cocos, but would ideally apply to all of a bank's long-term debt instead of just a thin sliver of it, making it more controversial. Surprisingly, bond investors are generally more comfortable buying bonds that could be bailed in than they would be buying Cocos. The difference is that the former would convert only when a bank actually went bust, at which point they would be taking losses anyhow, not when the bank was merely ailing. These sorts of instruments can take years and have yet to prove themselves in a crisis [24].

All this turns banks from champions of capitalism into affronts to it, reliant on rigged markets and taxpayer subsidies. Regulators worked to change that. In a 2012 joint paper the Bank of England and the FDIC, the agency that insures bank deposits in the US, set out their approach. When the next bank big enough to threaten the entire financial system fails, regulators plan to use "living wills" that explain how to unwind its holdings. They will take control, replacing a bank's managers and doling out losses to bondholders as well as equity investors [23].

The message was clear: regulators were not trying to prevent failures, but to prepare for them. The hope was that managers would react by holding enough capital and liquid assets to keep banks out of trouble [23].

Financial markets are also leaky. Credit can flow across borders and from shadow banks, which complicates the efforts of central bankers who hope to use capital regulation as a way of pricking bubbles, says James Mason of Roubini Global Economics. Japan provides a useful lesson. In the 1990s, Japan's finance ministry clamped down on the loans that banks could make against property, hoping to prick the bubble that subsequently burst so catastrophically. Its efforts probably came too late to make much of a difference, but in any case they were thwarted by housing-finance companies able to sidestep the restrictions because they were not banks [24].

### Shadow banking

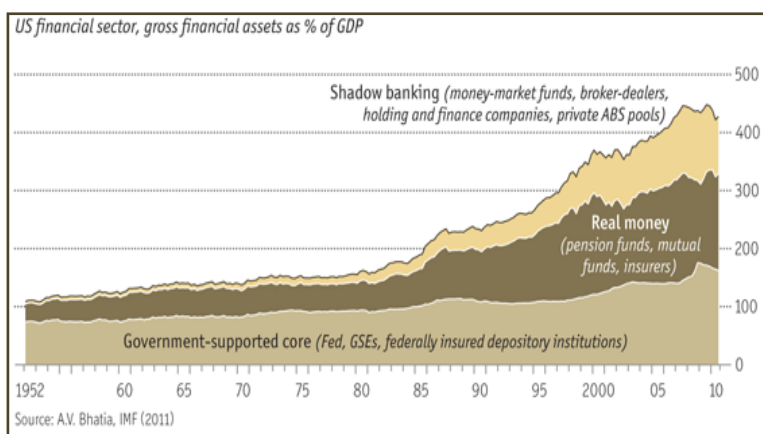
Shadow banking applies to a range of financial institutions and activities. It includes long-established institutions like pension, insurance, private-equity and hedge funds, as well as newer ones like exchange-traded fixed income funds, which provide a vehicle for savers to deposit cash that is then invested in government and corporate bonds. Separating the activities of the "real banks" from shadow firms is hard. Some non-banks, such as private-credit lending arms, make loans just as banks do. And just as they did before the GFC, banks issue shadow instruments that are allocated in capital markets, such as mortgage-backed securities or bundled corporate loans. Banks also lend to shadow banks [26].

In most countries banks dominated lending to households and firms. The US has long been different. Banks played a big role in economic development: John Pier Morgan was the muscle behind the railways rolled out from coast to coast during the 1880s and a century later Citibank helped America Inc. expand abroad as globalisation took off. But capital markets played a big role too and is truer than ever [26].

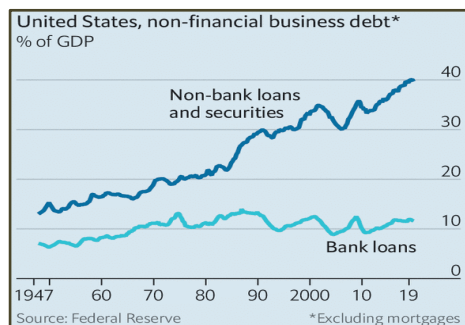


How banks are defined in the US has changed over time. Between 1933 and 1999 commercial banks were legally required to be separated from investment banks, a quintet of which dominated US capital markets and were regulated differently. But all these firms had elements in common. They held only a fraction of their assets as reserves and they borrowed short-term to make long-term loans or hold long-term securities. That exposed them to runs. Economic history is littered with the tombstones of banks that were felled when markets for illiquid securities seized up, or depositors rushed to withdraw their funds [26].

In the US and Europe the huge growth of money-market funds and of the shadow banking system in the decades before the crisis largely reflected a shift of risk away from banks to escape regulatory capital charges (see chart, US financial sector). This trend was reversed during the crisis but has resumed, with fixed-income hedge-fund activity and other alternative-asset managers growing much faster than banks [24].



The banking sector now looks largely healthy after all banks have been hit with stricter capital requirements, while the “proprietary” trading that banks conducted with their own money has mostly been killed off [18]. Investment banks are also safer, most of which are now part of big banking conglomerates. However, banking is being upstaged by a new wave of innovation in capital markets that has changed securitisation and debt issuance and led to more direct lending by other financial firms. As a result banks’ corporate lending as a share of GDP, for example, stagnated at about 12%, even as they have rebuilt their strength and America Inc. indulged in a borrowing boom (see chart, US non-financial business debt) [26].



New capital rules pushed risk-taking out of banks. Digitisation has given computers more decision-making power, created new platforms for owning assets and cut the cost of trading almost to zero. The result is a high-frequency, market-based system with a new cast of players and markets that operate at breakneck speed: the volume of shares traded in the US in 2022 was 3,8 times what it was a decade before [28].

Fragilities in the financial system remain – but elsewhere, and in a different form. Former officials, analysts and investors

warn that risks appear to have migrated from banks into a sprawling, multi-faceted investment industry which has grown tremendously since the GFC, partly by stepping into the void left by banks. A classic case is how corporate lending is increasingly done by the bond market, rather than banks, especially for bigger companies. Bonds now account for well over half of all global debt, according to the Bank for International Settlements. But as interest rates have stayed low, investors have piled into many riskier corners of markets and racier strategies to eke out greater returns [27].

The new-look financial system is still loaded with risks. In 2022, asset prices were very high: the last time shares were so pricey relative to long-run profits was before the slumps of 1929 and 2001, and the extra return for owning risky bonds was near its lowest for the last 25 years. Portfolios loaded up on “long-duration” assets that yield profits only in the distant future [28].

This affects how central banks respond to crises. In 2007-09 the Federal Reserve intervened in capital markets but went to much greater lengths to prop up commercial and investment banks. In 2020, during the Covid-related economic slowdown banks went relatively unscathed as capital markets seized up. Rather than acting as a lender of last resort to banks, the Fed became the market maker of last resort, intervening in credit markets with a total size of about \$23.5trn. The scale of the intervention surpassed any other in history [26].

Some argue that risks have grown because the non-bank part of the financial system has not been adequately regulated. This could amplify what could become a full-blown financial crisis.

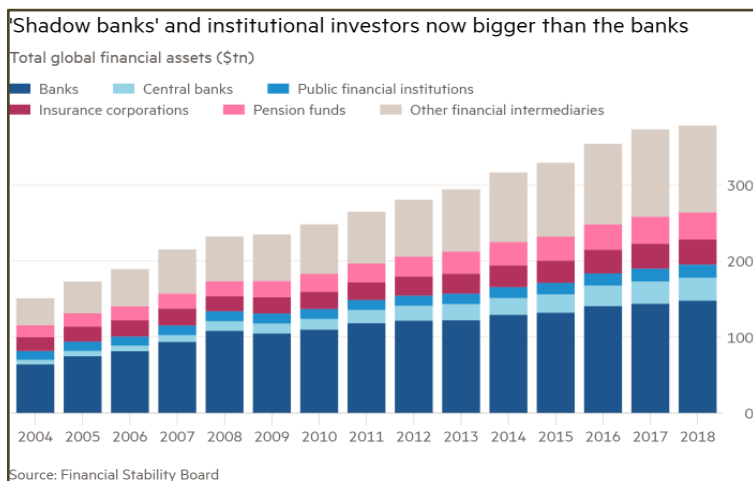
Financial crises are not mere economic downturns, or even synonymous with plummeting markets.

The early 1980s saw a painful global recession caused by the US Fed’s aggressive interest rate rises, but outside of parts of the developing world that borrow heavily in dollars, it was not a financial crisis. Nor was the global stock market losing nearly half its value in the early 2000s, when the dotcom bubble burst [27].

Rather, financial crises are characterised by severe market instability, financial institutions keeling over, widespread debt defaults and even government bankruptcies. This causes the functioning of the financial system itself to break down, worsening whatever the core trigger was. Actions by central banks and government spending packages helped buoy markets after the brutal volatility of March 2020, when global equities slumped in the swiftest bear market in history [27].

Two dangers stand out with the risks under the reinvented finance. First, some leverage is hidden in shadow banks and investment funds. For example, the total borrowings and deposit-like liabilities of hedge funds, property trusts and money market funds have risen to 43% of GDP in 2022, up from 32% a decade ago. Small investment firms that rack up huge debts without anyone noticing can default, imposing losses on its lenders. Second, although the new system is more decentralised, it still relies on transactions being channelled through a few nodes that could be overwhelmed by volatility. Trillions of dollars of derivatives contracts are routed through five US clearing houses [28].

At the peak of the GFC, shadow banks controlled assets worth about \$98tn, according to the Financial Stability Board, making it slightly smaller than the global banking industry. In 2020 its heft stood at well over \$180tn, almost a fifth higher than overall banking assets, thanks to a bull market run over the decade since the crisis and a steady encroachment into parts of the financial system that was once the preserve of banks (see chart, global financial assets) [27].



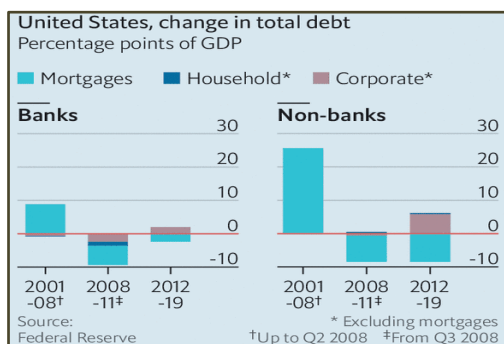
Government props make the system more stable. But every leg of support requires fiddling to stop bankers exploiting the taxpayer. Take deposit insurance, which was established in the US under the Glass-Steagall Act after the Depression. Although President Franklin Roosevelt signed it into law and is often credited as its inventor, he in fact tried to have it stripped from the bill, warning it would “lead to laxity in bank management and carelessness on the part of both banker and depositor”. Roosevelt may have lost the argument; it is nevertheless true that the more generous the deposit insurance, the less vigilant the depositor and the more it falls to regulators to ensure banks are not taking excessive risks [29].

Another leg of support comes from central banks, which are meant to stop self-fulfilling panics by

acting as a lender of last resort. In a crisis, central bankers follow a dictum attributed to Walter Bagehot, a former editor of *The Economist*, to lend freely, secured by good collateral and at a penalty rate of interest. This means deciding what good collateral is, and how much of a “haircut” (discount) to impose when valuing it. Precisely which assets the Fed or other central banks agree to lend against in a crisis will affect what assets banks choose to hold in normal times [29].

With banks regulated and the rest of the financial system more lightly regulated, the result is regulatory arbitrage with some activities simply migrating to less regulated entities, notes Richard Berner of New York University. But technology also facilitated a shift because it has promoted the growth of payments and of bank-like activities outside the banking system. The stock of lending by banks and non-banks has slowly changed since 2001. The US deleveraged since the financial crisis (see chart, change in total debt). That was driven by the decline in mortgage debt, held by both banks and non-banks. Corporate debt, though, has reached an all-time high, and the bulk of activity is facilitated by shadow banks. Of the stock of debt that companies added since 2012, that lent by banks increased by just 2% of GDP. The stock that the non-bank sector holds rose by 6% points. Even though banks are flush with capital and liquidity it is the capital markets that have financed the bulk of the increase in corporate debt [26].

Central bankers have long been aware of the perils of offering too much support. In 2009 Sir Paul Tucker, then of the Bank of England, warned about central banks becoming the “lender of second resort”, freeing banks from having to worry about the liquidity of their assets, so long as these were deemed eligible collateral. Yet central banks are getting more generous. The Fed’s latest facilities barely seem Bagehotian at all, valuing long-term securities at par even when the market has heavily discounted them, and imposing an interest penalty of a mere tenth of a percentage point [29].



The logical accompaniment to the expansion of the banking safety-net would be rules to ensure that the wider net is not exploited. After the GFC of 2007-09 regulators deemed long-term government bonds to be safe and liquid assets, which they assumed would be a source of liquidity for bankers to tap before they turned to the central bank when the next crisis arrived. Now the risks of long-dated assets have been made abundantly clear by rising interest rates, and the Fed and the FDIC carried the can after all. Regulators could respond by redefining the highest-quality liquid assets as bonds that are both short-dated and issued by the most creditworthy sovereign borrowers. To do so, however, would be to take a step towards narrow banking, in which every deposit is backed by such an asset [29].

Supporters of shadow banking argue the investment industry’s core business model is very different from banking. Asset managers are its locus but use little leverage, and losses befall investors in individual funds, not asset managers themselves. Even in an improbable scenario where one of the industry’s giants goes bust, it should not require a government bailout [27].

This trade-off—between the safety of the banking system and the power of regulators—used to be murky. Some central banks were deliberately ambiguous about what collateral they would accept in an attempt to keep banks on their toes. But new technology seems to be forcing the government’s role into the open. Many blame mobile-banking apps and social media for the speed of the run on SVB. If runs are now more likely, so are emergency central-bank loans, making collateral policy still more important [29].

### Post-pandemic bank runs

The latest financial crisis hit in 2023 with the run on Silicon Valley Bank (SVB) in the US. As happens after every banking panic, the safety-net is being remade. And so regulators must again confront a profound question: how far into finance should the hand of government reach [29]?

The prospect of banks becoming de facto government-funded should alarm anyone who values the role of the private sector in judging risk. Yet the difference between deposit financing underwritten by multiple layers of the state and funding that is provided directly by the state itself is getting harder to distinguish. A more explicit role for governments in the banking system may be the logical endpoint of the road down which regulators have been travelling for some time [29].

Banks are inherently unstable. They offer deposits that are instantaneously redeemable while holding long-dated, illiquid assets such as mortgages and business loans. The mismatch means even well-managed institutions are vulnerable to a run that might be sparked by a misunderstanding. The fragility of banks is matched by severe consequences if they fail: runs tend to be contagious events that can cause credit crunches and recessions [29].

The latest iteration of a classic bank run resulted in a central bank stepping in to backstop the financial system, or as

economist dub the response, acting as “lender of last resort” (LOLR). How to prevent panics without sowing new dangers is perhaps the central question faced by financial regulators. The clearest evidence of the need for a financial backstop of some variety comes from the pre-LOLR years. There were eight US banking panics between 1863 and 1913, each delivering a heavy blow to the economy. The Federal Reserve system was created in 1913 as a response. Breaking the Fed into parts with regional responsibilities did not allow it to respond to the Great Depression forcefully and in a coordinated manner [30].

In the aftermath of that crisis the US established a true LOLR framework. The federal government introduced deposit insurance. To limit moral hazard, other tools such as deposit-rate caps constrained banks, and this template has existed ever since. The authorities both provide support and impose limits. Getting the balance right is the difficulty [30].

In the decades after the Great Depression, the Fed put an end to bank runs. But starting in the 1970s, when inflation soared and growth softened, the financial system came under stress. On each occasion officials expanded their playbook. In 1970 they snuffed out trouble that originated outside the banking system. In 1974 they auctioned off a failed bank. In 1987 they pumped liquidity into the banking system after a stockmarket crash. In 1998 they helped to unwind a hedge fund. Even if each episode was different, the basic principles were consistent. The Fed was willing to let a few dominoes fall before it ultimately stopped the chain reaction [30].

These episodes were dress rehearsals for the Fed’s maximalist responses to the GFC and the covid pandemic lockdowns in 2020. Both times it created new credit facilities for struggling banks. It guided financing to troubled corners of the economy. It accepted an ever-wider array of securities, including corporate bonds, as collateral. It allowed big firms to fail – most significantly, Lehman Brothers. And as markets started to work again, it retracted much of its support [30].

Each intervention has prompted a rethink of moral hazard. In the 1970s the concern was over-regulation. Rather than making the financial system safer, policies such as deposit-rate caps pushed activity to shadow lenders. Deregulation occurred little by little until after the GFC, and back came regulation. Big banks must hold more capital, limit their trading, and undergo regular stress testing. Heftier support from the Fed comes with stricter limits [30].

The run on SVB or Credit Suisse look like another intervention rather than a radical new design. Both the US and Swiss governments pronounced that the actions were not a bailout, and that commercial solutions would be found. It is hardly the first time that uninsured depositors or shareholders would walk away without harm. But nor is it the first time, in the US case, that the Fed has let a couple of banks fail before introducing a credit programme that is likely to save similar firms. However, in one important respect, the assistance has been more lavish than in previous rescues. While providing emergency credit, it normally has been conservative in its collateral rules, using market prices to value the securities that banks hand over in exchange for cash. Moreover, it has aimed to lend only to solvent firms [30].

In 2023, the Fed accepted government bonds at face value, even though their market value fell sharply. If it had to seize collateral, it could have suffered a loss in present-value terms. And the programme could breathe life into banks that, in market-to-market terms, were insolvent. These programmes are not permanent, and the special loans are capped at one year – long enough to stave off a crisis. If not, then the Fed could be left holding underwater assets on its books, absorbing financial damages that belong to the market. The lender of last resort risks morphing into the loss-maker of first resort [30].

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