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### **Too much saving... or too few financing channels?**

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#### **Abstract**

The global financial crisis led to widespread dislocation. Understanding the forces that led to such a crisis is no easy matter. After briefly looking back at the mechanics underlying the recent episode of international transfers of saving, this paper looks at how the resulting global imbalances started to unwind and why helping promote the building of new financing channels should now be governments' priority.

## Introduction

The recent unwinding of the current-account imbalances that were built up prior to the global financial crisis has not led to any reduction in the efforts made to understand the forces that produced them. This proves just how complex the matter is. In this respect an original way of looking at things has been proposed: the “excessive financial elasticity view” [Borio and Disyatat, 2011]. It highlights the role of financial behaviours in the borrowing excesses that led to deepening current-account deficits. While in sympathy with many aspects of this view, we would tend to qualify and complement it: this excessive financial elasticity was and still is the only degree of freedom in a global financial system that is poorly structured and too rigid to accommodate a significant increase in world saving. Financial behaviours have a natural tendency to be excessive and pro-cyclical, but these excesses were unfortunately the only way to help the world economy absorb the significant fall in its propensity to spend that took place from the end of the 1990s on: without this excessive “elasticity”, emerging economies’ growth would have been curbed and the huge accumulation of financial savings these economies generated would not have taken place. Of course, a large part of this saving has been poorly invested and this can be viewed as a result of this “excessive elasticity” of financial behaviours. But this wastage can equally be seen as a consequence of a lack of “financing channels” capable of better allocating the available pool of world saving.

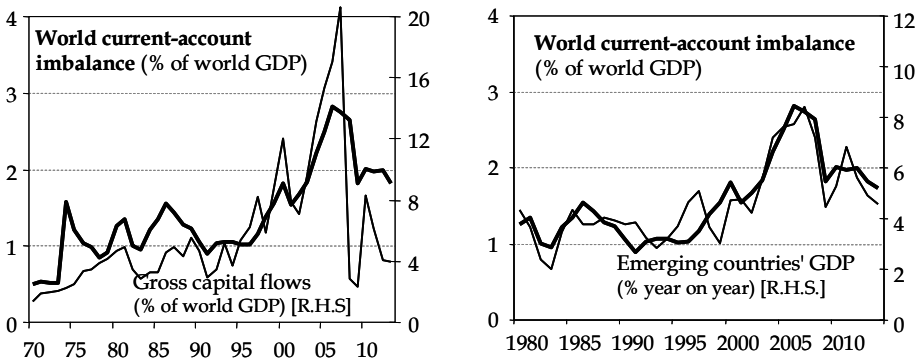
The “global” financial system is in fact in large part a mere juxtaposition of heterogeneous domestic systems. Some are equipped with developed and specialised financing channels while in others these channels are underdeveloped or inexistent and in yet some others they may be clogged. As a result, the effectiveness of the transmission of monetary policies implemented to counter deflationary forces will be very uneven. In some countries, certain sectors – mainly the household sector – will respond strongly to a fall in interest rates while in others this response will be muted. The combination of this heterogeneity with an excessive elasticity of financial behaviours has important consequences: an increase in the share of world GDP going to countries that tend not to spend all their income will not only give rise to growing current-account imbalances but also to the growing and soon unsustainable indebtedness of sectors which, having an easy access to well-functioning financing channels, respond most strongly to a monetary stimulus. The problem then will not arise from the growing current-account imbalances themselves – after all, one of the purposes of capital-account liberalization is to allow saving to be transferred from one economy to another – but from the inefficient allocation of available savings as well as the unsustainable manner in which part of the risks associated with their investment are carried. Talking of a “saving glut” in a world where there seem to be plenty of reasons for investing more may be misleading: building financing channels better capable of allocating savings to underfunded places could well turn the glut into a shortage!

This paper will start by briefly examining the mechanics underlying the recent episode of international transfers of saving before going on to look at how the resulting global imbalances started to unwind and, finally, showing why helping build new and more evenly distributed financing channels should now be governments’ priority.

# 1. Behind the “global imbalances”: the mechanics of international transfers of saving

We shall start with an observation that is often overlooked: the imbalances that formed from the end of the 1990s on cannot be dissociated from the changes in growth trends observed during those same years. The increase in international transfers of saving, accompanied by an explosion of capital flows, coincided with a spectacular acceleration in growth in the emerging regions (Graph 1). Moreover, far from being confined to a few exemplary economies, this acceleration has been fairly general. At the same time, as the growth of the emerging countries has quickened in pace, the growth differentials among them have narrowed<sup>1</sup>.

Graph 1. World current-account imbalance, gross capital flows and growth of emerging regions



The world current-account imbalance is the half-sum of the absolute values of the current-account surpluses or deficits of 186 countries. Similarly, world capital flows are the half-sum of the absolute values of capital inflows and outflows.

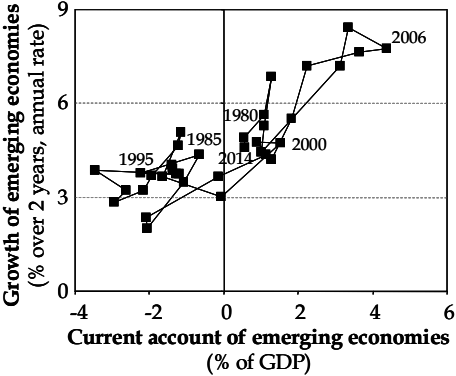
Sources: IMF, authors’ calculations.

The role played here by financial globalisation has been decisive, as can be seen from the correlation that appeared between emerging regions’ growth and their current-account balance: the acceleration in growth which started at the end of the 1990s was closely associated with an *improvement* in their current-account balance (see Graph 2). It was by permitting these regions, taken as a whole, to *export* saving that increased capital and trade flows contributed to this acceleration (the more so since exporting savings did not preclude importing technologies and know-how through inflows of foreign direct investment). Given the high propensity to save of some of the economies concerned – China being the best example – this contribution was essential. If a country has a high propensity to save, its growth will be constrained by the capacity of its financial system to intermediate – and its domestic agents to invest – its potential saving. Allowing it to export part of this will ease this constraint. This is precisely what happened during the years preceding the great financial crisis. When China, faced with the possibility of a rapid progress in its potential, output curbed the appreciation of its currency in order to avoid the deflationary pressure that would otherwise result from its agents’ spending behaviour, it “exported” its demand-management problem to the rest of the world. The latter could in fact “import” it because it had the capacity to trigger the borrowing needed to keep its economy close to potential

<sup>1</sup> A detailed analysis of evolutions in the various emerging areas during those years is given in Brender and Pisani [2010].

despite the income shortfall resulting from its loss of market share. *The complementarity between emerging and advanced economies that developed was based not so much on the superiority of the financial assets issued by the latter as on the fact that their financial systems had the capacity to make the lending needed to respond to deflationary forces.*

Graph 2. Current accounts and growth in emerging regions, 1980-2014

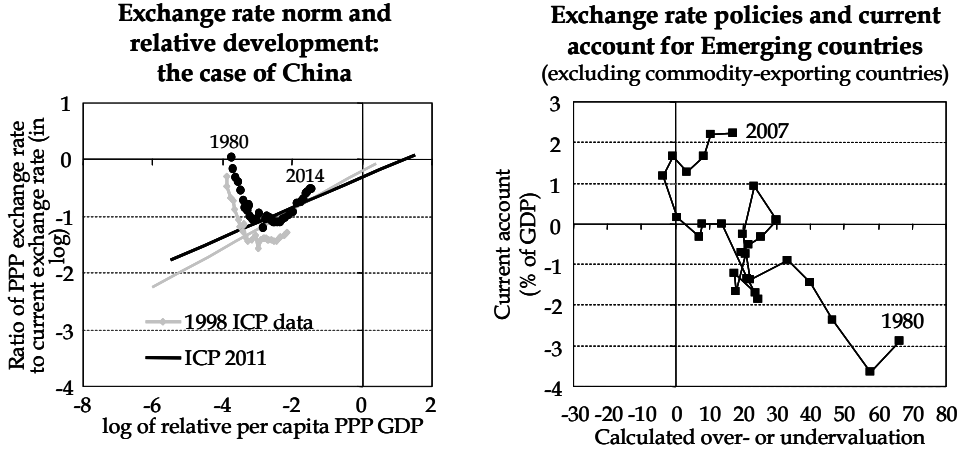


The definition of the emerging countries used here is that of the IMF. The inclusion of the four “Newly Industrialising Countries” (NICs) leads to a similar result.  
*Source: IMF.*

The recourse to the financial system of the advanced economies in order to handle international transfers of saving was not totally new: during the 1970s it had helped the world economy respond to an abrupt rise in the oil price. At that time, the deflationary impact of the increase in OPEC’s share of world income had been largely countered by increased borrowing on the part of countries in the South. During the past decade, it has been the advanced countries themselves that provided the counterweight: their growing current-account deficits have been largely the reflection of an increase in borrowing of their private agents, as we shall see below. This increase helped absorb the shifts in world income associated with the emergence of new producers of manufactured goods and with a new round of increases in commodity prices.

The rise of Asian emerging countries’ exports created an adjustment problem for the rest of the world analogous to that posed by a rise in the oil price. Like the oil exporters, these countries were potential exporters of saving and this potential could only be realised if the rest of the world was prepared to go further into debt. This shows the possibility opened up by “globalisation”. It enabled countries to experience rapid development despite structurally weaker growth in their domestic demand. For this to happen, though, they had to manage their exchange rate in a way that would allow sufficient growth in their exports *despite an accumulation of current-account surpluses* (Graph 3). For a country like China, engaged in a “rapid catch-up” strategy, the “right” exchange rate was the one allowing high growth in employment and productivity despite a propensity to spend income that was structurally below unity. This fast growth would nevertheless have been impossible without the rest of the world’s propensity to spend rising correspondingly. For there to be export of saving from one region, some other region has to import it! The appended Annex shows how by acting on its exchange rate an emerging region with a potential excess of saving can exert a deflationary pressure on the rest of the world, triggering a policy response that will lead to the additional borrowing needed for this potential to materialise.

Graph 3. Real exchange rate, development level and exchange rate policy



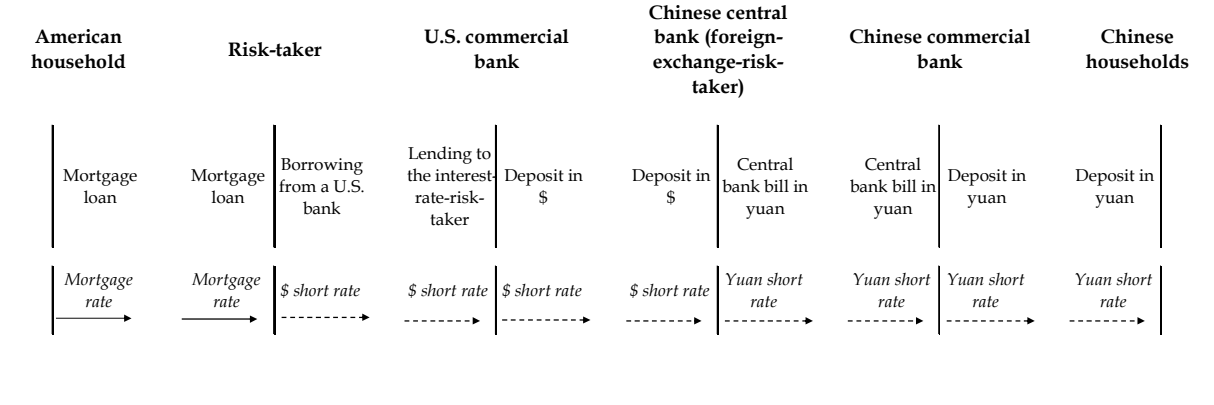
Note: On the right-hand graph, a relative over- or undervaluation was calculated by comparing the PPP exchange rate of each individual country (out of a panel of 105 non-commodity emerging countries) to its current exchange rate (both expressed in national units per dollar) and by adjusting the apparent over- or undervaluation by the level of development of the country relative to the US. When the variable “calculated over- or undervaluation” is below 0, the country’s currency is “undervalued”; when it is above 0, it is “overvalued”. The weighting used to calculate the emerging “over- or undervaluation” aggregate is the share of each individual country in the panel’s GDP measured in current dollars. For more details on this calculation, see Brender and Pisani [2010].

Sources: IMF and authors’ own calculations.

For savings to be effectively transferred from one part of the world to another an interaction of macroeconomic policies is not sufficient, however: the risks associated with the loans that will be made have to be carried. If the countries that export those savings are “emerging”, their capacity to carry such risks is likely to be minimal. For the transfers to take place these risks will have to be taken on by the rest of the world. The accumulation of current-account surpluses by the emerging countries would not have been possible had the financial system of the developed economies not taken on the financial risks involved. Diagram 1 describes one of the myriad of risk-taking chains that made this savings transfer possible, taking the example of certain Chinese savings – deposits by households – appearing as a counterpart of some American borrowing – a mortgage taken out by a household. The world is made up of only two countries: China is the emerging economy that, by avoiding an appreciation in its currency, “pushes” the developed economy – the US – into deficit.

Before looking at the risk-taking chain itself, it is important to have in mind the succession of operations necessary for the transfer of saving to take place. By making a mortgage loan, an American bank creates a deposit in dollars and acquires in exchange a claim on the household. The latter uses the deposit to pay for its property purchase, thus putting the deposit into circulation in the American economy. The US being in deficit vis-à-vis China, the deposit – or another indistinguishable from it – will end up leaving the economy as a payment to a Chinese exporter. He will exchange these dollars with his central bank for Yuans that he will use to pay his workers. These include our Chinese savers, who deposit their savings on their bank accounts. This was made possible by the loan made in the United States. Loans always make deposits, even if the loan is American and the deposit is Chinese. For this to happen, however, the various risks involved must have been taken on.

Diagram 1. A “global” chain of risk-taking



The American mortgage loan constitutes the start of the risk-taking chain. In the above example we assume that the mortgage has been securitised and bought by a “risk-taker”. By definition, the risk-taker does not collect any savings – think of an SPV or a dealer or any other operator of the “shadow banking system” – and borrows short-term from a bank to buy the mortgage claim (possibly using the mortgage security as collateral). By so doing, he takes on several of the risks involved: the interest-rate risk (he is borrowing short term at a variable rate and receives a fixed rate), a credit risk (a payment delay or a default will mean that he makes a loss) and a liquidity risk (if for one reason or another he cannot roll over his short term loan, he will be obliged to sell his claim and possibly suffer a loss). Where does the money lent to our risk-taker come from? To answer this, we now have to look at the Chinese part of the chain. The central bank printed Yuans to buy dollars from the Chinese exporter and these dollars are deposited with an American commercial bank. This completes the dollar part of the chain: the initial dollar deposit is back where it came from!

It still remains to complete the Yuan part of the chain. To finance its acquisition of dollars, the central bank has issued debt in Yuans, say in the form of a bill. This bill has been purchased by the Chinese commercial bank: since China is in surplus the commercial bank has an excess of deposits. In this chain, the latter takes no risk, but the Chinese central bank does. It buys dollars against Yuans and acts as a foreign-exchange-risk-taker. It is its policy of not allowing the exchange rate to appreciate under the impact of a current-account surplus that prompts it to play this role. Its intervention binds together the various links in the chain. The precise way in which the dollars purchased on this occasion are invested “risk-free” is of little importance. If, instead of a deposit with an American bank, the Chinese central bank acquires, everything else remaining equal, a Treasury bill, the seller of the bill will hold a deposit in its place.

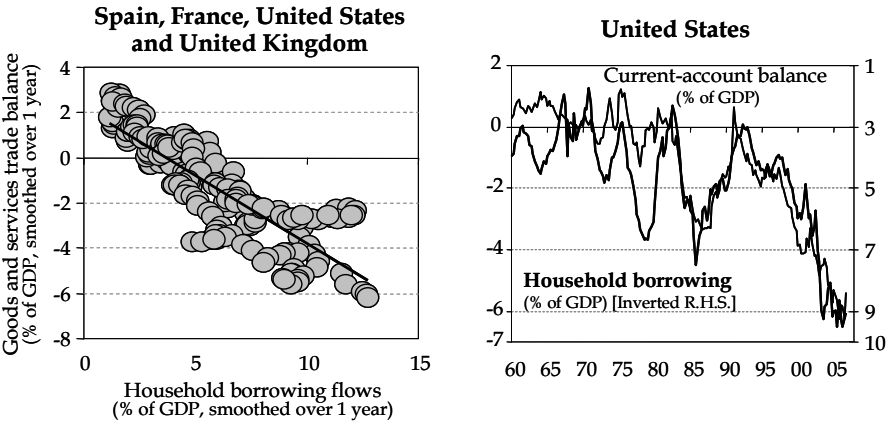
As we shall now see “excessive financial elasticity” obviously played a role during the past decade. It helps explain how some well-functioning financing channels could instigate the amount of lending necessary for a huge accumulation of savings to take place in the emerging world – as well as in a few developed economies–, with a large part of the risks associated with this financing being carried by such somewhat vulnerable risk-taking chains.

**2. The build-up and the unwinding of global imbalances during the 2000s**

By making *international transfers of saving* possible, central banks wishing to regulate activity just in their own economy can help the world economy as a whole, not necessarily intentionally, to approach and then stay close to its growth potential. This was the case in the early part of the 2000s, when countries having a tendency not to spend all their income – the oil-producers and China but also some developed countries like Germany – found themselves, each for different reasons, *achieving an increased share of world income*. This evolution prompted central banks elsewhere to keep policy rates low in order to prevent their economies, held back by a loss of share in world income, from deviating too far from full employment. Responding to these lower interest rates, agents increased their indebtedness and this in the end meant borrowing from less spendthrift economies the saving that would not otherwise have been generated. In this way, the countries with saving to spare were able to export the surplus that would otherwise have threatened to stifle their growth. In this respect, the world economy is a closed economy: its members can only save if others are prepared to borrow.

There is a key difference, however, in terms of monetary and financial organisation: instead of one currency, one central bank and one financial system there is a juxtaposition of monetary areas each with its own central bank and financial system (several in the case of the Eurozone!). If care is not taken, the saving that are in virtual surplus in one part of the world will go to finance the borrowing of countries whose financial channels transmit monetary impulses most rapidly and forcefully to those agents that are most sensitive to them, namely households<sup>2</sup>. This was clearly illustrated by the build-up of current-account deficits that began in the mid-1990s, made possible by a spectacular rise in borrowing by households in countries where access to lending was particularly easy. Between 1997 and 2006, the current-account balance of just four countries (the United States, the United Kingdom, France and Spain), representing around 40% of world GDP, worsened by almost \$900 billion, or three-quarters of the total deterioration in current accounts observed during the period. *Most of this was explained by the rise in household indebtedness* (Graph 4 on the left). In some cases, the phenomenon was not restricted to these years: for more than three decades, the fluctuations in the United States current-account balance mainly reflected those of borrowing by American households alone (Graph 4 on the right).

**Graph 4. Household debt and current-account balances in the ‘spendthrift’ countries**



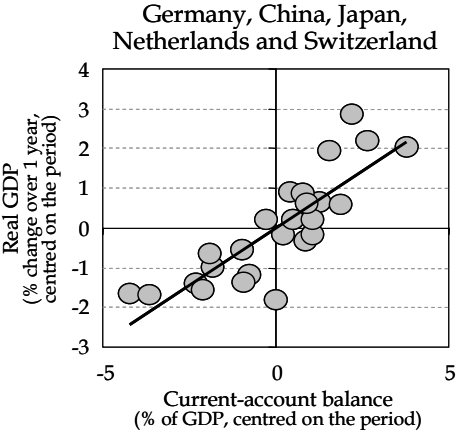
Note: The left-hand figure relates to the period 1995-2006.

Sources: National central banks and Thomson Datastream.

<sup>2</sup> See Brender *et al.* [2015].

In the years that preceded the financial crisis, the acceleration in the household borrowing of a handful of economies therefore enabled the income of the thrifty countries to increase more rapidly. The oil-exporting countries were able to build up current-account surpluses as a result of the sharp price rises that preceded the 2008 crisis, while the manufactures-exporting countries whose agents tended not to spend the entirety of their income – China, Japan and Germany, for example – saw their growth accelerating while at the same time their current-account surpluses were improving (Graph 5). The loans granted to households in the spendthrift countries made it possible, during these few years, for the thrifty countries to grow more rapidly, with the deposits they were able to build up exceeding the loans that their financing channels were capable of distributing (and that their domestic agents were capable of absorbing). The deterioration in the current accounts of the spendthrifts thus made possible the improvement in those of the thrifty countries and the acceleration in their growth.

Graph 5. Current-account balances and growth in the 'thrifty' countries



Note: The figure relates to the period 2002-06 for the five non-oil-exporting countries with the largest current-account surpluses (in dollars).

Sources: National central banks and Thomson Datastream.

During the years in which these global imbalances were continually increasing, the growth in total lending was far from excessive, at least from a macroeconomic point of view: each central bank was more or less successful in keeping its economy close to its growth potential. Admittedly, the high level of world economic growth prevailing at the time caught the commodity markets off-guard and prices soared, but there was no disquieting acceleration in underlying inflation in the developed economies. These years were the period of the Great Moderation. While expenditure in almost all countries grew in line with potential output, the bulk of the borrowing that underpinned this progress was concentrated in a limited number of countries, with the response of their households to the monetary policies being implemented contributing to the support of activity in the rest of the world.

To a large extent, the specific response of households in each of these countries was explained by the particular features of its financial system. The contrast between the evolutions of household borrowing in Germany and in Spain clearly demonstrates this. It was due, partly at least, to a difference in the financial practices by which one and the same monetary policy – that of the ECB – was transmitted<sup>3</sup>. The US case is even more enlightening,

<sup>3</sup> In Spain, mortgages are at variable rates indexed on short rates while in Germany, households borrow long-term at fixed rates. It should also be noted that German in contrast to Spanish households were already heavily indebted at the beginning of the 2000s.



in that it illustrates the role played by the different segments of the financing channels available to each economy. Left to themselves, the mechanisms for the distribution of lending and for ensuring the circulation of the risks implied by this lending interacted perversely from the mid-2000s on in such a way as to fuel a steady rise in borrowing by US households. The growth in borrowing that took place in the period up to 2007 could be continuous only because, with the borrowing requirements of solvent households fully saturated, loans to insolvent households took up the running, a clear manifestation of “excessive financial elasticity”. This in turn was made possible by the fact that, once granted, these sub-prime loans were securitised, so that their risks ended up being borne by operators having no access to the information needed for their proper assessment.

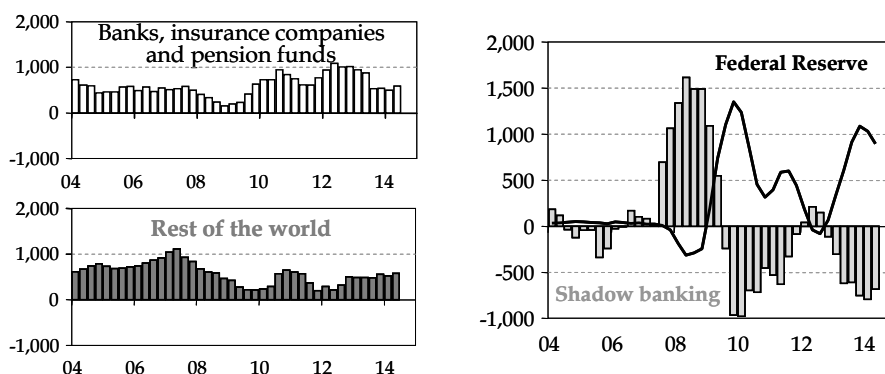
The consequences of this *laissez-aller* were all the more catastrophic in that these securitised loans had been acquired by risk-takers. Their intervention was needed in order to complete the chains enabling saving generated in China or Germany to “finance” loans made in the United States or Spain. In the thrifty countries, savings tended in fact to be invested in relatively riskless forms, mostly bank deposits with differing maturities. Investments of this type could be built up in increasingly large amounts because investment banks, hedge funds and other market operators located elsewhere were taking the risks that the depositors themselves were unwilling to take. To purchase the securities issued in this way, the risk-takers borrowed short-term, notably on the repo markets. A succession of operations of this type, constantly renewed, therefore made it possible to ensure that savings deposits were able to accumulate in the thrifty countries as counterpart to the loans granted elsewhere. The increasing number of operations needed for the taking of the totality of the risks implied by these international transfers of saving also explains, in part at least, the observed intensification of international capital flows. This formed part of the “international division of financial risk-taking” that has steadily developed since the beginning of the 1990s.

How this episode ended does not need re-telling. The revelation of the poor quality of the sub-prime loans and the subsequent rise in aversion to risk led to the non-renewal of the loans that were financing the operations of the risk-takers, who had no option, if they were to repay their loans, but to engage in distress selling of the securities they held. The myriad chains of intermediation needed to make more or less short-term deposits the counterpart of long-term loans began to disintegrate. The gradual paralysis of monetary and financial circulation, the collapse in activity, especially in the thrifty countries, then resurrected fears of a Great Depression. This was only prevented by the intervention on a massive scale, albeit belated, of the central banks. Starting at the end of 2008, in the United States as well as in the United Kingdom, the central bank purely and simply took the place of the now absent risk-takers by borrowing, also short-term, the liquidities that had hitherto been lent to these risk-takers<sup>4</sup> and by buying the securities that the latter had been obliged to sell (Graph 6)!

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<sup>4</sup> These purchases of securities had in fact as counterpart an increase in the reserves of the commercial banks held with the central bank. Similarly in Europe, when the sovereign debt crisis broke out, the ECB ‘borrowed’ from the German banks the sums that the latter had until then been lending to the Spanish banks and lent them directly to the Spanish banks instead.

Graph 6. Net purchases of bonds in the United States, by sector, 2004-14  
(billion dollars, smoothed over 4 quarters, annual rate)



*Note:* Bonds here comprise Treasury securities (including Treasury bills), agency securities, tax-exempt and corporate securities. The shadow banking system comprises the securitisation agencies, issuers of ABS, investment banks, money-market funds and various other institutions (finance companies, REITs, etc.) that obtain financing on the markets. Purchases by households of corporate, agency or Treasury securities have also been added as hedge funds are part of the household sector in the US flow of funds accounts.

*Source:* Federal Reserve.

The innovations introduced in the past decades have not made it possible to avoid repetition of what the world economy had already experienced on several occasions. Left to itself, globalised finance has again turned out to be incapable of transferring substantial masses of saving from one economic area to another without a substantial degree of wastage. From this point of view, recent experience has been no different from that of the 1970s, when the recycling of petrodollars ended in a dramatic crisis, namely that of Latin American debt.

### 3. The need for new financing channels

The 2008 crisis put the brakes on borrowing by households in the developed countries, whose unsustainable character was brutally exposed, with the sudden reduction in their propensity to spend leading to a steep rise in the private saving ratio and a sharp reduction in current-account deficits. Faced with the resulting risk of economic depression, governments accepted deterioration in their budget balances in order to prop up activity. However, they had later to put their borrowing back on a sustainable trajectory [Brender et al., 2012]. The United States, by adjusting the rate of this rebalancing of the budget to that of the return to normal on the part of private saving behaviour, facilitated the country's return to growth: the government gradually reduced its deficit and continued to absorb the excess saving of private agents to prevent it from stifling activity. The Eurozone countries, unlike the United States, aimed to reduce budget deficits more rapidly, without worrying about the rate at which private agents' propensity to spend would return to normal, and even decided in 2011 to accelerate the rebalancing process. The disastrous results of this cyclical management soon became apparent. The incipient recovery broke down and the current-account balance moved into substantial surplus, whereas that of the United States stabilised at its post-crisis level. As regards the saving-exporting emerging regions, the consequences of the financial shock of the end-2000s are easy to characterise. The rate at which the US economy absorbed the saving of the rest of the world fell sharply, and the Eurozone

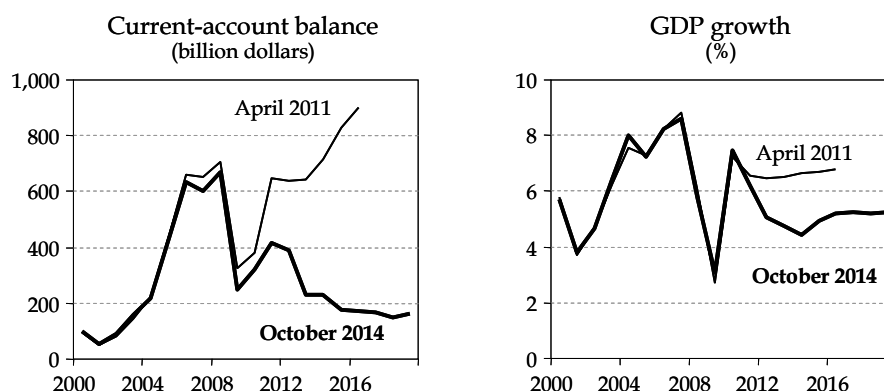
countries, whose current accounts had previously been in balance, far from contributing to the absorption of the emerging regions' surplus, became in their turn exporters of saving.

Faced with this abrupt change, the emerging regions had little choice: in order to avoid too great a weakening of their growth under the impact of the interruption of borrowing in the rest of the world, they took emergency steps to boost demand by stimulating domestic borrowing. The governments initially widened their deficits before borrowing by private agents rose at a rapid rate, taking up the running from that of the rest of the world. Whereas between 2008 and 2013, US private debt fell by 14 GDP points, China's rose by almost 70 points! This rise in domestic borrowing in several emerging economies nevertheless rapidly exposed the underdeveloped state of their financial systems. Those of saving-exporting countries, China in particular, were primitive and essentially directed towards financing firms. Maintaining control over a very rapid growth of lending was therefore particularly delicate, especially in cases where this growth took place to a substantial extent through loans to households. This had already been demonstrated in Korea ten years earlier by the sudden introduction of lending through card-based consumer credit. The repeated efforts by the Chinese monetary authorities, starting at the beginning of the 2010s, to use administrative measures to regulate the distribution of lending and to improve its allocation were a further illustration of this - especially as, alongside the traditional banking system, which was subjected to official surveillance, a shadow banking system under little or no surveillance rapidly developed, partly with the aim of circumventing the rules governing the distribution of bank lending. China's experience since the beginning of the 2010s shows how difficult it is for a country at this stage of development to achieve rapid construction of the financing channels capable of passing on the abundance of saving created. There is therefore a substantial chance that much of this saving will go to waste.

Unable to recycle locally in sustainable conditions all the saving they tend to generate, many emerging regions have experienced less dynamic growth since the beginning of the decade. The yearly revisions made to the IMF forecasts illustrate the interplay of the forces at work. At the beginning of 2011, a marked increase in the saving surplus of these regions was expected by the end of the decade; in the autumn of 2014, the Fund was predicting for this same time horizon the virtual disappearance of this surplus and was making a downward revision of 1.5 points in the medium-term growth outlook (Graph 7). These revisions were particularly substantial in the case of emerging Asia, for which the expected medium-term growth was cut from 8.6% in April 2011 to 6.3%, while the current-account surplus predicted for 2016 was cut from almost \$850 billion (1% of world GDP) to only \$200 billion. The cumulative saving surplus between 2014 and 2016 was reduced by \$1.5 trillion from its 2011 forecast!

These downward revisions in the current-account surplus and growth expected for the emerging Asian countries clearly point to one of the financial challenges for the last part of this decade, namely how to provide the world economy with financing channels that are more robust, more numerous and better distributed, capable of absorbing the saving surplus holding back growth in these countries and in the more thrifty economies in general. The Chinese case is sufficient to give an idea of the scale of this challenge. It also gives an idea of the amount of investments this potential saving would make it possible to finance and of the forgone growth that their non-realisation implies for the world economy. This forgone growth will be all the greater in that China is not the only economy whose growth is currently being held back by an excess of saving: Germany, with a current-account surplus larger than that of China, may be in the same situation!

Graph 7. Revisions to the IMF's current-account and growth forecasts for the emerging regions, 2000-19



Source: IMF.

Alongside channels intended, within these economies themselves, to permit increased and better exploitation of the saving they are capable of generating, other channels must also be available in the rest of the world to attract the surplus and prevent over-straining these domestic channels. To a large extent, the channels that had ensured the international transfers of saving in the 2000s are at least temporarily no longer functioning. This means that new ones have to be constructed. In a world having to cope with climate warming, in which many emerging economies are unable to finance the investment needed to launch a process of rapid and sustainable catch-up and in which a number of developed countries have neglected their physical – and sometimes even social – infrastructure, finding potential fields for financing through these channels should be an easy matter. The difficulty lies in finding those willing to bear the risks associated with the hundreds of billions of dollars' worth of additional investment which the saving of the thrifty countries could finance each year. The signals sent out in the mid-2010s by the bond markets were disquieting in this regard. The lowest long rates in decades were only just capable of stimulating the borrowing needed to absorb the saving generated by a world economy operating well below its potential!

Herein lies part of the origin of the menace of 'secular stagnation' [Summers, 2014]. Emphasis needs to be placed on its paradoxical nature, involving, on the one hand, the existence of substantial potential sources of saving and, on the other, obvious investment needs. For the former to finance the latter, however, someone must be prepared to take on the risks implied and this is the stumbling block. In a situation of this kind, governments would normally play the role of long-term investor and borrow in order to take charge of at least part of these investments, namely, those which sooner or later will provide additional tax income or permit a reduction in budgetary expenditure. The low level of long-term interest rates is telling us that this is just the right moment for such investments. However, for fear of adding dangerously to the levels of debt – and in some cases aware of having badly managed their budgets –, governments in the developed countries, those of the eurozone in particular, are hesitant to commit themselves in a direction that could make them even more vulnerable to a change in the mood of the markets.

Only greater international cooperation can extricate the world from this deadlock. If the national governments, which are the natural long-term investors, do not 'step up to the plate', supranational long-term investors can act as a substitute. For this, however, international organisations at regional (or possibly world) level must agree on the priority

thrusts for investment and provide at least partial guarantees for the loans needed to finance the projects conforming to the norms laid down. Once guaranteed, these loans could be purchased by securitisation vehicles, which might issue bonds of varying maturities backed by a set of loans of the same type whose default risk would be at least partly guaranteed and could be purchased by savings-collectors anywhere in the world. By channelling savings towards projects that are seen as collectively viable in the long term, these vehicles would act as borrowers of last resort in a world where they are sorely lacking today. Europe attempted at the end of 2014, through the Juncker plan, to set an example. However, this was on a small scale in relation to the savings surplus needing to be absorbed. Even if fully realised in three years – a short time for infrastructure projects – these investments would each year absorb only one-third of the present saving surplus generated in the eurozone alone!

This example serves as a reminder that it would be futile – and dangerous – to count on infrastructure investment alone to reinvigorate world growth. Given that delays in the launching and subsequent implementation of these projects are particularly long, it will be necessary to launch a substantial number of them if any significant support is to be provided for activity. It is illusory to think that this could be achieved at all rapidly, especially as these investments are not devoid of undesirable side-effects (in many countries they have often been riddled with corruption [Gros, 2014]) and bottlenecks are capable of cropping up at any place. Here again, caution and detailed surveillance are needed. Alongside the financing channels directed towards the construction of ambitious infrastructure, at a pace that is bound to be moderate, others have to be put in place in parallel, having implementation delays that are, at least in some cases, shorter. This is in fact one of the lessons to be learned from the so-called sub-prime crisis, namely that relying on just a few financing channels in order to manage, with the help of financial globalisation, the monetary constraint holding back world growth can only lead to fresh disasters!

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**Annex. The forces behind international transfers of saving during the 1990s and early 2000s: an interaction of macroeconomic policies between emerging and developed economies**

We shall reason here on the basis of a world consisting of two regions, the developed countries (subscripts  $d$ ) and the emerging Asian countries (subscripts  $a$ ). Trade between the two groups is summarised by the share  $\mu$  that each group has in the spending  $D$  of the other. The formation of income ( $Y$ ) of each region can be written as a function of the propensities to import and the domestic demands:

$$Y_d = (1 - \mu_d(e))D_d + \frac{1}{e}\mu_a(e)D_a$$

$$Y_a = (1 - \mu_a(e))D_a + e\mu_d(e)D_d$$

The proportions  $\mu$  are a function of the exchange rate  $e$  used to convert one currency into the other. When  $e$  rises, the currencies of the developed countries appreciate and their propensity to import  $\mu_d$  rises, while  $\mu_a$ , the Asian countries' propensity to import, diminishes. As these ratios are defined in relation to spending in national currencies, the imports of each region have to be converted into the currency of the other in order to provide the value of the exports. The demand  $D$  in each region related to income by a propensity to spend  $\delta$  that is a decreasing function of income:

$$D_d = \delta_d Y_d$$

$$D_a = \delta_a Y_a$$

For each of the two regions, a "full-employment" level of activity  $\bar{Y}$  is then defined. Strictly speaking, the level  $\bar{Y}_a$  corresponds not to full employment but to the level of employment aimed at by the authorities. It will be assumed that saving behaviours, financial mechanisms and economic policies in these regions are such that, unless their economies are substantially below "full employment", *the propensity to spend income  $\delta_a$  is always less than unity*. If these economies are running at full employment, their agents will therefore not spend the totality of the income  $\bar{Y}_a$  being formed. This level of full-employment activity can hence only be attained on condition that they *export their saving surplus*. They will be able to do this only if the rest of the world is prepared to borrow. In order to induce these other countries to do so, the manufactures-exporting emerging regions have one lever to hand, namely their exchange rates. By using this instrument they can provoke a policy reaction on the part of the developed regions that will in the end make it possible for both regions to operate at full employment, but at the cost of increasing the current-account disequilibrium.

In order to depict the sequencing involved, let us start by defining a reference exchange rate  $\bar{e}$  as the rate that ensures current-account equilibrium between the two regions, *assuming that each region spends the totality of its full-employment income*. By definition, therefore, we have propensities to import associated with the reference exchange rate,  $\mu_a(\bar{e})$  and  $\mu_d(\bar{e})$ , such that :

$$\mu_a(\bar{e})\bar{Y}_a = \bar{e}\mu_d(\bar{e})\bar{Y}_d$$

The exchange rate  $\bar{e}$ , which one might be tempted to call the equilibrium exchange rate, is a highly theoretical reference rate. To say that the current account of the Asian emerging regions is in balance means in fact that these countries' spending exactly equals their income. However, at full employment, their propensity to spend  $\delta_a$  is less than unity. What happens, then, if the reference exchange rate prevails and the *developed* regions spend their full-employment income? Given the definition of  $\bar{e}$ , the emerging region's level of activity is determined by the following relationship:

$$Y_a = (1 - \mu_a(\bar{e}))\delta_a Y_a + \mu_a(\bar{e})\bar{Y}_a$$

If  $\delta_a$  is less than unity, it can be verified that  $Y_a$  is bound to be less than  $\bar{Y}_a$ . If spending by the developed countries is equal to their full-employment income, the demand for the emerging countries' exports, at the reference exchange rate, will be insufficient to enable the latter to attain full employment.

Things might be different if the emerging countries manage to bring the exchange rate below this reference level. Let us again take as starting point the situation in which the developed countries spend their full-employment income. What happens if the Asian countries' currencies depreciate compared with the reference level and move from  $\bar{e}$  to  $\bar{e} + \Delta e$ ? This depreciation brings about a shift of market shares in their favour and they will now experience an increase in world demand for their products. As we have seen, if  $\Delta e > 0$ ,  $\mu_d(\bar{e} + \Delta e) > \mu_d(\bar{e})$  and  $\mu_a(\bar{e} + \Delta e) < \mu_a(\bar{e})$ . This additional demand stimulates activity in the Asian countries and brings it closer to the desired level  $\bar{Y}_a$ . Let us suppose that  $\Delta e$  rises to the point at which these countries do indeed attain this level of activity  $\bar{Y}_a$ . If the developed regions still spend only their full-employment income, their level of activity will be:

$$Y_d = (1 - \mu_d(\bar{e} + \Delta e))\bar{Y}_d + \frac{1}{\bar{e} + \Delta e} \mu_a(\bar{e} + \Delta e)\delta_a\bar{Y}_a$$

It can be verified that this level of activity  $Y_d$  is necessarily less than  $\bar{Y}_d$ : the market shares gained by the one side are lost by the other, so that it is no longer possible for the developed regions to be at full employment. If these regions have room for manoeuvre in economic policy and have at their disposal financial systems that are efficient – and whose capacity for risk-taking is not saturated – they will nevertheless be able to respond to this “undervaluation” of the Asian countries' currencies by increasing their propensity to spend. They will then find themselves again at full employment, but with a propensity to spend that is greater than unity and hence with a current-account deficit.

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(\*) A more exhaustive list of references is to be found in our CEPS publications.